

**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 March 31, 2020

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 April 30, 2020**

17,758,645

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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 March 31,			
	2020		2019	
Net sales	\$	378,561	\$	211,210
Cost of goods sold (excluding amortization expense - See note 14)		244,710		135,443
Gross profit		133,851		75,767
Selling, general and administrative expenses		98,701		51,455
Indefinite-lived intangible asset impairment		38,000		-
Restructuring and related charges		1,716		-
Combination and other acquisition-related expenses		7,878		4,483
Operating (loss) income		(12,444)		19,829
Other expense, net		(21,175)		(635)
Interest expense, net		(8,461)		(776)
(Loss) income before taxes and equity in net income of associated companies		(42,080)		18,418
Taxes on (loss) income before equity in net income of associated companies		(13,070)		4,929
(Loss) income before equity in net income of associated companies		(29,010)		13,489
Equity in net income of associated companies		666		411
Net (loss) income		(28,344)		13,900
Less: Net income attributable to noncontrolling interest		37		56
Net (loss) income attributable to Quaker Chemical Corporation	\$	(28,381)	\$	13,844
Earnings per common share data:				
Net (loss) income attributable to Quaker Chemical Corporation common shareholders – basic	\$	(1.60)	\$	1.04
Net (loss) income attributable to Quaker Chemical Corporation common shareholders – diluted	\$	(1.60)	\$	1.03
Dividends declared	\$	0.385	\$	0.370

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

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

	Unaudited	
	Three Months Ended March 31,	
	2020	2019
Net (loss) income	\$ (28,344)	\$ 13,900
Other comprehensive (loss) income, net of tax		
Currency translation adjustments	(54,751)	(432)
Defined benefit retirement plans	16,957	706
Current period change in fair value of derivatives	(3,981)	—
Unrealized (loss) gain on available-for-sale securities	(1,711)	1,273
Other comprehensive (loss) income	(43,486)	1,547
Comprehensive (loss) income	(71,830)	15,447
Less: Comprehensive income (loss) attributable to noncontrolling interest	95	(55)
Comprehensive (loss) income attributable to Quaker Chemical Corporation	\$ (71,735)	\$ 15,392

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	
	March 31, 2020	December 31, 2019
ASSETS		
Current assets		
Cash and cash equivalents	\$ 316,437	\$ 123,524
Accounts receivable, net	357,902	375,982
Inventories		
Raw materials and supplies	81,827	82,058
Work-in-process and finished goods	96,041	92,892
Prepaid expenses and other current assets	43,021	41,516
Total current assets	895,228	715,972
Property, plant and equipment, at cost	390,353	398,834
Less accumulated depreciation	(188,261)	(185,365)
Property, plant and equipment, net	202,092	213,469
Right of use lease assets	40,496	42,905
Goodwill	592,385	607,205
Other intangible assets, net	1,050,203	1,121,765
Investments in associated companies	84,089	93,822
Deferred tax assets	14,706	14,745
Other non-current assets	41,352	40,433
Total assets	\$ 2,920,551	\$ 2,850,316
LIABILITIES AND EQUITY		
Current liabilities		
Short-term borrowings and current portion of long-term debt	\$ 38,112	\$ 38,332
Accounts and other payables	177,976	170,929
Accrued compensation	24,819	45,620
Accrued restructuring	14,548	18,043
Other current liabilities	85,132	87,010
Total current liabilities	340,587	359,934
Long-term debt	1,076,292	882,437
Long-term lease liabilities	29,402	31,273
Deferred tax liabilities	190,880	211,094
Other non-current liabilities	120,849	123,212
Total liabilities	1,758,010	1,607,950
Commitments and contingencies (Note 19)		
Equity		
Common stock, \$1 par value; authorized 30,000,000 shares; issued and outstanding 2020 – 17,752,255 shares; 2019 – 17,735,162 shares	17,752	17,735
Capital in excess of par value	888,533	888,218
Retained earnings	377,362	412,979
Accumulated other comprehensive loss	(121,524)	(78,170)
Total Quaker shareholders' equity	1,162,123	1,240,762
Noncontrolling interest	418	1,604
Total equity	1,162,541	1,242,366
Total liabilities and equity	\$ 2,920,551	\$ 2,850,316

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	
	Three Months Ended March 31,	
	2020	2019
Cash flows from operating activities		
Net (loss) income	\$ (28,344)	\$ 13,900
Adjustments to reconcile net income to net cash provided by operating activities:		
Amortization of debt issuance costs	1,187	42
Depreciation and amortization	21,197	4,859
Equity in undistributed earnings of associated companies, net of dividends	4,285	(186)
Deferred compensation, deferred taxes and other, net	(22,988)	(6,842)
Share-based compensation	4,682	1,012
Gain on disposal of property, plant, equipment and other assets	(2)	(9)
Insurance settlement realized	(229)	(190)
Indefinite-lived intangible asset impairment	38,000	-
Combination and other acquisition-related expenses, net of payments	(519)	(1,012)
Restructuring and related charges	1,716	-
Pension and other postretirement benefits	22,453	(1,346)
Increase (decrease) in cash from changes in current assets and current liabilities, net of acquisitions:		
Accounts receivable	2,322	(5,470)
Inventories	(10,162)	946
Prepaid expenses and other current assets	(3,263)	324
Change in restructuring liabilities	(4,841)	-
Accounts payable and accrued liabilities	(5,275)	(6,008)
Net cash provided by operating activities	<u>20,219</u>	<u>20</u>
Cash flows from investing activities		
Investments in property, plant and equipment	(4,892)	(2,537)
Payments related to acquisitions, net of cash acquired	(3,160)	(500)
Proceeds from disposition of assets	-	8
Insurance settlement interest earned	31	65
Net cash used in investing activities	<u>(8,021)</u>	<u>(2,964)</u>
Cash flows from financing activities		
Payments of long-term debt	(9,371)	-
Borrowings (repayments) on revolving credit facilities, net	205,500	(24,034)
(Repayments) borrowings on other debt, net	(185)	86
Dividends paid	(6,828)	(4,935)
Stock options exercised, other	(696)	(1,489)
Purchase of noncontrolling interest in affiliates	(1,047)	-
Distributions to noncontrolling affiliate shareholders	(751)	-
Net cash provided by (used in) financing activities	<u>186,622</u>	<u>(30,372)</u>
Effect of foreign exchange rate changes on cash	(6,424)	1,004
Net increase (decrease) in cash, cash equivalents and restricted cash	192,396	(32,312)
Cash, cash equivalents and restricted cash at the beginning of the period	143,555	124,425
Cash, cash equivalents and restricted cash at the end of the period	<u>\$ 335,951</u>	<u>\$ 92,113</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 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 the 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 necessary for a fair statement of the financial position, results of operations and cash flows for the interim periods. The results for the three months ended March 31, 2020 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 for the year ended December 31, 2019 (the “2019 Form 10-K”).

Hyper-inflationary economies

Economies that have a cumulative three-year rate of inflation exceeding 100% are considered hyper-inflationary in accordance with 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.

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 Argentina subsidiary to which hyper-inflationary accounting also is applied. As of, and for the three months ended March 31, 2020, the Company’s Argentine subsidiaries represented less than 1% of the Company’s consolidated total assets and net sales, respectively. During the three months ended March 31, 2020 and 2019, the Company recorded \$0.1 million and \$0.2 million, respectively, of remeasurement losses associated with the applicable currency conversions related to Argentina. These losses were recorded within foreign exchange gains (losses), net, which is a component of other 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, 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. The Company believes that combining Quaker’s and Houghton’s products 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 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 approximately 4.3 million shares, comprising 24.5% of the common stock of the Company immediately after the 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, including indefinite and definite-lived intangible assets, 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, customer attrition 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 included 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 current preliminary estimated fair values of Houghton net assets acquired:

	August 1, 2019 (1)	Measurement Period Adjustments	August 1, 2019 (as adjusted)
Cash and cash equivalents	\$ 75,821	\$ —	\$ 75,821
Accounts receivable, net	178,922	—	178,922
Inventories, net	95,193	—	95,193
Prepaid expenses and other assets	10,652	207	10,859
Property, plant and equipment	115,529	(66)	115,463
Right of use lease assets	10,673	—	10,673
Investments in associated companies	66,447	—	66,447
Other non-current assets	4,710	1,553	6,263
Intangible assets	1,028,400	—	1,028,400
Goodwill	494,915	(23)	494,892
Total assets purchased	<u>2,081,262</u>	<u>1,671</u>	<u>2,082,933</u>
Short-term borrowings, not refinanced at closing	9,297	—	9,297
Accounts payable, accrued expenses and other accrued liabilities	150,078	146	150,224
Deferred tax liabilities	205,082	(28)	205,054
Long-term lease liabilities	6,607	—	6,607
Other non-current liabilities	47,733	1,553	49,286
Total liabilities assumed	<u>418,797</u>	<u>1,671</u>	<u>420,468</u>
Total consideration paid for Houghton	1,662,465	—	1,662,465
Less: cash acquired	75,821	—	75,821
Less: fair value of common stock issued as consideration	789,080	—	789,080
Net cash paid for Houghton	<u>\$ 797,564</u>	<u>\$ —</u>	<u>\$ 797,564</u>

(1) As previously disclosed in the Company's 2019 Form 10-K.

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

As of March 31, 2020, the allocation of the purchase price for the Combination has not been finalized and the one-year measurement period has not ended. While not currently expected, 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. Houghton assets acquired and liabilities assumed have been assigned to each of the Company's reportable segments on a specific identification or allocated basis, as applicable. Measurement period adjustments recorded during the first quarter of 2020 related primarily to the recognition of other non-current assets and other non-current liabilities based on additional information obtained regarding certain tax audits and associated rights to indemnification.

Combination and other acquisition-related expenses have been and are expected to continue to be significant. The Company incurred total costs of \$8.3 million and \$5.3 million for the three months ended March 31, 2020 and 2019, 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 and post-closing integration activities. These costs also include \$0.5 million of accelerated depreciation charges during the three months ended March 31, 2020 and \$0.9 million of interest costs to maintain the bank commitment ("ticking fees") for the Combination during the three months ended March 31, 2019. The Company had current liabilities related to the Combination and other acquisition-related activities of \$6.1 million and \$6.6 million as of March 31, 2020 and December 31, 2019, respectively, primarily recorded within other accrued 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 ("Norman Hay"), a private U.K. company that provides specialty chemicals, operating equipment, and services to industrial end markets. The acquisition adds new technologies in automotive, original equipment manufacturer ("OEM"), and aerospace, as well as engineering expertise which is expected to strengthen the Company's existing equipment solutions platform. The acquired Norman Hay assets and liabilities were assigned to the Global Specialty Businesses reportable segment. The original purchase price was 80.0 million GBP, on a cash-free and debt-free basis, subject to routine and customary post-closing adjustments related to working capital and net indebtedness levels.

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

	October 1, 2019 (1)	Measurement Period Adjustments	October 1, 2019 (as adjusted)
Cash and cash equivalents	\$ 18,981	\$ —	\$ 18,981
Accounts receivable, net	15,471	—	15,471
Inventories, net	8,213	—	8,213
Prepaid expenses and other assets	4,203	—	4,203
Property, plant and equipment	14,981	—	14,981
Right of use lease assets	10,608	—	10,608
Intangible assets	51,088	—	51,088
Goodwill	29,384	(166)	29,218
Total assets purchased	152,929	(166)	152,763
Long-term debt included current portions	485	—	485
Accounts payable, accrued expenses and other accrued liabilities	13,488	(708)	12,780
Deferred tax liabilities	12,746	708	13,454
Long-term lease liabilities	8,594	—	8,594
Total liabilities assumed	35,313	—	35,313
Total consideration paid for Norman Hay	117,616	(166)	117,450
Less: estimated purchase price settlement (2)	3,287	(3,287)	—
Less: cash acquired	18,981	—	18,981
Net cash paid for Norman Hay	\$ 95,348	\$ 3,121	\$ 98,469

(1) As previously disclosed in the Company's 2019 Form 10-K.

(2) The Company finalized its post-closing adjustments for the Norman Hay acquisition and paid approximately 2.5 million GBP during the first quarter of 2020 to settle such adjustments.

As of March 31, 2020, the allocation of the purchase price for Norman Hay 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.

Other Acquisitions

In March 2020, the Company acquired the remaining 49% ownership interest in one of its South African affiliates, Quaker Chemical South Africa Limited (“QSA”) for 16.7 million ZAR, or approximately \$1.0 million, from its joint venture partner PQ Holdings South Africa. QSA is a part of the Company’s Europe, Middle East and Africa (“EMEA”) reportable segment. As this acquisition was a change in an existing controlling ownership, the Company recorded \$0.7 million of excess purchase price over the carrying value of the non-controlling interest in Capital in excess of par value. In addition, subsequent to the date of these Condensed Consolidated Financial Statements, in May 2020 the Company acquired a company from Denmark for an approximately \$3 million note, which will be settled subsequent to the filing of this Form 10-Q in the second quarter of 2020 with the Company’s common stock. In 2018 the Company purchased certain formulations and product technology for the mining industry for \$1.0 million, with \$0.5 million of the purchase price paid at signing and the remaining \$0.5 million of the purchase price paid during the first quarter of 2019.

Note 3 – Recently Issued Accounting Standards

Recently Issued Accounting Standards Adopted

The Financial Accounting Standards Board (“FASB”) issued ASU 2018-15, *Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* 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 should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. Early adoption was permitted. The Company adopted this standard on a prospective basis, effective January 1, 2020. There was no cumulative effect of adoption recorded within retained earnings on January 1, 2020.

The FASB issued ASU 2018-14, *Disclosure Framework — Changes to the Disclosure Requirements for Defined Benefit Plans* 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 should be applied prospectively in the initial year of adoption or prospectively to all periods presented, depending on the amended disclosure requirement. Early adoption was permitted. The Company adopted this standard on a prospective basis, effective January 1, 2020. ASU 2018-14 addresses disclosures only and will not have an impact on the Company’s consolidated financial statements.

The FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* in June 2016 related to the accounting for and disclosure of credit losses. The FASB subsequently issued several additional accounting standard updates which amended and clarified the guidance, but did not materially change the guidance or its applicability to the Company. This accounting 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. Early adoption was permitted. The Company did not early adopt, but did adopt the guidance in this accounting standard update, including all applicable subsequent updates to this accounting guidance, as required, on a modified retrospective basis, effective January 1, 2020. Adoption did not have a material impact to the Company’s financial statements as expected. However, as a result of this adoption, the Company recorded a cumulative effect of accounting change that resulted in an increase to its allowance for doubtful accounts of \$0.5 million, a decrease to deferred tax liabilities of \$0.1 million and a decrease to retained earnings of \$0.4 million.

In accordance with this guidance, the Company recognizes an allowance for credit losses reflecting the net amount expected to be collected from its financial assets, primarily trade accounts receivable. This allowance represents the portion of the receivable that the Company does not expect to collect over its contractual life, considering past events and reasonable and supportable forecasts of future economic conditions. The Company’s allowance for credit losses on its trade accounts receivable is based on specific collectability facts and circumstances for each outstanding receivable and customer, the aging of outstanding receivables and the associated collection risk the Company estimates for certain past due aging categories, and also, the general risk to all outstanding accounts receivable based on historical amounts determined to be uncollectible.

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

Recently Issued Accounting Standards Not Yet Adopted

The FASB issued *Account Standards Update (“ASU”) 2020-01 Investments – Equity Securities (Topic 321), Investments – Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815) – Clarifying the Interactions between Topic 321, Topic 323, and Topic 815* in January 2020 clarifying the interaction among the accounting standards related to equity securities, equity method investments, and certain derivatives. The new guidance, among other things, states that a company should consider observable transactions that require a company to either apply or discontinue the equity method of accounting, for the purposes of applying the fair value measurement alternative immediately before applying or upon discontinuing the equity method. The new guidance also addresses the measurement of certain purchased options and forward contracts used to acquire investments. The guidance within this accounting standard update is effective for annual and interim periods beginning after December 15, 2020 and is to be applied prospectively. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB issued *ASU 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes* in December 2019 to simplify the accounting for income taxes. The guidance within this accounting standard update removes certain exceptions, including the exception to the incremental approach for certain intra-period tax allocations, to the requirement to recognize or not recognize certain deferred tax liabilities for equity method investments and foreign subsidiaries, and to the general methodology for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. Further, the guidance simplifies the accounting related to franchise taxes, the step up in tax basis for goodwill, current and deferred tax expense, and codification improvements for income taxes related to employee stock ownership plans. The guidance is effective for annual and interim periods beginning after December 15, 2020. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB issued *ASU 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement* 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.

Note 4 – Business Segments

The Company’s operating segments, which are consistent with its 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 and the chief operating decision maker assess 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 chief operating decision maker of the Company assesses its performance and allocates its resources. The Company’s current 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, specialty grease and Norman Hay 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 cost of goods sold (“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 not included in segment operating earnings, such as certain corporate and administrative costs, Combination and other acquisition-related expenses, and restructuring and related charges. Other items not specifically identified with the Company’s reportable segments include interest expense, net and other expense, net.

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The following table presents information about the performance of the Company's reportable operating segments for the three months ended March 31, 2020 and 2019:

	Three Months Ended	
	March 31,	
	2020	2019
Net sales		
Americas	\$ 129,896	\$ 72,225
EMEA	104,839	52,425
Asia/Pacific	73,552	46,167
Global Specialty Businesses	70,274	40,393
Total net sales	\$ 378,561	\$ 211,210
Segment operating earnings		
Americas	\$ 29,188	\$ 14,339
EMEA	18,359	8,793
Asia/Pacific	19,541	12,812
Global Specialty Businesses	20,560	10,604
Total segment operating earnings	87,648	46,548
Combination and other acquisition-related expenses	(7,878)	(4,483)
Restructuring and related charges	(1,716)	—
Indefinite-lived intangible asset impairment	(38,000)	—
Non-operating and administrative expenses	(38,451)	(20,348)
Depreciation of corporate assets and amortization	(14,047)	(1,888)
Operating (loss) income	(12,444)	19,829
Other expense, net	(21,175)	(635)
Interest expense, net	(8,461)	(776)
(Loss) income before taxes and equity in net income of associated companies	\$ (42,080)	\$ 18,418

Inter-segment revenues for the three months ended March 31, 2020 and 2019 were \$2.9 million and \$1.4 million for Americas, \$5.5 million and \$5.3 million for EMEA, \$0.1 million and less than \$0.1 million for Asia/Pacific and \$1.3 million and \$1.5 million for Global Specialty Businesses, respectively. However, all inter-segment transactions have been eliminated from each reportable operating segment's net sales and earnings for all periods presented in the above tables.

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, including steel, aluminum, aerospace, defense, transportation-OEM, transportation-components, offshore sub-sea energy, architectural aluminum, construction, 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 fluids, cleaning fluids, corrosion inhibitors, metal drawing and forming fluids, die cast mold releases, heat treatment and quenchant, metal forging fluids, hydraulic fluids, specialty greases, offshore sub-sea energy control fluids, rolling lubricants, rod and wire drawing fluids and surface treatment chemicals.

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 typically visit the plants of customers regularly, work on site, and, through training and experience, identify production needs which can be resolved or otherwise addressed either by adapting the Company's existing products or by applying new formulations developed in its laboratories. The specialty chemical industry comprises many companies similar in size to the Company, as well as companies larger and smaller than Quaker Houghton. The 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.

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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 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 \$12.5 million and \$10.4 million for the three months ended March 31, 2020 and 2019, respectively.

A significant portion of the Company's revenues are realized from the sale of process fluids and services to manufacturers of steel, aluminum, automobiles, aircraft, industrial equipment, 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 and aluminum 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 2019 Form 10-K, during 2019, the Company's five largest customers (each composed of multiple subsidiaries or divisions with semiautonomous purchasing authority) accounted for approximately 12% of consolidated net sales, with its largest customer accounting for approximately 6% 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 is both the sales agreement as well as 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 as the customer 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 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.

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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; 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 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 to not adjust the promised amount of consideration for the effects of a significant financing component as 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 provides a good or service 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 March 31, 2020 or December 31, 2019.

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 \$2.5 million and \$2.2 million of deferred revenue as of March 31, 2020 and December 31, 2019, respectively. During the three months ended March 31, 2020, the Company satisfied all of the associated performance obligations and recognized into revenue the advance payments received and recorded as of December 31, 2019.

Disaggregated Revenue

The Company sells its various industrial process fluids, its specialty chemicals 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 by major product lines that represent approximately 10% or more of consolidated net sales in its 2019 Form 10-K, and those annual percentages are generally consistent with the current quarter's net sales by product line. Also, net sales of each of the Company's major product lines are generally spread throughout all three of the Company's geographic regions, and in most cases, approximately proportionate to the level of total sales in each region.

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The following tables disaggregate the Company's net sales by segment, geographic region, customer industry, and timing of revenue recognized for the three months ended March 31, 2020 and 2019. The Company has made certain reclassifications of disaggregated customer industry disclosures for the three months ended March 31, 2019 to conform with the Company's current period customer industry segmentation.

	Three Months Ended March 31, 2020			
	Americas	EMEA	Asia/Pacific	Consolidated Total
Customer Industries				
Metals	\$ 46,673	\$ 29,888	\$ 41,589	\$ 118,150
Metalworking and other	83,223	74,951	31,963	190,137
	129,896	104,839	73,552	308,287
Global Specialty Businesses	44,231	16,605	9,438	70,274
	<u>\$ 174,127</u>	<u>\$ 121,444</u>	<u>\$ 82,990</u>	<u>\$ 378,561</u>
Timing of Revenue Recognized				
Product sales at a point in time	\$ 168,802	\$ 118,423	\$ 81,156	\$ 368,381
Services transferred over time	5,325	3,021	1,834	10,180
	<u>\$ 174,127</u>	<u>\$ 121,444</u>	<u>\$ 82,990</u>	<u>\$ 378,561</u>

	Three Months Ended March 31, 2019			
	Americas	EMEA	Asia/Pacific	Consolidated Total
Customer Industries				
Metals	\$ 40,925	\$ 24,716	\$ 29,213	\$ 94,854
Metalworking and other	31,300	27,709	16,954	75,963
	72,225	52,425	46,167	170,817
Global Specialty Businesses	32,170	3,863	4,360	40,393
	<u>\$ 104,395</u>	<u>\$ 56,288</u>	<u>\$ 50,527</u>	<u>\$ 211,210</u>
Timing of Revenue Recognized				
Product sales at a point in time	\$ 101,547	\$ 56,234	\$ 48,651	\$ 206,432
Services transferred over time	2,848	54	1,876	4,778
	<u>\$ 104,395</u>	<u>\$ 56,288</u>	<u>\$ 50,527</u>	<u>\$ 211,210</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 11 years. In addition, the Company has certain land use leases with remaining lease terms up to 95 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

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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.

Operating lease expense is recognized on a straight-line basis over the lease term. Operating lease expense for the three months ended March 31, 2020 and 2019 was \$3.4 million and \$1.8 million, respectively. Short-term lease expense was \$0.5 million and \$0.1 million for the three months ended March 31, 2020 and 2019, respectively. The Company has no material variable lease costs or sublease income for the three months ended March 31, 2020 and 2019. Cash paid for operating leases was \$3.4 million and \$1.7 million during the three months ended March 31, 2020 and 2019, respectively. The Company recorded new right of use lease assets and associated lease liabilities of approximately \$1.7 million during the three months ended March 31, 2020.

Supplemental balance sheet information related to the Company's leases is as follows:

	March 31, 2020	December 31, 2019
Right of use lease assets	\$ 40,496	\$ 42,905
Other current liabilities	10,731	11,177
Long-term lease liabilities	29,402	31,273
Total operating lease liabilities	\$ 40,133	\$ 42,450
Weighted average remaining lease term (years)	6.1	6.2
Weighted average discount rate	4.22%	4.21%

Maturities of operating lease liabilities as of March 31, 2020 were as follows:

	March 31, 2020
For the remainder of 2020	\$ 9,508
For the year ended December 31, 2021	10,234
For the year ended December 31, 2022	6,817
For the year ended December 31, 2023	4,953
For the year ended December 31, 2024	3,981
For the year ended December 31, 2025 and beyond	10,919
Total lease payments	46,412
Less: imputed interest	(6,279)
Present value of lease liabilities	\$ 40,133

Note 7 – Restructuring and Related Activities

As previously disclosed in its 2019 Form 10-K, in the third quarter of 2019, the Company's management approved a global restructuring plan (the "QH Program") as part of its plan to realize certain cost synergies associated with the Combination. The QH Program includes restructuring and associated severance costs to reduce total headcount by approximately 325 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 continue to occur during 2020 and 2021 under the QH Program and estimates that total costs related to the QH Program will approximate one-times the anticipated cost synergies realized from the QH Program. Employee separation benefits will vary depending on local regulations within certain foreign countries and will include severance and other benefits.

All costs incurred to date relate specifically to severance costs to reduce headcount and are recorded in Restructuring and related charges in the Company's Condensed Statements of Operations. As described in Note 4 of Notes to Condensed Consolidated Financial Statements, restructuring and related charges are not included in the Company's calculation of reportable segments' measure of operating earnings and therefore these costs are not reviewed by or recorded to reportable segments.

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Activity in the Company's accrual for restructuring under the QH Program for the three months ended March 31, 2020 is as follows:

	QH Program
Accrued restructuring as of December 31, 2019	\$ 18,043
Restructuring and related charges	1,716
Cash payments	(4,841)
Currency translation adjustments	(370)
Accrued restructuring as of March 31, 2020	<u>\$ 14,548</u>

Note 8 – Share-Based Compensation

The Company recognized the following share-based compensation expense in its Condensed Consolidated Statements of Operations for the three months ended March 31, 2020 and 2019:

	Three Months Ended	
	March 31,	
	2020	2019
Stock options	\$ 432	\$ 260
Nonvested restricted stock awards and restricted stock units	1,264	698
Employee stock purchase plan	-	23
Director stock ownership plan	40	31
Annual incentive plan	2,946	-
Total share-based compensation expense	<u>\$ 4,682</u>	<u>\$ 1,012</u>

Share-based compensation expenses is recorded in SG&A, except for \$0.5 million and less than \$0.1 million during the three months ended March 31, 2020 and 2019, respectively, recorded within Combination and other acquisition-related expenses. The increase in total share-based compensation expense for the three months ended March 31, 2020 includes annual incentive plan costs as a component of share-based compensation beginning in 2020, described further below.

Stock Options

During the first quarter of 2020, the Company granted stock options under its long-term incentive plan ("LTIP") that are subject only to time vesting over a three-year period. For the purposes of determining the fair value of stock option awards, the Company used a Black-Scholes option pricing model and the assumptions set forth in the table below:

Number of options granted	49,115
Dividend yield	0.99 %
Expected volatility	31.57 %
Risk-free interest rate	0.36 %
Expected term (years)	4.0

The fair value of these options is amortized on a straight-line basis over the vesting period. As of March 31, 2020, unrecognized compensation expense related to all stock options granted was \$2.5 million, to be recognized over a weighted average remaining period of 2.3 years.

Restricted Stock Awards and Restricted Stock Units

During the first quarter of 2020, the Company granted 19,927 nonvested restricted shares and 3,039 nonvested restricted stock units under its LTIP, subject to time-based vesting, generally over a three-year period. The fair value of 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 March 31, 2020, unrecognized compensation expense related to the nonvested restricted shares was \$6.7 million, to be recognized over a weighted average remaining period of 2.2 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 2.2 years.

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Performance Stock Units

In March 2020, the Company included performance-dependent stock awards (“PSUs”) as a component of its LTIP, which will be settled in a certain number of shares subject to market-based and time-based vesting conditions. The number of fully vested shares that may ultimately be issued as settlement for each award may range from 0% up to 200% of the target award, subject to the achievement of the Company’s total shareholder return (“TSR”) relative to the performance of the Company’s peer group, the S&P Midcap 400 Materials group. The service period required for the PSUs is three years and the TSR measurement period for the PSUs is from January 1, 2020 through December 31, 2022.

Compensation expense for PSUs is measured based on their grant date fair value and is recognized on a straight-line basis over the three-year vesting period. The grant-date fair value of the PSUs was estimated using a Monte Carlo simulation on the grant date and using the following assumptions: (i) a risk-free rate of 0.28%; (ii) an expected term of 3.0 years; and (iii) a three-year daily historical volatility for each of the companies in the peer group, including Quaker Houghton. As of March 31, 2020, the Company estimates that it will issue approximately 38,000 fully vested shares as of the settlement date of the award based on the conditions of the PSUs and Company’s closing stock price on March 31, 2020.

As of March 31, 2020, there was approximately \$3.4 million of total unrecognized compensation cost related to PSUs, which the Company expects to recognize over a weighted-average period of 3.0 years.

Annual Incentive Plan

The Company maintains an Annual Incentive Plan (“AIP”), which may be settled in cash or a certain number of shares subject to performance-based and time-based vesting conditions. It is the Company’s current intention to settle the 2020 AIP in shares, and therefore, expense associated with the AIP in 2020 will be recorded as a component of share-based compensation expense. The number of fully vested shares that may ultimately be issued as settlement for each award is subject to the achievement of the Company’s performance against certain internal financial and non-financial metrics and approval by the Company’s Compensation Committee.

Compensation expense for the AIP is measured based on the estimated total value of the award. The number of shares that will ultimately be issued under the AIP award will be equal to final value of the award converted into a number of shares based on the trading price of the Company’s common stock on the date of settlement. As of March 31, 2020, the Company estimates that it will issue approximately 93,000 fully vested shares as of the settlement date of the award based on the conditions of the AIP, the Company’s projected performance against its performance metrics and Company’s closing stock price on March 31, 2020.

Note 9 – Pension and Other Postretirement Benefits

The components of net periodic benefit cost for the three months ended March 31, 2020 and 2019 are as follows:

	Three Months Ended March 31,					
	Pension Benefits			Other Postretirement Benefits		
	2020	2019	2020	2019	2020	2019
Service cost	\$ 1,174	\$ 986	\$ 2	\$ 2		
Interest cost	1,769	1,111	26	35		
Expected return on plan assets	(1,959)	(984)	—	—		
Settlement loss	22,667	—	—	—		
Actuarial loss amortization	1,047	775	15	—		
Prior service (credit) cost amortization	(40)	(42)	—	—		
Total net periodic benefit cost	\$ 24,658	\$ 1,846	\$ 43	\$ 37		

In the fourth quarter of 2018, the Company began the process of terminating its legacy Quaker non-contributory U.S. pension plan (“Legacy Quaker U.S. Pension Plan”). During the third quarter of 2019, the Company received a favorable termination determination letter from the Internal Revenue Service (“I.R.S.”) and amended the Legacy Quaker U.S. Pension Plan to comply with final regulations of the Internal Revenue Code. The Company completed the Legacy Quaker U.S. Pension Plan termination during the first quarter of 2020. In order to terminate the Legacy Quaker U.S. Pension Plan in accordance with I.R.S. and Pension Benefit Guaranty Corporation requirements, the Company was required to fully fund the Legacy Quaker U.S. Pension Plan on a termination basis and the amount necessary to do so was approximately \$1.8 million, subject to final true up adjustments to be completed over the next several months. In addition, the Company recorded a non-cash pension settlement charge at plan termination of approximately \$22.7 million. This settlement charge included the immediate recognition into expense of the related unrecognized losses within accumulated other comprehensive (loss) income (“AOCI”) on the balance sheet as of the plan termination date.

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Employer Contributions

The Company previously disclosed in its 2019 Form 10-K that it expected to make minimum cash contributions of \$10.0 million to its U.S. and foreign pension plans and approximately \$0.4 million to its other postretirement benefit plans in 2020. As a result of certain current year pension plan funding relief provided by the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") enacted into law on March 27, 2020, the Company now expects to make minimum cash contributions of \$8.0 million to its U.S. and foreign pension plans in 2020. As of March 31, 2020, \$3.8 million and \$0.1 million of contributions have been made to the Company's U.S. and foreign pension plans and its other postretirement benefit plans, respectively. This excludes the \$1.8 million of additional funding made in the first quarter of 2020, as required, to terminate the Legacy Quaker U.S. Pension Plan, noted above.

Note 10 – Other Expense, Net

The components of other expense, net for the three months ended March 31, 2020 and 2019 are as follows:

	Three Months Ended	
	March 31,	
	2020	2019
Income from third party license fees	\$ 304	\$ 220
Foreign exchange gains (losses), net	821	(237)
Gain on fixed asset disposals, net	2	9
Non-income tax refunds and other related credits	1,299	152
Pension and postretirement benefit costs, non-service components	(23,525)	(896)
Other non-operating income	180	148
Other non-operating expense	(256)	(31)
Total other expense, net	<u>\$ (21,175)</u>	<u>\$ (635)</u>

Pension and postretirement benefit costs, non-service components during the three months ended March 31, 2020 includes \$22.7 million related to the Legacy Quaker U.S. Pension Plan non-cash settlement charge described in Note 9 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 months ended March 31, 2020 was a benefit of 31.1% compared to an expense of 26.8% for the three months ended March 31, 2019. The Company's effective tax rate for the three months ended March 31, 2020 was impacted by the tax effect of certain one-time pre-tax losses as well as certain tax charges and benefits in the current period including those related to changes in foreign tax credit valuation allowances, tax law changes in a foreign jurisdiction, and the tax impact of the Company's termination of its Legacy Quaker U.S. Pension Plan. Comparatively, the prior year first quarter effective tax rate was impacted by certain non-deductible costs associated with the Combination.

On March 27, 2020, in response to COVID-19 and its detrimental impact to the global economy, the CARES Act was enacted into law, providing a stimulus to the U.S. economy in the form of various individual and business assistance programs as well as temporary changes to existing tax law. Among the changes include a postponement of certain tax payments, deferral of the employer's portion of the social security tax and certain other payroll-related incentives, and an increase in the interest expense limitation under Section 163(j) of the Internal Revenue Code from 30% to 50% for the 2019 and 2020 tax years. ASC 740 requires the tax effects of changes in tax laws or rates to be recorded in the period of enactment. Under the CARES Act, the Company has the option to use its 2019 adjusted taxable income in determining its interest expense limitation under Section 163(j). While the Company is still considering whether to make this election for 2020, the current quarter tax provision takes into account this potential election and associated tax benefit, which offsets an increase to the Company's foreign tax credit valuation allowance recognized during the current quarter primarily driven by changes in current year projected taxable income due to the negative impacts from COVID-19. In addition, the Company reviewed its existing deferred tax assets in light of COVID-19 and determined that, at this time, no change in valuation allowance is required except with regard to its foreign tax credits as noted above. While the ultimate impact of COVID-19 on the Company's results of operations is still uncertain, the Company will continue to assess future changes in projected taxable income to determine if they result in additional changes to any of the Company's valuation allowances.

As previously disclosed in its 2019 Form 10-K, the Company had a deferred tax liability of \$8.2 million, which primarily represents the Company's estimate of non-U.S. taxes it will incur to repatriate certain foreign earnings to the U.S. During the first quarter of 2020, the Company made certain adjustments to the deferred tax liability to take into account a tax law change enacted in the quarter in a certain foreign jurisdiction, the inclusion of other earnings to be repatriated, and the actual repatriation of earnings, resulting in a deferred tax liability of \$7.4 million as of March 31, 2020.

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Notes to Condensed Consolidated Financial Statements - Continued
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As of March 31, 2020, the Company's cumulative liability for gross unrecognized tax benefits was \$19.0 million, a decrease of \$0.1 million from the cumulative liability accrued as of December 31, 2019.

The Company continues to recognize interest and penalties associated with uncertain tax positions as a component of taxes on (loss) income before equity in net income of associated companies in its Condensed Consolidated Statements of Operations. The Company recognized an expense of less than \$0.1 million for interest and a benefit of \$0.1 million for penalties in its Condensed Consolidated Statement of Operations for the three months ended March 31, 2020, and recognized an expense of \$0.1 million for interest and an expense of less than \$0.1 million for penalties in its Condensed Consolidated Statement of Operations for the three months ended March 31, 2019. As of March 31, 2020, the Company had accrued \$2.2 million for cumulative interest and \$3.3 million for cumulative penalties in its Condensed Consolidated Balance Sheets, compared to \$2.3 million for cumulative interest and \$3.1 million for cumulative penalties accrued at December 31, 2019.

During the three months ended March 31, 2020 and 2019, the Company recognized decreases of \$0.8 million and \$0.1 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, 2020 it will reduce its cumulative liability for gross unrecognized tax benefits by approximately \$2.4 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, 2020.

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 and the United Kingdom from 2014, Mexico, Spain and Germany from 2015, India from fiscal year beginning April 1, 2017 and ending March 31, 2018, the U.S. from 2016, and various U.S. state tax jurisdictions from 2010.

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 the second quarter of 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 to discuss these assessments and no resolution was agreed upon, so the Company filed an appeal with the first level of tax court in Italy. If the appeal is not successful in materially reducing the assessed tax, then the Company will further evaluate its options including potentially filing for competent authority relief from these assessments under MAP, consistent with the Company's previous filings for 2008 through 2013. As of March 31, 2020, the Company believes it has adequate reserves for uncertain tax positions with respect to these and all other audits.

Houghton Italia, S.r.l is also currently involved in a corporate income tax audit with the Italian tax authorities covering tax years 2014 through 2018. As part of the purchase accounting related to the Combination, the Company has established a \$5.4 million reserve for uncertain tax positions relating to this audit. These amounts relate to the 2014 to 2018 audit periods as well as the seven-month period in 2019 prior to the Combination. Since these amounts relate to tax periods prior to the Combination, the Company expects that it would file an indemnification claim with Houghton's former owners for any tax liabilities arising pre-Combination. As a result, a corresponding \$5.4 million indemnification receivable has also been established through purchase accounting that would offset the \$5.4 million in tax liabilities booked through purchase accounting. As of March 31, 2020, the Company believes it has adequate reserves for uncertain tax positions.

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Note 12 – Earnings Per Share

The following table summarizes earnings per share calculations for the three months ended March 31, 2020 and 2019:

	Three Months Ended	
	March 31,	
	2020	2019
Basic (loss) earnings per common share		
Net (loss) income attributable to Quaker Chemical Corporation	\$ (28,381)	\$ 13,844
Less: loss (income) allocated to participating securities	101	(46)
Net (loss) income available to common shareholders	\$ (28,280)	\$ 13,798
Basic weighted average common shares outstanding	17,672,525	13,291,589
Basic (loss) earnings per common share	\$ (1.60)	\$ 1.04
Diluted (loss) earnings per common share		
Net (loss) income attributable to Quaker Chemical Corporation	\$ (28,381)	\$ 13,844
Less: loss (income) allocated to participating securities	101	(46)
Net (loss) income available to common shareholders	\$ (28,280)	\$ 13,798
Basic weighted average common shares outstanding	17,672,525	13,291,589
Effect of dilutive securities	—	46,901
Diluted weighted average common shares outstanding	17,672,525	13,338,490
Diluted (loss) earnings per common share	\$ (1.60)	\$ 1.03

During the third quarter of 2019, the Company issued approximately 4.3 million shares of common stock, comprising 24.5% of the common stock of the Company immediately after the closing, as a component of the consideration transferred in the Combination. Certain stock options and restricted stock units are not included in the diluted (loss) earnings per share calculation when the effect would have been anti-dilutive. All of the Company's potentially dilutive shares for the three months ended March 31, 2020 are anti-dilutive and not included in the dilutive (loss) earnings per share calculations because of the Company's net loss during the period. Additionally, there were no anti-dilutive shares for the three months ended March 31, 2019.

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 less than \$0.1 million in each of the three months ended March 31, 2020 and 2019, respectively, offset by \$0.2 million of net payments during each of the three months ended March 31, 2020 and 2019, respectively. 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.

The following table provides a reconciliation of cash, cash equivalents and restricted cash as of March 31, 2020 and 2019 and December 31, 2019 and 2018:

	March 31,		December 31,	
	2020	2019	2019	2018
Cash and cash equivalents	\$ 316,437	\$ 71,960	\$ 123,524	\$ 104,147
Restricted cash included in other current assets	34	—	353	—
Restricted cash included in other assets	19,480	20,153	19,678	20,278
Cash, cash equivalents and restricted cash	\$ 335,951	\$ 92,113	\$ 143,555	\$ 124,425

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Note 14 – Goodwill and Other Intangible Assets

Changes in the carrying amount of goodwill for the three months ended March 31, 2020 were as follows:

	Americas	EMEA	Asia/Pacific	Global Specialty Businesses	Total
Balance as of December 31, 2019	\$ 216,385	\$ 133,018	\$ 141,727	\$ 116,075	\$ 607,205
Currency translation and other adjustments	(11,212)	(5,557)	5,113	(3,164)	(14,820)
Balance as of March 31, 2020	<u>\$ 205,173</u>	<u>\$ 127,461</u>	<u>\$ 146,840</u>	<u>\$ 112,911</u>	<u>\$ 592,385</u>

Other adjustments in the table above include updates to the Company's allocation of the Houghton purchase price and associated goodwill to each of the Company's reportable segments during the first quarter of 2020.

Gross carrying amounts and accumulated amortization for definite-lived intangible assets as of March 31, 2020 and December 31, 2019 were as follows:

	Gross Carrying Amount		Accumulated Amortization	
	2020	2019	2020	2019
Customer lists and rights to sell	\$ 772,747	\$ 792,362	\$ 60,610	\$ 49,932
Trademarks, formulations and product technology	155,416	157,049	23,075	21,299
Other	6,274	6,261	5,649	5,776
Total definite-lived intangible assets	<u>\$ 934,437</u>	<u>\$ 955,672</u>	<u>\$ 89,334</u>	<u>\$ 77,007</u>

The Company amortizes definite-lived intangible assets on a straight-line basis over their useful lives. The Company recorded \$14.0 million and \$1.8 million of amortization expense for the three months ended March 31, 2020 and 2019, respectively. Estimated annual aggregate amortization expense for the current year and subsequent five years is as follows:

For the year ended December 31, 2020	\$ 54,690
For the year ended December 31, 2021	54,301
For the year ended December 31, 2022	54,154
For the year ended December 31, 2023	53,940
For the year ended December 31, 2024	53,526
For the year ended December 31, 2025	52,766

Goodwill and intangible assets that have indefinite lives are not amortized and are required to be assessed at least annually for impairment. The Company completes its annual goodwill and indefinite-lived intangible asset impairment test during the fourth quarter of each year. The Company continuously evaluates if triggering events indicate a possible impairment in one or more of its reporting units or indefinite-lived or long-lived assets.

As of March 31, 2020, the Company evaluated the current impact of COVID-19 on the Company's operations, as well as the volatility and uncertainty in the economic outlook as a result of COVID-19, to determine if this indicated it was more likely than not that the carrying value of any of the Company's reporting units or other indefinite-lived or long-lived intangible assets were not recoverable. The Company concluded that the impact of COVID-19 did not represent a triggering event as of March 31, 2020 with regards to any of the Company's reporting units or other indefinite-lived and long-lived intangible assets, except for the Company's Houghton and Fluidcare trademark and tradename indefinite-lived intangible assets.

The Company determined that the expected impact from COVID-19 on current and future year projected net sales attributable to legacy Houghton represented a triggering event, and as a result of this conclusion, the Company completed an interim quantitative indefinite-lived intangible asset impairment assessment as of March 31, 2020. Driven by a decrease in projected legacy Houghton net sales in the current year and the impact of the current year decline on projected future legacy Houghton net sales as well as an increase in the weighted average cost of capital assumption utilized in the quantitative impairment assessment, the Company concluded that the estimated fair values of the Houghton and Fluidcare trademark and tradename intangible assets were less than their carrying values. As a result, an impairment charge of \$38.0 million to write down the carrying values of these intangible assets to their estimated fair values was recorded in the first quarter of 2020. The Company's estimate of fair value and the carrying value of these Houghton and Fluidcare trademark and tradename indefinite-lived intangible assets as of March 31, 2020 was \$204.0 million. Comparatively, these indefinite-lived intangible assets totaled \$242.0 million as of December 31, 2019. In addition, the Company has other indefinite-lived intangible assets totaling \$1.1 million as of both March 31, 2020 and December 31, 2019.

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Notes to Condensed Consolidated Financial Statements - Continued
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While the Company concluded that the impact of COVID-19 did not represent a triggering event as of March 31, 2020 for any of its other long-lived or indefinite-lived assets or reporting units, the Company will continue to evaluate the impact of COVID-19 on the Company's current and projected results. If current economic conditions worsen or projections of the timeline for recovery are significantly extended, then the Company may conclude in the future that the impact from COVID-19 requires the need to perform further interim quantitative impairment tests, which could result in additional impairment charges in the future.

Note 15 – Debt

Debt as of March 31, 2020 and December 31, 2019 includes the following:

	As of March 31, 2020		As of December 31, 2019	
	Interest Rate	Outstanding Balance	Interest Rate	Outstanding Balance
Credit Facilities:				
Revolver	2.50%	\$ 376,550	3.20%	\$ 171,169
U.S. Term Loan	2.70%	592,500	3.20%	600,000
EURO Term Loan	1.50%	146,435	1.50%	151,188
Industrial development bonds	5.26%	10,000	5.26%	10,000
Bank lines of credit and other debt obligations	Various	2,341	Various	2,608
Total debt		\$ 1,127,826		\$ 934,965
Less: debt issuance costs		(13,422)		(14,196)
Less: short-term and current portion of long-term debts		(38,112)		(38,332)
Total long-term debt		\$ 1,076,292		\$ 882,437

Credit facilities

The Company's primary credit facility (as amended, the "New Credit Facility") is comprised of a \$400.0 million multicurrency revolver (the "Revolver"), a \$600.0 million term loan (the "U.S. Term Loan"), each with the Company as borrower, and a \$150.0 million (as of August 1, 2019) Euro equivalent term loan (the "EURO Term Loan" and together with the "U.S. Term Loan", the "Term Loans") with Quaker Chemical B.V., a Dutch subsidiary of the Company as borrower, each with a five-year term maturing in August 2024. Subject to the consent of the administrative agent and certain other conditions, the Company may designate additional borrowers. The maximum amount available under the New Credit Facility can be increased by up to \$300.0 million at the Company's request if there are lenders who agree to accept additional commitments and the Company has satisfied certain other 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. There are LIBOR replacement provisions that contemplate a further amendment if and when LIBOR ceases to be reported. Interest incurred on the outstanding borrowings under the New Credit Facility during the three months ended March 31, 2020 was approximately 3.0%. 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 \$15 million, net of bank letters of credit of approximately \$8 million, as of March 31, 2020, as the Company drew down most of the available capacity under the Revolver on March 24, 2020 as a precautionary measure due to COVID-19 uncertainty.

The New Credit Facility is subject to certain financial and other covenants. The Company's initial consolidated net debt to consolidated adjusted EBITDA ratio cannot exceed 4.25 to 1, with step downs in the permitted ratio over the course of the New Credit Facility. The Company's consolidated adjusted EBITDA to interest expense ratio cannot be less than 3.0 to 1. The New Credit Facility also prohibits the payment of cash dividends if the Company is in default or if the amount of the dividend paid annually exceeds the greater of \$50.0 million and 20% of consolidated adjusted EBITDA unless the ratio of consolidated net debt to consolidated adjusted EBITDA is less than 2.0 to 1, in which case there is no such limitation on amount. As of March 31, 2020 and December 31, 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. During the three months ended March 31, 2020, the Company made the first quarterly amortization payment related to the Term Loans of \$9.4 million. 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. The obligations of the Dutch borrower only are guaranteed by certain foreign subsidiaries on an unsecured basis.

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Notes to Condensed Consolidated Financial Statements - Continued
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The New Credit Facility requires the Company to deliver to the administrative agent and each lender the audited consolidated financial statements of the Company for each fiscal year in a prescribed period of time. On March 17, 2020, the Company, the administrative agent, and all parties to the New Credit Facility entered into an amendment (the "Amendment") which allowed the Company to deliver the annual audited consolidated financial statements for the year ended December 31, 2019 to the bank group no later than April 16, 2020 as compared to the initial deadline of March 17, 2020. The Company delivered its 2019 audited consolidated financial statements to the administrative agent and each lender on March 20, 2020 in compliance with the Amendment.

The New Credit Facility required the Company to fix its variable interest rates on at least 20% of its total Term Loans. In order to satisfy this requirement as well as to manage the Company's exposure to variable interest rate risk associated with the New Credit Facility, in November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps at a base rate of 1.64% plus an applicable margin as provided in the New Credit Facility, based on the Company's consolidated net leverage ratio. At the time the Company entered into the swaps, and as of March 31, 2020, this aggregate rate was 3.1%. See Note 18 of Notes to Condensed Consolidated Financial Statements.

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 were attributed to the Term Loans and recorded as a direct reduction of long-term debt on the Company's Condensed Consolidated Balance Sheet. Approximately \$8.3 million of the capitalized costs were attributed to the Revolver and recorded within other assets on the Company's Condensed Consolidated Balance Sheet. These capitalized costs are being amortized into interest expense over the five-year term of the New Credit Facility. As of March 31, 2020 and December 31, 2019, the Company had \$13.4 million and \$14.2 million, respectively, of debt issuance costs recorded as a reduction of long-term debt. As of March 31, 2020 and December 31, 2019, the Company had \$7.2 million and \$7.6 million, respectively, of debt issuance costs recorded within other assets.

Industrial development bonds

As of March 31, 2020 and December 31, 2019, the Company had fixed rate, industrial development authority bonds totaling \$10.0 million in principal amount due in 2028. These bonds have similar covenants to the New Credit Facility noted above.

Bank lines of credit and other debt obligations

The Company has certain unsecured bank lines of credit and discounting facilities in one of its foreign subsidiaries, which are not collateralized. 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. Total unused capacity under these arrangements as of March 31, 2020 was approximately \$36 million.

In addition to the bank letters of credit described in the "Credit facilities" subsection above, the Company's only other off-balance sheet arrangements include certain financial and other guarantees. The Company's total bank letters of credit and guarantees outstanding as of March 31, 2020 were approximately \$14 million.

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

	Three Months Ended	
	March 31,	
	2020	2019
Interest expense	\$ 7,712	\$ 1,172
Amortization of debt issuance costs	1,187	42
Total	\$ 8,899	\$ 1,214

Based on the variable interest rates associated with the New Credit Facility, as of March 31, 2020 and December 31, 2019, the amounts at which the Company's total debt were recorded are not materially different from their fair market value.

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Notes to Condensed Consolidated Financial Statements - Continued
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Note 16 – Equity

The following tables present the changes in equity, net of tax, for the three months ended March 31, 2020 and 2019:

	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interest	Total
Balance at December 31, 2019	\$ 17,735	\$ 888,218	\$ 412,979	\$ (78,170)	\$ 1,604	\$ 1,242,366
Cumulative effect of an accounting change	-	-	(402)	-	-	(402)
Balance at January 1, 2020	17,735	888,218	412,577	(78,170)	1,604	1,241,964
Net (loss) income	-	-	(28,381)	-	37	(28,344)
Amounts reported in other comprehensive loss	-	-	-	(43,354)	(132)	(43,486)
Dividends (\$0.385 per share)	-	-	(6,834)	-	-	(6,834)
Acquisition of noncontrolling interest	-	(707)	-	-	(340)	(1,047)
Distribution to noncontrolling interest affiliate shareholders	-	-	-	-	(751)	(751)
Share issuance and equity-based compensation plans	17	1,022	-	-	-	1,039
Balance at March 31, 2020	<u>\$ 17,752</u>	<u>\$ 888,533</u>	<u>\$ 377,362</u>	<u>\$ (121,524)</u>	<u>\$ 418</u>	<u>\$ 1,162,541</u>
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	-	-	13,844	-	56	13,900
Amounts reported in other comprehensive income (loss)	-	-	-	1,548	(1)	1,547
Dividends (\$0.370 per share)	-	-	(4,933)	-	-	(4,933)
Share issuance and equity-based compensation plans	(4)	(472)	-	-	-	(476)
Balance at March 31, 2019	<u>\$ 13,334</u>	<u>\$ 96,832</u>	<u>\$ 413,992</u>	<u>\$ (79,167)</u>	<u>\$ 1,372</u>	<u>\$ 446,363</u>

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The following tables show the reclassifications from and resulting balances of AOCI for the three months ended March 31, 2020 and 2019:

	Currency Translation Adjustments	Defined Benefit Retirement Plans	Unrealized Gain (Loss) in Available-for- Sale Securities	Derivative Instruments	Total
Balance at December 31, 2019	\$ (44,568)	\$ (34,533)	\$ 1,251	\$ (320)	\$ (78,170)
Other comprehensive (loss) income before reclassifications	(54,619)	828	(2,135)	(5,170)	(61,096)
Amounts reclassified from AOCI	-	24,366	(32)	-	24,334
Current period other comprehensive (loss) income	(54,619)	25,194	(2,167)	(5,170)	(36,762)
Related tax amounts	-	(8,237)	456	1,189	(6,592)
Net current period other comprehensive (loss) income	(54,619)	16,957	(1,711)	(3,981)	(43,354)
Balance at March 31, 2020	\$ (99,187)	\$ (17,576)	\$ (460)	\$ (4,301)	\$ (121,524)
Balance at December 31, 2018	\$ (49,322)	\$ (30,551)	\$ (842)	\$ -	\$ (80,715)
Other comprehensive (loss) income before reclassifications	(431)	160	1,707	-	1,436
Amounts reclassified from AOCI	-	733	(96)	-	637
Current period other comprehensive (loss) income	(431)	893	1,611	-	2,073
Related tax amounts	-	(187)	(338)	-	(525)
Net current period other comprehensive (loss) income	(431)	706	1,273	-	1,548
Balance at March 31, 2019	\$ (49,753)	\$ (29,845)	\$ 431	\$ -	\$ (79,167)

All reclassifications related to unrealized (loss) gain 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.

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 March 31, 2020 Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
		\$ 1,509	\$ —	\$ 1,509
Company-owned life insurance	\$ 1,509	\$ —	\$ 1,509	\$ —
Total	\$ 1,509	\$ —	\$ 1,509	\$ —

Assets	Total Fair Value	Fair Value Measurements at December 31, 2019 Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
		\$ 1,782	\$ —	\$ 1,782
Company-owned life insurance	\$ 1,782	\$ —	\$ 1,782	\$ —
Total	\$ 1,782	\$ —	\$ 1,782	\$ —

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 March 31, 2020 or December 31, 2019, respectively, so related disclosures have not been included.

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Note 18 – Hedging Activities

As previously disclosed in its 2019 Form 10-K, in order to satisfy certain requirements 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, in November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps. See Note 15 of Notes to Condensed Consolidated Financial Statements. These interest rate swaps are designated as cash flow hedges and, as such, the contracts are marked-to-market at each reporting date and any unrealized gains or losses are included in AOCI to the extent effective and reclassified to interest expense in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur. The Company has previously used derivative financial instruments primarily for the purposes of hedging exposures to fluctuations in interest rates. The Company did not utilize derivatives designated as cash flow hedges during the three months ended March 31, 2019.

The balance sheet classification and fair values of the Company's derivative instruments, which are Level 2 measurements, are as follows:

	Condensed Consolidated Balance Sheet Location	Fair Value	
		March 31, 2020	December 31, 2019
Derivatives designated as cash flow hedges:			
Interest rate swaps	Other non-current liabilities	\$ 5,586	\$ 415
		<u>\$ 5,586</u>	<u>\$ 415</u>

The following table presents the net unrealized loss deferred to AOCI:

	AOCI	March 31, 2020	December 31, 2019
		\$	\$
Derivatives designated as cash flow hedges:			
Interest rate swaps	AOCI	4,301	320
		<u>\$ 4,301</u>	<u>\$ 320</u>

The following table presents the net gain reclassified from AOCI to earnings:

	Interest expense, net	Three Months Ended March 31,	
		2020	2019
Amount and location of income reclassified from AOCI into Income (Effective Portion)	Interest expense, net	\$ 19	\$ —

Interest rate swaps are entered into with a limited number of counterparties, each of which allows for net settlement of all contracts through a single payment in a single currency in the event of a default on or termination of any one contract. As such, in accordance with the Company's accounting policy, these derivative instruments are recorded on a net basis by counterparty within the Condensed Consolidated Balance Sheets.

Note 19 – Commitments and Contingencies

The Company previously disclosed in its 2019 Form 10-K 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 March 31, 2020, 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 March 31, 2020, 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 2019 Form 10-K 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 three months ended March 31, 2020, 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 \$0.5 million (excluding costs of defense).

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

The Company previously disclosed in its 2019 Form 10-K that as a result of the closing of the Combination, the Company is now party to Houghton environmental matters related to certain domestic and foreign properties currently or previously owned. These environmental matters primarily require the Company to perform long-term monitoring as well as operating and maintenance at each of the applicable sites. During the three months ended March 31, 2020, there have been no significant changes to the facts or circumstances of these previously disclosed matters, aside from on-going monitoring and maintenance activities and routine payments associated with each of the sites. The Company continually evaluates its obligations related to such matters, and based on historical costs incurred and projected costs to be incurred over the next 28 years, has estimated the present value range of costs for all of the Houghton environmental matters, on a discounted basis, to be between approximately \$5 million and \$6 million as of March 31, 2020, for which \$5.9 million was accrued within other accrued liabilities and other non-current liabilities on the Company's Condensed Consolidated Balance Sheet as of March 31, 2020. Comparatively, as of December 31, 2019, the Company had \$6.6 million accrued for with respect to these matters.

The Company believes, although there can be no assurance regarding the outcome of other unrelated environmental matters, that it has made adequate accruals for costs associated with other environmental problems of which it is aware. Approximately \$0.1 million and \$0.2 million were accrued as of March 31, 2020 and December 31, 2019, respectively, to provide for such anticipated future environmental assessments and remediation costs.

The Company is party to other litigation which management currently believes will not have a material adverse effect on the Company's results of operations, cash flows or financial condition. In addition, the Company has an immaterial amount of contractual purchase obligations.

Note 20 – COVID-19 Global Pandemic

Beginning in early 2020, there has been an outbreak of COVID-19, initially in China and which has spread globally, including generally all locations where the Company does business. In March 2020, the World Health Organization formally identified the COVID-19 outbreak as a pandemic. In an effort to halt the outbreak of COVID-19, the governments of impacted countries, including but not limited to the United States, the European Union, and China, have placed significant restrictions on travel within their respective borders, leading to extended business closures in some instances. This outbreak and associated travel restrictions and business closures or temporary shutdowns have had a significant disruption on the operations of the Company and its suppliers and customers. The Company has experienced disruptions as a result of COVID-19, including volume declines and lower net sales first at its China subsidiaries and subsequently, particularly beginning in the second half of March, throughout the rest of the business due to the global economic slowdown brought on by COVID-19. Management continues to monitor the impact that the COVID-19 pandemic is having on the Company, the overall specialty chemical industry, and the economies in which the Company operates. The Company anticipates that its future results of operations, including the results for the remainder of 2020 and particularly for the second quarter of 2020, will be significantly adversely impacted by COVID-19. Further, management continues to evaluate how COVID-19-related circumstances, such as remote work arrangements, have affected financial reporting processes, internal control over financial reporting, and disclosure controls and procedures. At this time, management does not believe that COVID-19 has had a material impact on financial reporting processes, internal controls over financial reporting, and disclosure controls and procedures.

The full extent of the COVID-19 pandemic related business and travel restrictions and changes to business and consumer behavior intended to reduce its spread are uncertain as of the date of this Report as COVID-19 and the responses of governmental authorities continue to rapidly evolve globally. The Company cannot reasonably estimate the magnitude of the effects these conditions will have on the Company's operations as they are subject to significant uncertainties relating to the ultimate geographic spread of the virus, the incidence and severity of the disease, the duration of the outbreak, the length of the travel restrictions and business closures imposed by governments of impacted countries, and the economic response by governments of impacted countries. The Company expects that there will be volume declines and lower net sales in the second quarter compared to the first quarter and prior year. A prolonged outbreak and continued restrictions on day-to-day life would likely result in volume declines and lower net sales for later periods in 2020 as well, when compared to the prior year. To the extent that the Company's customers and suppliers continue to be significantly and adversely impacted by COVID-19, this could reduce the availability, or result in delays, of materials or supplies to or from the Company, which in turn could significantly interrupt the Company's business operations. Such impacts could grow and become more significant to the Company's operations and the Company's liquidity or financial position. Therefore, given the speed and frequency of continuously evolving developments with respect to this pandemic, the Company cannot reasonably estimate the magnitude or the full extent to which COVID-19 may impact the Company's results of operations, liquidity or financial position.

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 (doing business as Quaker Houghton), its subsidiaries, and associated companies, unless the context otherwise requires. As used in this Report, the term Legacy Quaker refers to the Company prior to the closing of its combination with Houghton International, Inc. ("Houghton") (herein referred to as the "Combination") on August 1, 2019. Throughout the Report, all figures presented, unless otherwise stated, reflect the results of operations of the combined company for the three months ended March 31, 2020 and Legacy Quaker for the three months ended March 31, 2019.

Executive Summary

Quaker Houghton is a global leader in industrial process fluids. With a 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 first quarter of 2020 performance was consistent with the Company's expectations given the full quarter impact in China related to COVID-19, the full quarter impact of Boeing temporarily stopping production of the 737 Max airplane, negative impacts from foreign currency translation and the broader global economic slowdown related to COVID-19 that began in the second half of March. Specifically, net sales of \$378.6 million in the first quarter of 2020 increased 79% compared to \$211.2 million in the first quarter of 2019, due primarily to the inclusion of \$190.3 million of Houghton and Norman Hay plc ("Norman Hay") net sales. Excluding Houghton and Norman Hay net sales, the Company's net sales would have decreased 11% quarter-over-quarter, primarily due to a decrease in sales volumes of 5%, a negative impact from foreign exchange of 3% and a decline from price and product mix of 3%. The Company's gross profit and selling, general and administrative expenses ("SG&A") also increased due to the inclusion of Houghton and Norman Hay quarter-over-quarter, but both were also impacted by foreign exchange and the realization of cost savings associated with the Combination as well as the impact of lower SG&A due to the sales decline and further cost saving measures put in place to help offset the impacts of COVID-19.

The Company reported a first quarter of 2020 net loss of \$28.4 million or \$1.60 per diluted share compared to the first quarter of 2019 net income of \$13.8 million or \$1.03 per diluted share. The first quarter of 2020 net loss as reported was primarily due to a current quarter non-cash impairment charge of \$38.0 million for certain indefinite-lived intangible assets and a \$22.7 million non-cash settlement charge related to the termination of a legacy Quaker U.S. defined benefit pension plan. Excluding these non-recurring items in the current quarter and costs associated with the Combination as well as all other non-core items in each period, the Company's non-GAAP earnings per diluted share were \$1.38 in the first quarter of 2020 compared to \$1.41 in the prior year first quarter. Prior year earnings per share do not reflect the additional 4.3 million shares issued as part of the consideration for the Combination. The Company's adjusted EBITDA increased to \$60.5 million in the first quarter of 2020 compared to \$29.6 million in the prior year quarter largely due to the Combination, the inclusion of Norman Hay and the benefits of cost savings realized from the Combination. See the Non-GAAP Measures section of this Item below, as well as other items discussed in the Company's Consolidated Operations Review in the Operations 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 that consists of four segments: (i) Americas; (ii) Europe, Middle East and Africa ("EMEA"); (iii) Asia/Pacific; and (iv) Global Specialty Businesses. The Company's first quarter 2020 operating performance by reportable segment reflected the positive impact of three months of Houghton's performance in all of its segments and three months of Norman Hay in its Global Specialty Businesses segment. Without the inclusion of Houghton and Norman Hay, net sales would have been lower in all segments compared to the prior year, primarily driven by declines in volume due to the negative impacts of COVID-19 on the Company's end markets and negative foreign currency translation in all segments due to a strong US dollar. As reported, segment operating earnings were higher in all segments compared to 2019, which also reflects the inclusion of Houghton and Norman Hay net sales and gross profit, partially offset by higher SG&A as a result of the Combination and Norman Hay acquisition. 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 had net operating cash flow of \$20.2 million in the first quarter of 2020 compared to less than \$0.1 million in the first quarter of 2019. The increase in net operating cash flow quarter-over-quarter was driven by the inclusion of Houghton and Norman Hay earnings, partially offset by higher cash outflows due to working capital changes in the current year. The key drivers of the Company's operating cash flow and working capital are further discussed in the Company's Liquidity and Capital Resources section of this Item, below.

Overall, the Company's first quarter results were generally consistent with its expectations as the Company saw volume declines in China due to COVID-19, certain domestic volume weakness due to the temporary production stoppage of Boeing's 737 Max and COVID-19 impacts that largely started in the second half of March. Despite these impacts and other macroeconomic headwinds, including a stronger U.S. dollar, the Company had good first quarter results, driven by estimated share gains, continued progress with

the integration of Houghton and associated cost synergies, cost savings measures put in place due to COVID-19 and the benefit of Norman Hay. The Company now expects to realize Combination cost synergies on a pro forma combined company basis of \$53 million in 2020, \$65 million in 2021 and \$75 million in 2022, which are increases from the Company's previous expectations of \$35 million, \$50 million, and \$60 million, respectively.

The current global economy and impacts due to COVID-19 pose a challenging situation, but the Company expects to successfully exit this downturn as the Company has demonstrated the ability in the past to respond quickly to changing market conditions and expects to maintain sufficient liquidity even in difficult economic times. The Company expects that its increased integration synergies, additional cost savings actions, continuing to take share in the marketplace and improvement in gross margins will continue to help the Company during these challenging times, and coupled with the benefit of a projected gradual rebound in demand in its end markets will help drive significant adjusted EBITDA growth in 2021 and 2022.

Impact of COVID-19

Beginning in early 2020, there has been an outbreak of COVID-19, initially in China and which has spread globally, including generally all locations where the Company does business. The full extent of the outbreak, related business and travel restrictions and changes to behavior intended to reduce its spread remains uncertain. Therefore, the full extent to which COVID-19 may impact the Company's results of operations or financial condition is uncertain. This outbreak has had a significant disruption on the operations of the Company and its suppliers and customers. The Company has experienced disruptions as a result of COVID-19, including volume declines and lower net sales as further described in this section, first at its China subsidiaries and subsequently, particularly beginning in the second half of March, throughout the rest of the business due to the global economic slowdown brought on by COVID-19. The Company anticipates that its future results of operations, including the results for the remainder of 2020, particularly for the second quarter of 2020, will be significantly adversely impacted by COVID-19. Management continues to monitor the impact that the COVID-19 pandemic is having on the Company, the overall specialty chemical industry and the economies in which the Company operates.

Given the speed and frequency of the continuously evolving developments with respect to this pandemic, the Company cannot, as of the date of this Report, reasonably estimate the magnitude or the full extent of the impact to its future results of operations or to the ability of it or its customers to resume more normal operations. The Company expects that there will be volume declines and lower net sales in the second quarter compared to the first quarter and prior year. A prolonged outbreak and period of continued restrictions on day-to-day life would likely result in volume declines and lower net sales for later periods in 2020 as well, as compared to the prior year. To the extent that the Company's customers and suppliers continue to be significantly and adversely impacted by COVID-19, this could reduce the availability, or result in delays, of materials or supplies to or from the Company, which in turn could significantly interrupt the Company's business operations. Further, management continues to evaluate how COVID-19-related circumstances, such as remote work arrangements, have affected financial reporting processes and systems, internal control over financial reporting, and disclosure controls and procedures. At this time, management does not believe that COVID-19 has had a material impact on financial reporting processes, internal controls over financial reporting, and disclosure controls and procedures. For additional information regarding the potential impact of COVID-19, see Item 1A of Part II of this Report.

The Company's top priority is, and especially during this pandemic remains, to protect the health and safety of its employees and customers, while working to ensure business continuity to meet customers' needs:

- Our People* – The Company has taken steps to protect the health and wellbeing of its people in affected areas through various actions, including enabling work at home where needed and possible, and employing social distancing standards, enhancing onsite hygiene practices, and instituting visitation restrictions at the Company's facilities.
- Our Operations* – Currently, all of the Company's 34 production facilities worldwide are open and operating and are deemed as essential businesses in the jurisdictions where they are operating. The Company believes it has been able to meet the needs of all its customers across the globe despite the current economic challenges.
- Our Business Conditions* – The Company's first quarter of 2020 results were consistent with expectations as the Company saw weakness in China due to COVID-19 in the first quarter, with the rest of the Company's businesses globally impacted by the pandemic beginning in the second half of March. Since then, many customers have reduced production levels, and in some cases, temporarily shut down their facilities. Therefore, the Company currently expects to experience the most severe impact related to COVID-19 in the second quarter of 2020, but then expects a gradual quarterly improvement sequentially throughout the remainder of the year depending on the containment of the virus and its effects. However, it remains highly uncertain as to how long the global pandemic and related economic challenges will last.
- Our Actions* – The Company has taken actions to conserve cash and reduce costs. Some of the actions taken include eliminating all discretionary expenditures, delaying or freezing salary increases where legally permitted, reducing executives' salaries, lowering targeted capital expenditures by approximately 30%, and accelerating and fine-tuning the Company's

integration plan. These initiatives have been designed and actioned so that the Company can successfully manage through this challenging situation while continuing to protect the health of its employees, meet customers' needs, maintain the Company's long-term competitive advantages and above-market growth, and enable it to continue to effectively integrate with Houghton. While the Company has taken a number of actions to protect our workforce, to continue to serve our customers with excellence and to conserve cash and reduce costs, further actions to respond to the pandemic and its effects may be necessary as conditions continue to evolve.

Liquidity and Capital Resources

At March 31, 2020, the Company had cash, cash equivalents and restricted cash of \$336.0 million, including \$19.5 million of restricted cash. Total cash, cash equivalents and restricted cash was \$143.6 million at December 31, 2019, which included \$20.0 million of restricted cash. The \$192.4 million increase in cash, cash equivalents and restricted cash was the net result of \$186.6 million of cash provided by financing activities and \$20.2 million of cash provided by operating activities, partially offset by \$8.0 million of cash used in investing activities and a \$6.4 million negative impact due to the effect of foreign currency translation on cash.

Net cash flows provided by operating activities were \$20.2 million in the first three months of 2020 compared to less than \$0.1 million in the first three months of 2019. The Company's current quarter operating cash flow increase was largely due to the inclusion of Houghton and Norman Hay earnings, which were not included in the prior year, partially offset by higher outflows related to working capital in the current quarter. The higher current quarter cash outflows related to working capital were largely driven by inventory stocking to prepare for global impacts from COVID-19, current quarter cash payments related to the Company's restructuring program, described below, and higher cash payments related to accounts payable and accruals, including annual incentive compensation payouts for the combined company, partially offset by higher cash receipts on accounts receivable due to the decrease in net sales in the current quarter. In addition, the Company had higher cash dividends received from its associated companies quarter-over-quarter, primarily due to \$5.0 million received from the Company's joint venture in Korea.

Net cash flows used in investing activities were \$8.0 million in the first three months of 2020 compared to \$3.0 million in the first three months of 2019. This increase in cash outflows was driven by higher investments in property, plant and equipment due to the inclusion of Houghton and Norman Hay expenditures as well as higher payments related to acquisitions during the three months ended March 31, 2020. In the current quarter, the Company finalized its post-closing adjustment related to Norman Hay for approximately \$3.2 million, whereas the Company had a prior year payment of \$0.5 million to finalize the acquisition of certain formulations and product technology in the mining industry.

Net cash flows provided by financing activities were \$186.6 million in the first three months of 2020 compared to cash used in financing activities of \$30.4 million in the first three months of 2019. The \$217.0 million increase in net cash flows was due primarily to additional borrowings of \$205.5 million on the Company's revolving credit facility in the current quarter compared to payments of \$24.0 million in the prior year first quarter. As a precautionary measure in response to the current economic uncertainty related to COVID-19, the Company drew down most of the available liquidity on its revolving credit facility during the first quarter of 2020, which drove the large change in borrowings compared to the prior year. This increase in borrowings was partially offset by \$9.4 million of scheduled repayments under the Company's term loan agreement. In addition, the Company paid \$6.8 million of cash dividends during the first quarter of 2020, a \$1.9 million or 38% increase in cash dividends compared to the prior year, primarily due to approximately 4.3 million shares issued at closing of the Combination, as well as the prior year cash dividend per share increase initiated in May 2019. Finally, during the first three months of 2020, the Company used \$1.0 million to purchase the remaining noncontrolling interest in its South Africa affiliate. Prior to this buyout, this South Africa affiliate made a distribution to the prior noncontrolling affiliate shareholder of approximately \$0.8 million in the first quarter of 2020. There were no similar noncontrolling interest activities in the first quarter of 2019.

As previously disclosed in its Annual Report on Form 10-K for the year ended December 31, 2019 (the "2019 Form 10-K"), on August 1, 2019, the Company completed the Combination, 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 approximately 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. Prior to the Combination, the Company secured commitments from certain banks for a new credit facility (as amended, the "New Credit Facility"). Concurrent with the closing of the Combination on August 1, 2019, those banks, Bank of America, N.A. as administrative agent, the Company and certain other parties closed on the New Credit Facility, replacing the Company's previous credit facility. See Note 2 and Note 15 of Notes to Condensed Consolidated Financial Statements.

As of March 31, 2020, the Company had New Credit Facility borrowings outstanding of \$1,115.5 million. As of December 31, 2019, the Company had New Credit Facility borrowings outstanding of \$922.4 million. The Company has unused capacity under the Revolver of approximately \$15 million, net of bank letters of credit of approximately \$8 million, as of March 31, 2020. As mentioned above, the Company drew down most of the available capacity on the Revolver during the first quarter of 2020 as a precautionary

measure in response to the current economic uncertainty related to COVID-19. The Company's other debt obligations are primarily industrial development bonds, bank lines of credit and municipality-related loans, which totaled \$12.3 million as of March 31, 2020 and \$12.6 million as of December 31, 2019, respectively. Total unused capacity under these arrangements as of March 31, 2020 was approximately \$36 million. The Company's total net debt as of March 31, 2020 was \$811.4 million. As of March 31, 2020 and December 31, 2019, the Company was in compliance with all of the New Credit Facility covenants.

The New Credit Facility requires the Company to deliver to the administrative agent and each lender the audited consolidated financial statements of the Company for each fiscal year in a prescribed period of time. On March 17, 2020, the Company, the administrative agent, and all parties to the New Credit Facility entered into an amendment (the "Amendment") which allowed the Company to deliver the annual audited consolidated financial statements for the year ended December 31, 2019 to the bank group no later than April 16, 2020 as compared to the initial deadline of March 17, 2020. The Company delivered its 2019 audited consolidated financial statements to the administrative agent and each lender on March 20, 2020 in compliance with the Amendment.

The New Credit Facility required the Company to fix its variable interest rates on at least 20% of its total Term Loans. In order to satisfy this requirement as well as to manage the Company's exposure to variable interest rate risk associated with the New Credit Facility, in November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps at a base rate of 1.64% plus an applicable margin as provided in the New Credit Facility, based on the Company's consolidated net leverage ratio. At the time the Company entered into the swaps, and as of March 31, 2020, this aggregate rate was 3.1%.

The Company now expects to realize Combination cost synergies on a pro forma combined company basis of \$53 million in 2020, \$65 million in 2021 and \$75 million in 2022, which are increases from the Company's previous expectations of \$35 million, \$50 million, and \$60 million, respectively. The Company estimates that it realized approximately \$10 million of cost savings during the first quarter of 2020 on a combined company pro forma basis, increasing its cumulative synergies realized in the eight months since closing of the Combination to approximately \$17 million.

The Company expects to incur additional costs and make associated cash payments to integrate Quaker and Houghton and continue realizing the Combinations total anticipated cost synergies. The Company expects cash payments, including those pursuant to the QH Program, described below, but excluding incremental capital expenditures related to the Combination, will generally approximate one-times its total anticipated cost synergies. The Company expects to incur these costs over a three-year period post-close, with a significant portion of these costs incurred or expected to be incurred in 2019 and the current year. The Company incurred \$8.3 million of total Combination and other acquisition-related expenses in the first quarter of 2020, including \$0.5 million of accelerated depreciation, described in the Non-GAAP measures of this Item below. The Company had aggregate net cash outflows of approximately \$8.3 million related to the Combination and other acquisition-related expenses during the first quarter of 2020. Comparatively, during the first quarter of 2019, the Company incurred \$5.3 million of total Combination and other acquisition-related expenses, including \$0.9 million of ticking fees, described in the Non-GAAP Measures of this Item below, and aggregate net cash outflows related to these costs were \$6.4 million.

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 includes restructuring and associated severance costs to reduce total headcount by approximately 325 people globally and plans for the closure of certain manufacturing and non-manufacturing facilities. As a result of the QH Program, the Company recognized \$1.7 million of restructuring and related charges in the first quarter of 2020. 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 will continue to occur during 2020 and 2021 under the QH Program and estimates that total costs related to the QH Program will approximate one-times the anticipated cost synergies realized under this program. The Company made cash payments related to the settlement of restructuring liabilities under the QH Program during the first quarter of 2020 of approximately \$4.9 million.

In the fourth quarter of 2018, the Company began the process of terminating its non-contributory U.S. pension plan ("the Legacy Quaker U.S. Pension Plan"). The Company completed the Legacy Quaker U.S. Pension Plan termination during the first quarter of 2020. In order to terminate the Legacy Quaker U.S. Pension Plan in accordance with I.R.S. and Pension Benefit Guaranty Corporation requirements, the Company was required to fully fund the Legacy Quaker U.S. Pension Plan on a termination basis and the amount necessary to do so was approximately \$1.8 million, subject to final true up adjustments to be completed over the next several months. In addition, the Company recorded a non-cash pension settlement charge at plan termination of approximately \$22.7 million.

As of March 31, 2020, the Company's gross liability for uncertain tax positions, including interest and penalties, was \$24.5 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 \$5.3 million as a result of offsetting benefits in other tax jurisdictions.

The Company believes that its existing cash, anticipated cash flows from operations and available additional liquidity will be sufficient to support its operating requirements and fund its business objectives for at least the next twelve months, including but

not limited to, payments of dividends to shareholders, costs related to the Combination and integration, pension plan contributions, capital expenditures, other business opportunities and other potential contingencies. The Company's liquidity is affected by many factors, some based on normal operations of our business and others related to global economic conditions and industry uncertainties, which we cannot predict. We also cannot predict economic conditions and industry downturns or the timing, strength or duration of recoveries. We may seek, as we believe appropriate, additional debt or equity financing which would provide capital for corporate purposes, working capital funding, additional liquidity needs or to fund future growth opportunities, including possible acquisitions and investments. The timing and amount of potential capital requirements cannot be determined at this time and will depend on a number of factors, including our actual and projected demand for our products, specialty chemical industry conditions, competitive factors, and the condition of financial markets, among others.

Critical Accounting Policies and Estimates

The Company's critical accounting policies and estimates, as set forth in its Annual Report on Form 10-K for the year ended December 31, 2019, remain materially consistent. However, due to the current impact as well as the volatility and uncertainty in the economic outlook as a result of COVID-19, the Company re-evaluated certain of its estimates, most notably its estimates and assumptions with regards to goodwill and other intangible assets.

Goodwill and other intangible assets: The Company accounts for business combinations under the acquisition method of accounting. This method requires the recording of acquired assets, including separately identifiable intangible assets, at their acquisition date fair values. 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. When necessary, the Company consults with external advisors to help determine fair value. For non-observable market values, the Company may determine fair value using acceptable valuation principles, including the excess earnings, relief from royalty, lost profit or cost methods.

The Company amortizes definite-lived intangible assets on a straight-line basis over their useful lives. Goodwill and intangible assets that have indefinite lives are not amortized and are required to be assessed at least annually for impairment. The Company completes its annual goodwill and indefinite-lived intangible asset impairment test during the fourth quarter of each year. The Company continuously evaluates if triggering events indicate a possible impairment in one or more of its indefinite-lived or long-lived assets.

As of March 31, 2020, the Company evaluated the current impact of COVID-19 on the Company's operations, as well as the volatility and uncertainty in the economic outlook as a result of COVID-19 to determine if this indicated it was more likely than not that the carrying value of any of the Company's indefinite-lived or long-lived assets was not recoverable. While the impact of COVID-19 has already had a negative effect on the Company's operations and is expected to significantly impact the Company's second quarter and full year 2020 results, in evaluating if a triggering event was present for one or more of the Company indefinite-lived or long-lived assets, the Company also considered the current carrying value and estimated fair value for each asset, as well as the Company's expected impact from COVID-19 on each specific asset. The Company concluded that the impact of COVID-19 did not represent a triggering event as of March 31, 2020 with regards to the Company's indefinite-lived and long-lived assets, except for the Company's Houghton and Fluidcare trademark and tradename indefinite-lived intangible assets.

Given the relatively short period of time between the fair value determination for the acquired Houghton and Fluidcare trademark and tradename indefinite-lived intangible assets as of the closing of the Combination on August 1, 2019, and the 2019 annual impairment testing date of October 1, the Company's 2019 annual impairment assessment concluded that the \$242.0 million carrying value of acquired Houghton and Fluidcare indefinite-lived intangible assets generally approximated fair value, with excess fair value of less than 5%. Because of the previously concluded relatively narrow gap between fair value and carrying value, the Company concluded in the first quarter of 2020 that the expected current year impact from COVID-19 on the Company's net sales represented a triggering event. As a result of the conclusion, the Company completed an interim quantitative indefinite-lived intangible asset impairment assessment as of March 31, 2020.

The determination of estimated fair value of the Houghton and Fluidcare trademark and tradename indefinite-lived assets was based on a relief from royalty valuation method which requires management's judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to the weighted average cost of capital ("WACC") as well as projected net sales. In completing the interim quantitative impairment assessment, the Company used a WACC assumption of approximately 10% as well as current year forecasted net sales and management's estimates with respect to future net sales growth rates specific to legacy Houghton's net sales. As a result of an increase in the WACC assumption as of March 31, 2020, compared to the prior year fourth quarter annual impairment assessment, and the significant current year decline in projected legacy Houghton net sales due to the impact of COVID-19, the Company concluded that the estimated fair values of these intangible assets were less than their carrying values and that an impairment charge to write down their carrying values to their estimated fair values was required. The Company's estimate of fair value of these assets as of March 31, 2020 was \$204.0 million. This resulted in a first quarter of 2020 non-cash impairment charge of \$38.0 million for certain indefinite-lived intangible assets.

While the Company concluded that the impact of COVID-19 did not represent a triggering event as of March 31, 2020 for its other indefinite-lived and long-lived assets, including its goodwill, the Company will continue to evaluate the impact of COVID-19 on the Company's current and projected results in the future. If current economic conditions worsen or projections of the timeline for recovery are significantly extended, then the Company may conclude in the future that the impact from COVID-19 represents a triggering event for one or more of its other indefinite-lived or long-lived assets, including goodwill. This may result in the need to perform further interim quantitative impairment tests and could result in additional impairment charges in the future.

Non-GAAP Measures

The information in this Form 10-Q filing includes non-GAAP (unaudited) financial information that includes EBITDA, adjusted EBITDA, adjusted EBITDA margin, non-GAAP operating income, non-GAAP operating margin, 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 (loss) 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 (loss) 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 – adjusted, 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.

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):

Non-GAAP Operating Income and Margin Reconciliations

	Three Months Ended	
	March 31,	
	2020	2019
Operating (loss) income	\$ (12,444)	\$ 19,829
Houghton combination and other acquisition-related expenses (a)	8,276	4,483
Restructuring and related charges (b)	1,716	-
Customer bankruptcy costs (c)	463	-
Indefinite-lived intangible asset impairment (d)	38,000	-
Non-GAAP operating income	<u>\$ 36,011</u>	<u>\$ 24,312</u>
Non-GAAP operating margin (%) (j)	9.5%	11.5%

**EBITDA, Adjusted EBITDA, Adjusted EBITDA Margin and
Non-GAAP Net Income Reconciliations**

	Three Months Ended	
	March 31,	
	2020	2019
Net (loss) income attributable to Quaker Chemical Corporation	\$ (28,381)	\$ 13,844
Depreciation and amortization (a) (i)	21,584	4,859
Interest expense, net (a)	8,461	776
Taxes on (loss) income before equity in net income of associated companies	(13,070)	4,929
EBITDA	\$ (11,406)	\$ 24,408
Equity loss (income) in a captive insurance company (e)	327	(346)
Houghton combination and other acquisition-related expenses (a)	7,803	4,483
Restructuring and related charges (b)	1,716	—
Customer bankruptcy costs (c)	463	—
Indefinite-lived intangible asset impairment (d)	38,000	—
Pension and postretirement benefit costs, non-service components (f)	23,525	896
Currency conversion impacts of hyper-inflationary economies (g)	51	194
Adjusted EBITDA	\$ 60,479	\$ 29,635
Adjusted EBITDA margin (%) (j)	16.0%	14.0%
Adjusted EBITDA	\$ 60,479	\$ 29,635
Less: Depreciation and amortization - adjusted (a)	21,111	4,859
Less: Interest expense, net - adjusted (a)	8,461	(86)
Less: Taxes on (loss) income before equity in net income of associated companies - adjusted (k)	6,463	6,040
Non-GAAP net income	\$ 24,444	\$ 18,822

Non-GAAP Earnings per Diluted Share Reconciliations

	Three Months Ended	
	March 31,	
	2020	2019
GAAP (loss) earnings per diluted share attributable to Quaker Chemical Corporation common shareholders	\$ (1.60)	\$ 1.03
Equity loss (income) in a captive insurance company per diluted share (e)	0.02	(0.03)
Houghton combination and other acquisition-related expenses per diluted share (a)	0.36	0.35
Restructuring and related charges per diluted share (b)	0.07	-
Customer bankruptcy costs per diluted share (c)	0.02	-
Indefinite-lived intangible asset impairment per diluted share (d)	1.65	-
Pension and postretirement benefit costs, non-service components per diluted share (f)	0.88	0.05
Currency conversion impacts of hyper-inflationary economies per diluted share (h)	0.00	0.01
Impact of certain discrete tax items per diluted share (h)	(0.02)	-
Non-GAAP earnings per diluted share (l)	\$ 1.38	\$ 1.41

(a) 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, 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 \$1.2 million for the three months ended March 31, 2019 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 months ended March 31, 2020, the Company recorded \$0.5 million of accelerated depreciation related to certain of the Company's facilities, which is included in the caption "Houghton combination and other acquisition-related expenses" in the reconciliation of operating income to non-GAAP operating income and included in the caption "Depreciation and amortization" in the reconciliation of net income attributable to the Company to EBITDA, but excluded from the caption "Depreciation and amortization - adjusted" in the reconciliation of adjusted EBITDA to non-GAAP net income attributable to the Company. During the three months ended March 31, 2019, the Company incurred \$0.9 million of ticking fees to maintain the bank commitment related to the Combination. 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 the caption "Interest expense, net - adjusted" in the reconciliation of adjusted EBITDA to non-GAAP

net income attributable to the Company. See Note 2 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.

- (b) Restructuring and related charges represents the costs incurred by the Company associated with the QH 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.
- (c) Customer bankruptcy costs represent the costs associated with a specific reserve for trade accounts receivable related to a customer who filed for bankruptcy protection. These expenses are not indicative of the future operating performance of the Company.
- (d) Indefinite-lived intangible asset impairment represents the non-cash charge taken to write down the value of certain indefinite-lived intangible assets associated with the Houghton Combination. The Company has no prior history of goodwill or intangible asset impairments and this charge is not indicative of the future operating performance of the Company. See Note 14 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (e) Equity loss (income) in a captive insurance company represents the after-tax (income) loss 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. The amount in the three months ended March 31, 2020 includes the \$22.7 million settlement charge for the Company's termination of the Legacy Quaker U.S. Pension Plan. See Note 9 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (g) 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. During both the three months ended March 31, 2020 and 2019, the Company incurred non-deductible, pre-tax charges related to the Company's Argentine affiliates. 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.
- (h) The impact of certain discrete tax items includes the impact of changes in certain valuation allowances recorded on certain of the Company's foreign tax credits, changes in withholding rates and the associated impact on previously accrued for distributions at certain of the Company's Asia/Pacific subsidiaries as well as the offsetting impact and amortization of a deferred tax benefit the Company recorded in the fourth quarter of 2019 related to an intercompany intangible asset transfer.
- (i) Depreciation and amortization for the three months ended March 31, 2020 included \$0.4 million of amortization expense recorded within equity in net income of associated companies in the Company's Condensed Consolidated Statement of Operations, which is attributable to the amortization of the fair value step up for the Company's 50% interest in a Houghton joint venture in Korea as a result of required purchase accounting.
- (j) 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.
- (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 income attributable to Quaker Chemical Corporation to adjusted EBITDA, and was determined utilizing the applicable rates in the taxing jurisdictions in which these adjustments occurred, subject to deductibility. Houghton combination and other acquisition-related expenses described in (a) resulted in incremental taxes of \$2.0 million and \$0.9 million for the three months ended March 31, 2020 and 2019, respectively. Restructuring and related charges described in (b) resulted in incremental taxes of \$0.4 million during the three months ended March 31, 2020. Customer bankruptcy costs described in (c) resulted in incremental taxes of \$0.1 million during the three months ended March 31, 2020. Indefinite-lived intangible asset impairment described in (d) resulted in incremental taxes of \$8.7 million during the three months ended March 31, 2020. Pension and postretirement benefit costs, non-service components described in (f) resulted in incremental taxes of \$7.9 million and \$0.2 million for the three months ended March 31, 2020 and 2019, respectively. Tax impact of certain discrete items described in (h) above resulted in a tax benefit of \$0.4 million during the three months ended March 31, 2020.
- (l) 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.

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 March 31, 2020. The Company's only off-balance sheet items outstanding as of March 31, 2020 represented approximately \$14 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 Note 15 of Notes to Condensed Consolidated Financial Statements in Item 1 of this Report.

Operations

Consolidated Operations Review – Comparison of the First Quarter of 2020 with the First Quarter of 2019

Net sales were \$378.6 million in the first quarter of 2020 compared to \$211.2 million in the first quarter of 2019. The net sales increase of 79% quarter-over-quarter includes Houghton and Norman net sales of \$190.3 million. Excluding Houghton and Norman Hay net sales, the Company's current quarter net sales would have declined 11%, which reflects a decrease in sales volumes of 5%, a negative impact from foreign currency translation of 3% and a decline in selling price and product mix of 3%. The largest drivers of the volume decline in the current quarter were the negative impact of COVID-19, most notably on lower volumes in the Company's Asia/Pacific reportable segment, as well as a decrease in volume driven by Boeing's decision to temporarily stop production of the 737 Max aircraft.

Cost of goods sold ("COGS") were \$244.7 million in the first quarter of 2020 compared to \$135.4 million in the first quarter of 2019. The increase in COGS of 81% was primarily due to the inclusion of Houghton and Norman Hay sales and associated COGS, as well as \$0.5 million of accelerated depreciation charges 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 quarter of 2020 increased \$58.1 million or 77% from the first quarter of 2019, due primarily to the Houghton and Norman Hay net sales, noted above. The Company's reported gross margin in the first quarter of 2020 was 35.4% compared to 35.9% in the first quarter of 2019. The decrease in gross margin quarter-over-quarter was the result of price and product mix largely due to lower gross margins in the legacy Houghton business, partially offset by certain COGS decreases as a result of the Company's progress on initial Combination-related logistics and procurement cost savings initiatives.

SG&A in the first quarter of 2020 increased \$47.2 million compared to the first quarter of 2019 due primarily to additional SG&A from Houghton and Norman Hay and \$0.5 million of customer bankruptcy costs described in the Non-GAAP Measures section of this Item, above, partially offset by lower SG&A due to foreign currency translation, the impact of the sales decline, noted above, on direct selling costs, the impact of lower SG&A due to cost savings measures implemented in reaction to the impact of COVID-19 and the benefits of realized cost synergies associated with the Combination.

During the first quarter of 2020, the Company incurred \$7.9 million of Combination and other acquisition-related expenses, primarily for legal, financial and other advisory and consultant expenses for integration activities. Comparatively, the Company incurred \$4.5 million of expenses in the prior year first quarter, primarily due to various professional fees related to integration planning and regulatory approvals. See the Non-GAAP Measures section of this Item, above.

The Company initiated a restructuring program during the third quarter of 2019 as part of its global plan to realize cost synergies associated with the Combination. The Company expects reductions in headcount and site closures to continue to occur during 2020 and 2021 under this program. The Company recorded additional restructuring and related charges of \$1.7 million related to this program during the first quarter of 2020 and there were no similar restructuring charges recorded during the first quarter of 2019. See the Non-GAAP Measures section of this Item, above.

During the first quarter of 2020, the Company recorded a \$38.0 million non-cash impairment charge related to certain acquired Houghton trademarks and tradenames, which was primarily the result of the current year negative impacts of COVID-19 on their estimated fair values. See the Critical Accounting Policies and Estimates section of this Item, above.

Operating loss in the first quarter of 2020 was \$12.4 million compared to operating income of \$19.8 million in the first quarter of 2019. Excluding the Combination and other acquisition-related charges, restructuring and related charges, the indefinite-lived intangible asset impairment charge, and other expenses that are not indicative of the future operating performance of the Company described in the Non-GAAP Measures section of this Item, above, the Company's current quarter non-GAAP operating income increased to \$36.0 million compared to \$24.3 million in the prior year first quarter, primarily due to additional net sales and operating income from Houghton and Norman Hay.

The Company had other expense, net, of \$21.2 million in the first quarter of 2020 compared to \$0.6 million in the first quarter of 2019. The quarter-over-quarter change was primarily due to the first quarter of 2020 pension plan settlement charge associated with the termination of the Legacy Quaker U.S. Pension Plan. Partially offsetting this pension settlement charge were foreign currency transaction gains of \$0.8 million in the first quarter of 2020 compared to foreign currency transaction losses of \$0.2 million in the first quarter of 2019, as well as an increase in receipts of local municipality-related grants primarily in the Company's Asia/Pacific region quarter-over-quarter.

Interest expense, net, increased \$7.7 million compared to the first quarter of 2019, as a result of additional borrowings under the Company's New Credit Facility to finance the closing of the Combination on August 1, 2019.

The Company's effective tax rates for the first quarters of 2020 and 2019 were a benefit of 31.1% and expense of 26.8%, respectively. The Company's effective tax rate for the three months ended March 31, 2020 was impacted by the tax effect of certain one-time pre-tax losses as well as certain tax charges and benefits in the current period including those related to changes in foreign tax credit valuation allowances, tax law changes in a foreign jurisdiction, and the tax impact of the Company's termination of its Legacy Quaker U.S. Pension Plan. Comparatively, the prior year first quarter effective tax rate was impacted by certain non-deductible costs associated with the Combination. 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 effective tax rates for the first quarter of 2020 and 2019 would have been approximately 22% and 24%, respectively. This quarter-over-quarter decrease was largely driven by a larger positive impact from changes in uncertain tax positions in the current quarter as compared to the prior year. 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 \$0.3 million in the first quarter of 2020 compared to the first quarter of 2019, primarily due to earnings from the Company's 50% interest in its joint venture in Korea that was acquired in the Combination, partially offset by a current quarter loss compared to prior year first quarter income 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 relatively consistent in both the first quarters of 2020 and 2019.

Foreign exchange positively impacted the Company's first quarter of 2020 earnings by less than 1% as the current quarter foreign exchange transaction gains compared to prior year foreign exchange transaction losses were partially offset by the negative impact from foreign currency translation of approximately 2% due to the strengthening of the U.S. dollar in the current quarter.

Reportable Segments Review - Comparison of the First Quarter of 2020 with the First Quarter of 2019

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 chief operating decision maker of 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 current 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, specialty grease and Norman Hay businesses.

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 not included in segment operating earnings, such as certain corporate and administrative costs, Combination and other acquisition-related expenses, and Restructuring and related charges. Other items not specifically identified with the Company's reportable segments include interest expense, net and other expense, net.

Americas

Americas represented approximately 34% of the Company's consolidated net sales in the first quarter of 2020. The segment's net sales were \$129.9 million, an increase of \$57.7 million or 80% compared to the first quarter of 2019. The increase in net sales reflects the inclusion of Houghton net sales of \$62.8 million. Excluding Houghton net sales, the segment's net sales decrease quarter-over-quarter of 7% was due to lower volumes of 4% and a negative impact of foreign currency translation of 3%. The current quarter volume decline was driven by the economic slowdown that began in late March due to the impacts of COVID-19. The foreign exchange impact was primarily due to the weakening of the Brazilian real against the U.S. dollar, as this exchange rate averaged 4.43 in the first quarter of 2020 compared to 3.77 in the first quarter of 2019. This segment's operating earnings were \$29.2 million, an increase of \$14.8 million or 104% compared to the first quarter of 2019. The increase in segment operating earnings reflects the inclusion of Houghton net sales, as well as a slightly higher gross margin, partially offset by higher SG&A, including Houghton SG&A.

EMEA

EMEA represented approximately 28% of the Company's consolidated net sales in the first quarter of 2020. The segment's net sales were \$104.8 million, an increase of \$52.4 million or 100% compared to the first quarter of 2019. The increase in net sales reflects the inclusion of Houghton net sales of \$57.9 million. Excluding Houghton net sales, the segment's net sales decrease quarter-over-quarter of 10% was due to lower volumes of 6%, a negative impact of foreign currency translation of 3%, and a decrease from selling price and product mix of 1%. The current quarter volume decline was driven by the economic slowdown that began in late March due to the impacts of COVID-19 and an overall reduced production in certain EMEA countries that began in the second half of 2019 and continued into the first quarter of 2020. The foreign exchange impact was primarily due to the weakening of the euro against the U.S. dollar as this exchange rate averaged 1.10 in the first quarter of 2020 compared to 1.14 in the first quarter of 2019. This segment's operating earnings were \$18.4 million, an increase of \$9.6 million or 109% compared to the first quarter of 2019. The increase in segment operating earnings reflects the inclusion of Houghton net sales, and relatively consistent gross margins, partially offset by higher SG&A, including Houghton SG&A.

Asia/Pacific

Asia/Pacific represented approximately 19% of the Company's consolidated net sales in the first quarter of 2020. The segment's net sales were \$73.6 million, an increase of \$27.4 million or 59% compared to the first quarter of 2019. The increase in net sales reflects the inclusion of Houghton net sales of \$33.7 million. Excluding Houghton net sales, the segment's net sales decrease of 14% quarter-over-quarter was driven by lower volumes of 10%, a negative impact of foreign currency translation of approximately 3% and decreases in selling price and product mix of 1%. The decline in volume was primarily due to the negative impact of COVID-19 within the region, notably in China during the first quarter of 2020. The foreign exchange impact was primarily due to the weakening of the Chinese renminbi against the U.S. dollar as this exchange rate averaged 6.98 in the first quarter of 2020 compared to 6.75 in the first quarter of 2019. This segment's operating earnings were \$19.5 million, an increase of \$6.7 million or 53% compared to the first quarter of 2019. The increase in segment operating earnings reflects the inclusion of Houghton net sales, partially offset by a lower gross margin due to price and product mix, including lower Houghton gross margin compared to Legacy Quaker and higher SG&A, including Houghton SG&A.

Global Specialty Businesses

Global Specialty Businesses represented approximately 19% of the Company's consolidated net sales in the first quarter of 2020. The segment's net sales were \$70.3 million, an increase of \$29.9 million or 74% compared to the first quarter of 2019. The increase in net sales reflects the inclusion of Houghton and Norman Hay net sales of \$35.9 million. Excluding Houghton and Norman Hay net sales, the segment's net sales would have decreased 15% quarter-over-quarter driven by declines from selling price and product mix of 19% and a negative impact from foreign currency translation of 2%, partially offset by higher volumes of 6%. Both the changes in selling price and product mix and volume were primarily driven by higher shipments of a lower priced product in the Company's mining business compared to the prior year. Partially offsetting this specific mining business volume increase was a decrease in volume in the Company's specialty coatings business driven by Boeing's decision to temporarily stop production of the 737 Max aircraft and initial volume declines due to the economic slowdown that began in late March due to the impacts of COVID-19. The foreign exchange impact was primarily due to the weakening of the Brazilian real against the U.S. dollar described in the Americas section, above. This segment's operating earnings were \$20.6 million, an increase of \$10.0 million or 94% compared to the first quarter of 2019. The increase in segment operating earnings reflects the inclusion of Houghton and Norman Hay net sales, as well as slightly higher gross margin due to price and product mix, including higher Houghton and Norman Hay gross margin compared to Legacy Quaker, partially offset by higher SG&A, including Houghton and Norman Hay.

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 Securities and Exchange Commission ("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, including statements regarding the potential effects of the COVID-19 pandemic on the Company's business, results of operations, or financial condition and our expectation to remain compliant with the terms of the Company's credit facility on our current expectations about future events.

Quaker Chemical Corporation
Management's Discussion and Analysis

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;
- the impacts on our business as a result of the COVID-19 pandemic;
- our current and future results and plans; and
- statements that include the words "may," "could," "should," "would," "believe," "expect," "anticipate," "estimate," "intend," "plan" or 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 2019 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 the Company'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 our 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, the primary and secondary impacts of the COVID-19 pandemic, including actions taken in response to the pandemic by various governments, which could exacerbate some or all of the other risks and uncertainties faced by the Company, including the potential for 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, industrial equipment, and durable goods manufacturers. The ultimate significance of COVID-19 on our business will depend on, among other things, the extent and duration of the pandemic, the severity of the disease and the number of people infected with the virus, the effects on the economy by the pandemic, including the resulting market volatility, and by the measures taken by governmental authorities and other third parties restricting day-to-day life and the length of time that such measures remain in place, and governmental programs implemented to assist businesses impacted by the COVID-19 pandemic. Other factors could also adversely affect us, including those related to the Combination and other acquisitions and the integration of the combined company as well as other acquired businesses. 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 our actual results to differ materially from expected and historical results.

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 this Report, as well as Item 1A in our 2019 Form 10-K 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.

Quaker Houghton on the Internet

Financial results, news and other information about Quaker Houghton can be accessed from the Company's website at <https://www.quakerhoughton.com>. This site includes important information on the Company's locations, products and services, financial reports, news releases and career opportunities. The Company's periodic and current reports on Forms 10-K, 10-Q, 8-K, and other filings, including exhibits and supplemental schedules filed therewith, and amendments to those reports, filed with the SEC are available on the Company's website, free of charge, as soon as reasonably practicable after they are electronically filed with or furnished to the SEC. Information contained on, or that may be accessed through, the Company's website is not incorporated by reference in this Report and, accordingly, you should not consider that information part of this Report.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Quaker Houghton is exposed to the impact of interest rates, foreign currency fluctuations, changes in commodity prices and credit risk. The current economic environment associated with COVID-19 has led to significant volatility and uncertainty with each of these market risks. Other than the impact of the COVID-19 pandemic on market risks generally, we believe there has been no other material change to the information disclosed in Part II, Item 7A, of our 2019 Form 10-K. See Item 1A, "Risk Factors", of this Report for additional discussion of the current and potential risks associated with the COVID-19 pandemic.

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 as of March 31, 2020 because of the material weaknesses in our internal control over financial reporting, as described below.

As previously disclosed in "Item 9A. Controls and Procedures." in the Company's 2019 Form 10-K, through the process of evaluating risks and corresponding changes to the design of existing or the implementation of new controls in light of the significant non-recurring transactions that occurred during 2019, including the Combination, the Company identified certain deficiencies in its application of the principles associated with the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control – Integrated Framework (2013) that management has concluded in the aggregate constitute a material weakness. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis. We did not effectively design and maintain controls in response to the risks of material misstatement. Specifically, changes to existing controls or the implementation of new controls have not been sufficient to respond to changes to the risks of material misstatement to financial reporting. As a result of this deficiency in the design and implementation of an effective risk assessment, this material weakness contributed to certain control deficiencies that management has concluded result in the following additional material weaknesses: (i) we did not design and maintain effective controls over the review of pricing, quantity and customer data to verify that revenue recognized at certain smaller locations was complete and accurate, and (ii) we did not design and maintain effective controls over the reliability of data used to support the reasonableness of certain assumptions in the accounting for business combinations.

Notwithstanding these material weaknesses, the Company has concluded that the unaudited condensed consolidated financial statements included in this Report present fairly, in all material respects, the financial position of the Company as of March 31, 2020 and December 31, 2019, and the results of its operations and its cash flows and changes in equity for both the three month periods ended March 31, 2020 and March 31, 2019, are in conformity with accounting principles generally accepted in the United States of America. However, these control deficiencies could have resulted in misstatements of interim condensed consolidated financial statements and disclosures that could have resulted in a material misstatement that would not be prevented or detected.

Remediation Plan Activities. As previously disclosed in "Item 9A. Controls and Procedures." in the Company's 2019 Form 10-K, the Company and its Board of Directors are committed to maintaining a strong internal control environment. During the first quarter of 2020, management has begun developing its full remediation plan and is in the early phase of what will be a multi-step remediation process to completely and fully remediate the material weaknesses identified and described above. The initial steps the Company has taken include identifying dedicated internal resources supplemented with third-party specialists to assist with formalizing a robust and detailed remediation plan and specifically completing an updated risk assessment, including identifying and assessing those risks attendant to the significant changes within the Company as a result of becoming a larger, more complex global organization as a result of the Combination. The Company plans to conduct a comprehensive review, and, as applicable, update its existing internal control framework to ensure that it has identified, developed and deployed the appropriate business process and information technology general controls to meet the objectives and address the risks identified through the updated risk assessment process.

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 March 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, 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 March 31, 2020.

PART II.
OTHER INFORMATION

Items 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 19 of the Notes to the Condensed Consolidated Financial Statements in Part I, Item 1, of this Report.

Item 1A. Risk Factors.

In addition to the other information set forth in this Report, you should carefully consider the risk set forth below, which updates the risk factors previously disclosed in Part I, Item 1A of our 2019 Form 10-K, as well as the other risk factors described in the 2019 Form 10-K, which could materially affect our business, financial condition or future results. The risk described below, and the risks described in our 2019 Form 10-K are not the only risks we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially and adversely affect our business, financial condition or operating results.

The outbreak of COVID-19 and its impact on business and economic conditions have negatively affected our business, results of operations and financial condition and the extent and duration of those effects is uncertain.

Beginning in early 2020, there has been an outbreak of COVID-19, initially in China and which has spread globally, including generally all locations where the Company does business. In March 2020, the World Health Organization formally identified the COVID-19 outbreak as a pandemic. The COVID-19 pandemic, including the fear of exposure to and the actual effects of the illness, together with the measures implemented to reduce its spread, which include restrictions on travel and large gatherings and requirements to shelter-in-place, have significantly impacted the global economy. The pandemic has disrupted global supply chains, lowered equity market valuations, created significant volatility and disruption in financial markets, and increased unemployment levels. In addition, it has resulted in temporary closures of many businesses, which may continue for an unknown period.

The scale and scope of the COVID-19 outbreak, the resulting pandemic, and the primary and secondary impacts on the economy and financial markets have had a significant disruption on the operations of the Company and its suppliers and customers and have adversely affected the Company's results of operations and financial condition during the first quarter of 2020 as further described in Management's Discussion and Analysis of Financial Condition and Results of Operations included in this Report. The Company has experienced disruptions as a result of COVID-19, first at its China subsidiaries and subsequently, particularly beginning in the first quarter of 2020, throughout the rest of the business due to the global economic slowdown. The Company anticipates that its future results of operations, including the results for the remainder of 2020, particularly for the second quarter of 2020, will be significantly adversely impacted by COVID-19. In particular, the spread of COVID-19 and efforts to contain the virus have had the following effects, which are likely to increase or become exacerbated the longer the crisis continues:

- reduced the demand for our products and services as many customers have reduced production levels;
- driven declines in volume and net sales across all reportable segments;
- required us to adjust certain of our facility operating procedures and to take steps to reduce costs and preserve liquidity; and
- negatively affected the carrying value of certain of the Company's reporting units or other indefinite-lived or long-lived intangible assets, namely the Company's Houghton and Fluidcare trademark and tradename indefinite-lived intangible assets, such that their estimated fair values were less than their carrying values.

The spread of COVID-19 and efforts to contain the virus could also:

- limit the availability and reduce the productivity of our employees;
- impact our financial reporting systems and processes, internal control over financial reporting, and disclosure controls and procedures, including our ability to ensure information required to be disclosed in our reports under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate, to allow for timely decisions regarding required disclosure;
- increase our costs as a result of our emergency measures, delay customer payments and potentially increase uncollectable accounts;
- cause delays and disruptions in the availability of and timely delivery of materials and components used in our operations;
- cause a deterioration of the credit quality of our customers and other counterparties that could result in credit losses;
- result in our inability to meet the requirements of the covenants in our existing credit facility, including covenants regarding our consolidated interest coverage ratio and consolidated net leverage ratio, or increase our cost of capital or make additional capital, including the refinancing of our credit facility, more difficult or available only on terms less favorable to us;
- impact our liquidity position and cost of and ability to access funds from financial institutions and capital markets;
- negatively affect the carrying values of other Company reporting units or other indefinite-lived or long-lived intangible assets; and
- cause other risks to impact us, including the risks described in the "Risk Factors" section of the 2019 Form 10-K.

While the Company has implemented business continuity and emergency response plans to permit it to continue to provide services and products to customers and support the Company's operations, while also taking health and safety measures such as implementing worker distancing measures and using a remote workforce where possible, there can be no assurance that the continued spread of COVID-19 and efforts to contain the virus (including, but not limited to, voluntary and mandatory quarantines, restrictions on travel, limiting gatherings of people, and reduced operations and extended closures of many businesses and institutions) will not further impact our business, results of operations and financial condition. However, given the unprecedented and rapidly evolving developments with respect to this pandemic, the Company cannot, as of the date of this Report, reasonably estimate the magnitude or full extent of the impact to its future results of operations or to the ability of it or its customers to resume more normal operations. The Company expects that there will be significant volume declines and lower net sales in the second quarter of 2020 compared to the first quarter of 2020 and prior year. A prolonged outbreak and period of continued restrictions on day-to-day life would likely result in further volume declines and lower net sales for later periods of 2020, as compared to the prior year as well.

The ultimate significance of COVID-19 on our business will depend on, among other things, the extent and duration of the pandemic, the severity of the disease and the number of people infected with the virus, the ultimate geographic spread of the virus, the effects on the economy by the pandemic, including market volatility, and by the measures taken by governmental authorities and other third parties restricting day-to-day life and the length of time that such measures remain in place, and laws or governmental programs implemented to assist businesses impacted by the COVID-19 pandemic, such as fiscal stimulus and other legislation designed to deliver monetary aid and other relief. The likelihood of a further impact on the Company that could be material increases the longer the virus impacts activity levels in the United States and across the world.

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 first quarter of 2020 for 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)
January 1 - January 31	268	\$ 164.52	—	\$ 86,865,026
February 1 - February 29	4,089	\$ 165.60	—	\$ 86,865,026
March 1 - March 31	—	\$ —	—	\$ 86,865,026
Total	4,357	\$ 165.53	—	\$ 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 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"), and it has no expiration date. There were no shares acquired by the Company pursuant to the 2015 Share Repurchase Program during the quarter ended March 31, 2020.

Limitation on the Payment of Dividends

The New Credit Facility has certain limitations on the payment of dividends and other so-called restricted payments. See Note 15 of Notes to Condensed Consolidated Financial Statements, in Part I, Item 1, of this Report.

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 – [Restated By-laws \(effective May 6, 2015, as amended through March 27, 2020\).*](#)
 - 10.1 – [Amendment No. 1, dated as of March 17, 2020, to the Credit Agreement, dated as of August 1, 2019. Incorporated by reference to Exhibit 10.1 as filed by the Registrant with Form 8-K filed on March 17, 2020.](#)
 - 10.2 – [Amendment No. 1, effective March 1, 2020, to the Quaker Houghton Retirement Savings Plan.*†](#)
 - 31.1 – [Certification of Chief Executive Officer of the Company pursuant to Rule 13a-14\(a\) of the Securities C 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 Calculation Linkbase Document*
 - 101.DEF – Inline XBRL Taxonomy Definition Linkbase Document*
 - 101.LAB – Inline XBRL Taxonomy Label Linkbase Document*
 - 101.PRE – Inline XBRL Taxonomy Presentation Linkbase Document*
- 104 – Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101.INS)*

* Filed herewith.

** Furnished herewith.

† Management contract or compensatory plan.

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: May 11, 2020

QUAKER CHEMICAL CORPORATION
(a Pennsylvania Corporation)

RESTATED BY-LAWS
(effective May 6, 2015, as amended through March 27, 2020)

Section 1.1. Registered Office

The Registered Office of the Corporation shall be at One Quaker Park, 901 Hector Street, Conshohocken, Pennsylvania until otherwise changed by the Board of Directors.

Section 2.1. Place or Means of Shareholders' Meetings

Meetings of the shareholders shall be held at the Registered Office of the Corporation, at such other place within or without Pennsylvania as the Board of Directors may fix, or by means of the Internet or other electronic communications technology in a fashion that satisfies the requirements of the Pennsylvania Business Corporation Law for a meeting conducted in that fashion, in each case as may be determined from time to time by the Board of Directors.

Section 2.2. Annual Meeting of Shareholders

An Annual Meeting of shareholders shall be held in every calendar year at such time as the Board of Directors may fix. At the Annual Meeting of shareholders, directors shall be elected to serve for the ensuing year or until their successors shall be duly elected and qualified, and there shall be transacted such other business as may properly be brought before the Meeting.

A financial report of the Corporation's business as of the close of the preceding fiscal year shall be presented at the Annual Meeting, and shall be sent to shareholders.

Section 2.3. Special Meetings of Shareholders

Special Meetings of shareholders may be called at any time by the Chairman of the Board, the President or the Board of Directors, or shareholders entitled to cast not less than four-fifths of the votes which all shareholders are entitled to cast at the particular meeting. At any time, upon the written request of any person entitled to call a Special Meeting, it shall be the duty of the Secretary to fix the date of such Special Meeting to be held not less than five nor more than sixty days after the receipt of the request and to give due notice thereof. If the Secretary shall neglect or refuse to fix the date of the meeting and give notice thereof, the person or persons making the request may do so.

Section 2.4. Notice of Shareholders' Meetings

At least five days written notice shall be given of any meeting of shareholders, unless a greater period of notice is required by law. Such notice shall specify the place, day and hour of the meeting, and in the case of a Special Meeting of shareholders, the general nature of the business to be transacted.

Section 2.5. Waiver of Notice of Shareholders' Meetings

Whenever written notice is required to be given by law, by the Articles or these Restated By-Laws

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("By-Laws"), a written waiver thereof signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. Except in the case of a Special Meeting of shareholders, neither the business to be transacted nor the purpose of the meeting need be specified in the Waiver of Notice of such Meeting.

Attendance of a person, either in person or by proxy, at any meeting shall constitute a waiver of notice of such meeting, except where a person attends a meeting for the express purpose of objecting to the transaction of any business because the meeting was not lawfully called or convened.

Section 2.6. Quorum for Shareholders' Meetings

The presence, in person or by proxy, of the shareholders entitled to cast a majority of the votes which all shareholders are entitled to cast on a matter to be voted upon at a meeting of shareholders shall constitute a quorum, and the acts of such quorum, at a duly organized meeting of shareholders, shall constitute the acts of all the shareholders. The shareholders present at a duly organized meeting can continue to do business until adjournment, notwithstanding the withdrawal of enough shareholders to leave less than a quorum.

Section 2.7. Conduct of Shareholders' Meetings

Meetings of the shareholders shall be presided over by the Chairman of the Board, or if he is not present, by the President, or if he is not present, by a Vice President, or if none of the Chairman of the Board or the President or Vice President is present, by a Chairman to be chosen at the meeting. The Secretary of the Corporation, or in his absence, an Assistant Secretary or one temporarily designated as such, shall act as Secretary of the meeting.

Section 2.8. Shareholder Participation by Telephone

One or more shareholders may participate in any meeting of shareholders by means of conference telephone or similar communications equipment by means of which all persons participating in such meeting can hear each other.

Section 2.9. Voting by Shareholders

Except as otherwise provided by law or in the Articles, every shareholder of record shall have the right at every shareholders' meeting to those votes as provided for pursuant to Article 5 of the Articles, for every share standing in his name on the books of the Corporation. Every shareholder entitled to vote at a meeting of shareholders or to express consent to corporate action in writing without a meeting may authorize another person or persons to act for him by proxy.

All voting and elections shall be taken by voice vote unless a vote by ballot shall be demanded by a shareholder or by the Chairman of the meeting before the voting or election begins, or unless otherwise required by law or by the Articles.

Section 2.10. Judges of Election

In advance of any meeting of shareholders, the Board of Directors may appoint Judges of Election, who need not be shareholders, to act at such meeting or any adjournment thereof. If Judges of Election be not so appointed, the Chairman of the meeting may, and on the request of any shareholder or his proxy shall, make such appointment at the meeting. The number of Judges shall be one or three, and no candidate shall act as a Judge. On request of the Chairman of the meeting or of any shareholder or his

proxy, the Judges shall make a report in writing of any challenge or question or matter determined by them and execute a certificate of any fact found by them.

Section 2.11. Adjournment of Meetings

Adjournment of any meeting may be taken, but any meetings at which Directors are to be elected shall be adjourned only from day to day, or for such longer periods not exceeding fifteen days each, as may be directed by the shareholders who are entitled to cast at least a majority of the votes which all such shareholders would be entitled to cast at an election of directors, until such directors have been elected. When a meeting is adjourned, it shall not be necessary to give any notice of the adjourned meeting or of the business to be transacted thereat, other than by announcement of the meeting at which such adjournment is taken. In case of any meeting called for the election of Directors, those who attend the second of such adjourned meeting, although less than a quorum, shall nevertheless constitute a quorum for the purpose of electing Directors.

Section 2.12. Shareholder Proposals

Nominations by shareholders of persons for election to the Board of Directors may be made at an annual or special meeting only in compliance with Section 3.15 hereof. The proposal of other business to be considered by the shareholders at an Annual Meeting of shareholders may only be made (i) pursuant to the Corporation's notice of meeting, (ii) by or at the direction of the Chairman of the Board, the President or the Board of Directors, or (iii) by any shareholder of the Corporation who (x) was a shareholder of record at the time of giving of notice provided for in this By-Law and at the time of the Annual Meeting, (y) is entitled to vote at the meeting and (z) provides timely notice in writing to the Secretary of the Corporation and complies with the procedures and requirements set forth in this By-Law; clause (iii) shall be the exclusive means for a shareholder to submit other business (other than matters properly brought under Rule 14a-8 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and included in the Corporation's notice of meeting) before an Annual Meeting of shareholders. To be properly brought before a meeting of shareholders, business must be of a proper subject for action by shareholders under applicable law and must not, if implemented, cause the Corporation to violate any state, federal or foreign law or regulation, each as determined in good faith by the Board of Directors.

To be timely, a shareholder's notice shall be delivered to or mailed to, and received by, the Secretary at the principal executive offices of the Corporation not more than 120 days nor less than 90 days prior to the first anniversary of the preceding year's Annual Meeting; provided, however, that in the event that the date of the Annual Meeting is more than 30 days before or more than 60 days after such anniversary date, notice by the shareholder to be timely must be so delivered not earlier than the close of business on the 120th day prior to the date of such Annual Meeting and not later than the close of business on the later of the 90th day prior to the date of such Annual Meeting or, if the first public announcement of the date of such Annual Meeting is less than 100 days prior to the date of such Annual Meeting, the 10th day following the day on which public announcement of the date of such meeting is first made by the Corporation. In no event shall any adjournment or postponement of a meeting or the announcement thereof commence a new time period for the giving of a shareholder's notice as described above. Such shareholder's notice to the Secretary shall set forth (a) as to the shareholder giving notice and the beneficial owner, if any, on whose behalf the proposal is made, (i) their name and record address, (ii) the class and number of shares of stock of the Corporation which are, directly or indirectly, owned beneficially and/or of record by each of them, (iii) any proxy, contract, arrangement, understanding, or relationship pursuant to which such shareholder or beneficial owner, if any, has a right to vote any shares of any security of the Corporation, (iv) a description of all agreements, arrangements and understandings between such shareholder and beneficial owner, if any, and any other person or persons (including their names) in connection with the proposal of such business by such shareholder, and (v) any other

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information relating to such shareholder and beneficial owner, if any, that would be required to be disclosed in a proxy statement or other filing required to be made in connection with solicitations of proxies for the proposal pursuant to the Exchange Act and the rules and regulations promulgated thereunder, (b) a brief description of the business desired to be brought before the meeting, the reasons for conducting such business at the meeting and any material interest in such business of such shareholder giving notice and the beneficial owner, if any, on whose behalf the proposal is made, (c) a representation that the shareholder is a holder of record of shares of the Corporation entitled to vote at the meeting and an agreement by the shareholder that the shareholder will appear in person or by proxy at the meeting to propose the consideration of the business, and (d) the information required by Section 2.13. Only such business shall be conducted at a special meeting of shareholders as shall have been brought before the meeting pursuant to the Corporation's notice of meeting. Only such business shall be conducted at an Annual Meeting of shareholders as shall have been brought before the meeting in accordance with the procedures set forth in this section.

The Chairman of the meeting may, if the facts warrant, determine and declare to the meeting that any proposal made at the meeting was not made in accordance with the foregoing procedures and, in such event, the proposal shall be disregarded. Any decision by the Chairman of the meeting shall be conclusive and binding upon all shareholders of the Corporation for any purpose.

Notwithstanding the foregoing provisions of this By-Law, a shareholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations thereunder with respect to the matters set forth in this By-Law; provided, however, that any references in these By-Laws to the Exchange Act or the rules promulgated thereunder are not intended to and shall not limit the requirements applicable to proposals of business to be considered pursuant to this By-Law.

Section 2.13. Disclosure by Shareholders of Hedged Positions

A notice submitted by a shareholder under Section 2.12 or 3.15 must describe, with respect to the shareholder and any Shareholder Associated Person, (i) any Derivative Instrument directly or indirectly beneficially owned by the shareholder or a Shareholder Associated Person, or any other direct or indirect opportunity for the shareholder or Shareholder Associated Person to profit or share in any profit derived from any increase or decrease in the value of shares of the Corporation, (ii) any proportionate interest in shares of the Corporation or Derivative Instruments held, directly or indirectly, by a general or limited partnership in which the shareholder or Shareholder Associated Person is a general partner or, directly or indirectly, beneficially owns an interest in a general partner, (iii) any short interest in any security of the Corporation (for purposes of this By-Law a person shall be deemed to have a short interest in a security if such person directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has the opportunity to profit or share in any profit derived from any decrease in the value of the subject security), (iv) any performance-related fees (other than an asset-based fee) that such shareholder or any Shareholder Associated Person is entitled to based on any increase or decrease in the value of shares of the Corporation or Derivative Instruments, if any, and (v) any hedging or other transaction or series of transactions that has been entered into by or on behalf of, or any other agreement, arrangement or understanding (including, without limitation, any put, short position or any borrowing or lending of shares) that has been made, the effect or intent of which is to mitigate loss to or manage risk of share price changes for, or to increase or decrease the voting power of, the shareholder or any Shareholder Associated Person with respect to any share of the Corporation.

Definitions. As used in this Section 2.13 the following terms have the meanings indicated:

"Derivative Instrument" means an option, warrant, convertible security, stock appreciation right, or similar right with an exercise or conversion privilege or a settlement payment or mechanism at a price

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related to any class or series of shares of the Corporation or with a value derived in whole or in part from the value of any class or series of shares of the Corporation, whether or not such instrument or right is subject to settlement in the underlying class or series of shares of the Corporation or otherwise.

"Shareholder Associated Person" of a shareholder means (i) any person controlling, controlled by, under common control with, or acting in concert with, the shareholder, (ii) any beneficial owner of shares of the Corporation owned of record or beneficially by the shareholder, and (iii) any person controlling, controlled by or under common control with, a person that is a Shareholder Associated Person pursuant to clause (ii) of this definition.

Section 3.1. Board of Directors, Number Qualifications, Elections, Term of Office, and Compensation

The business and affairs of the Corporation shall be managed by a Board of not less than five (5) nor more than fifteen (15) Directors, as may be fixed from time to time by the vote of a majority of the whole Board. Directors shall be of full age, but need not be residents of Pennsylvania or shareholders of the Corporation.

The Board of Directors shall have authority to fix the compensation of Directors for their services and to authorize payment for expenses of attendance at meetings. A Director may also be a salaried officer or employee of the Corporation.

Section 3.2. Quorum for Directors' Meetings

A majority of the Directors in office shall be necessary to constitute a quorum for the transaction of business, and the acts of a majority of the Directors present at a meeting at which a quorum is present shall be the acts of the Board of Directors. A Director who is present at a meeting shall be counted in determining the presence of a quorum even though a contract or transaction between the Corporation and such Director or another business in which such Director has a financial interest is authorized at the meeting.

Section 3.3. Directors' Consent in Lieu of Meeting

Any action which may be taken at a meeting of the Board of Directors or of any Committee thereof may be taken without a meeting if a consent or consents in writing, setting forth the action so taken, shall be signed by all of the Directors or the members of the Committee, as the case may be, and shall be filed with the Secretary of the Corporation. One or more Directors may participate in a meeting of the Board of Directors or a Committee thereof by means of a conference telephone or similar communications equipment by means of which all persons participating in such meeting can hear each other.

Section 3.4. Vacancies in Board of Directors

Except as otherwise provided in the Articles, vacancies in the Board of Directors, including vacancies resulting from an increase in the number of Directors, may be filled by a majority of the remaining members of the Board though less than a quorum, and each person so elected shall be a Director until his successor is elected by the shareholders, who may make such election at the next Annual Meeting of the shareholders.

Section 3.5. Place of Meeting of Board of Directors

The meetings of the Board of Directors may be held at such place within Pennsylvania, or

elsewhere, as a majority of the Directors may from time to time appoint or as may be designated in the notice calling the meeting.

Section 3.6. Organization Meeting of the Board of Directors

After the election of Directors by the shareholders, the newly elected Board may meet for the purpose of organization or otherwise:

- (a) Immediately following their election, or at such time and place as shall be fixed by vote of the shareholders at the Annual Meeting (and in either such case no notice of such meeting to the newly elected Directors shall be necessary in order legally to constitute the meeting, provided a majority of the whole Board shall be present):
or
- (b) At such time and place as may be fixed by consent in writing of all the Directors.

Section 3.7. Regular Meetings of the Board of Directors

Regular Meetings of the Board of Directors shall be held at such time and place as shall be determined by a majority of the Board.

Section 3.8. Special Meeting of the Board of Directors

Special Meetings of the Board of Directors may be called by the Chairman of the Board, President or Secretary on at least two days notice to each Director, either personally or by mail or by telegram, of the time and place of such Special Meeting. At the written request of two Directors, Special Meetings shall be called by the Chairman of the Board, President or Secretary in like manner and on like notice.

Section 3.9. Adjournments of Meetings of Board of Directors

If a meeting of the Board of Directors is adjourned, it shall not be necessary to give any notice of the adjourned meeting, or of the business to be transacted at an adjourned meeting, other than by announcement at the meeting at which such adjournment is taken.

Section 3.10. Powers of Board of Directors

A. *Organizational Meeting:* At the first meeting of the Board of Directors in each year (at which a quorum shall be present) held next after the Annual Meeting of Shareholders, it shall be the duty of the Board of Directors to elect or appoint the officers of the Corporation.

B. *General Powers:* The Board of Directors shall have all the power and authority granted by law to Directors except as may be specifically excepted by the Articles or by these By-Laws.

C. *Committees:* The Board of Directors, by Resolution adopted by a majority thereof, may designate an Executive Committee and one or more other committees, each of which shall consist of at least two Directors and such other Directors as shall be appointed by the Board of Directors to serve as alternate members of any such Committee to replace any absent or disqualified member at any Committee Meeting. In the event that any member of any such Committee shall be absent from or disqualified at such Meeting, the member or members thereof present at any such Meeting and not disqualified from voting, whether or not he or they constitute a quorum, may unanimously appoint another Director to act at the Meeting in the place of any such absent or disqualified member. Any such Committee shall have and exercise the authority of the Board of Directors in the management of the business and affairs of the Corporation to the extent provided in the Resolution creating such Committee.

Section 3.11. Removal of Directors by Shareholders

The entire Board of Directors, or any individual Director may be removed from office with or without assigning any cause, only by the affirmative vote of the shareholders entitled to cast at least four-fifths of the votes entitled to be cast generally in the election of Directors. In case the Board or any one or more Directors be so removed, new Directors may be elected at the same meeting.

Section 3.12. Limitation on Personal Liability of Directors

A Director of the Corporation shall not be personally liable for monetary damages for any action taken, or any failure to take any action, unless he or she has both (i) breached the standards set forth in Title 42, Chapter 83, Section 8363 of the Pennsylvania Consolidated Statutes relating to performance of a director's duties and (ii) such breach or failure to perform constitutes self-dealing, willful misconduct or recklessness. This exemption from liability shall not apply to the responsibility or liability of a Director pursuant to any criminal statute or the liability of a Director for the payment of taxes pursuant to local, State or Federal law. If the Pennsylvania Consolidated Statutes hereafter are amended to authorize the further elimination or limitation of the liability of directors, then the liability of a Director of the Corporation, in addition to the limitation on personal liability provided herein, shall be limited to the fullest extent permitted by the amended Pennsylvania Consolidated Statutes. Any repeal or modification of this section shall be prospective only, and shall not adversely affect any limitation on the personal liability of a Director of the Corporation existing at the time of such repeal or modification.

Section 3.13. Directors Emeriti

The Board of Directors may, from time to time, in its discretion confer upon such of its former members as it may determine the title of "Director Emeritus," and, if conferred, such title may be withdrawn by the Board of Directors at any time thereafter. Such title shall be honorary in nature to designate the conferee as a former member of the Board, and persons upon whom the title may be conferred shall not be members of the Board of Directors, shall not vote upon matters submitted to a vote of the Board of Directors, and, in the absence of a specific invitation to the contrary, shall not be entitled to attend any meetings of the Board of Directors or of committees thereof.

Section 3.14. Chairman Emeritus

The Board of Directors may, in its discretion, confer on such of its members or former members as shall have served as Chairman of the Board the title of Chairman Emeritus. Such title shall be honorary in nature to designate the conferee as a former Chairman of the Board. If serving as a Director, the title shall not be construed to grant any rights, duties, or authority beyond that of any other Director. If not serving as a Director, the conferee shall not be construed to be a Director of the Company.

Section 3.15. Director Nominations

Nominations of persons for election to the Board of Directors may be made at a meeting of shareholders by or at the direction of the Board of Directors.

Nominations of persons for election to the Board of Directors may also be made by any shareholder of the Corporation who (x) was a shareholder at the time of giving of notice provided for in this By-Law and at the time of the applicable meeting of shareholders, (y) is entitled to vote for the election of Directors at such meeting of shareholders and (z) provides timely notice in writing to the Secretary of the Corporation

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and complies with the procedures and requirements set forth in this Section 3.15, which shall be the exclusive means for a shareholder to make nominations of persons for election to the Board of Directors of the Corporation. No person may be appointed, nominated or elected a Director unless such person, at the time such person is nominated and appointed or elected, would then be able to serve as a Director without conflicting in any manner with any state, federal or foreign law or regulation applicable to the Corporation, as determined in good faith by the Board.

To be timely, a shareholder's notice pertaining to an Annual Meeting of shareholders at which Directors are to be elected shall be delivered to or mailed to, and received by, the Secretary at the principal executive offices of the Corporation not more than 120 days nor less than 90 days prior to the first anniversary of the preceding year's Annual Meeting; provided, however, that in the event that the date of the Annual Meeting is more than 30 days before or more than 60 days after such anniversary date, notice by the shareholder to be timely must be so delivered not earlier than the close of business on the 120th day prior to the date of such Annual Meeting and not later than the close of business on the later of the 90th day prior to the date of such Annual Meeting or, if the first public announcement of the date of such Annual Meeting is less than 100 days prior to the date of such Annual Meeting, the 10th day following the day on which public announcement of the date of such meeting is first made by the Corporation; provided, further, however, that in the event that the number of Directors to be elected to the Board of Directors at an Annual Meeting is increased and there is no public announcement by the Corporation naming all of the nominees for Director or specifying the size of the increased Board of Directors at least 100 days prior to the first anniversary of the preceding year's Annual Meeting, a shareholder's notice required by this Section 3.15 shall also be considered timely, but only with respect to nominees for any new positions created by such increase, if it shall be delivered to the Secretary at the principal executive offices of the Corporation not later than the close of business on the 10th day following the day on which such public announcement is first made by the Corporation. In the event the Corporation calls a special meeting of shareholders for the purpose of electing one or more Directors to the Board of Directors, any shareholder otherwise meeting the requirement of this Section 3.15 may nominate a person or persons (as the case may be) for election to such position(s) as specified in the Corporation's notice of meeting, if the shareholder's notice required above with respect to any nomination (including the completed and signed representation and agreement required by this Section 3.15 below) shall be delivered to the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the 120th day prior to the date of such special meeting and not later than the close of business on the later of the 90th day prior to the date of such special meeting or, if the first public announcement of the date of such special meeting is less than 100 days prior to the date of such special meeting, the 10th day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by the Board of Directors to be elected at such meeting. In no event shall any adjournment or postponement of a special meeting or the announcement thereof commence a new time period for the giving of a shareholder's notice as described above.

Such shareholder's notice to the Secretary shall set forth (a) as to each person whom the shareholder proposes to nominate for election or re-election as a Director, (i) the name, age, business address and residence address of the person, (ii) the principal occupation or employment of the person, (iii) the class and number of shares of stock of the Corporation which are directly or indirectly owned beneficially and/or of record by the person, (iv) a description of all direct and indirect compensation and other material monetary agreements, arrangements and understandings during the past three years, and any other material relationships (including any familial relationships), between or among the shareholder giving the notice and the beneficial owner, if any, on whose behalf the nomination is made, if any, and their respective affiliates and associates, or others acting in concert therewith, on the one hand, and each proposed nominee, and his or her respective affiliates and associates, or others acting in concert therewith, on the other hand, including, without limitation all information that would be required to be disclosed pursuant to Rule 404 promulgated under Regulation S-K if the shareholder making the

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nomination and any beneficial owner on whose behalf the nomination is made, if any, or any affiliate or associate thereof or person acting in concert therewith, were the "registrant" for purposes of such rule and the nominee were a Director or executive officer of such registrant, and (v) any other information relating to the person that is required to be disclosed in a proxy statement or other filing required to be made in connection with solicitations of proxies for election of Directors in a contested election pursuant to the rules and regulations promulgated under the Exchange Act (including such person's written consent to being named in the proxy statement as a nominee and to serving as a Director if elected); (b) as to the shareholder giving the notice and the beneficial owner, if any, on whose behalf the nomination is made (i) their names and record addresses, (ii) the class and number of shares of stock of the Corporation which are, directly or indirectly, owned beneficially and/or of record by each of them, (iii) any proxy, contract, arrangement, understanding, or relationship pursuant to which such shareholder or beneficial owner, if any, has a right to vote any security of the Corporation; (c) a representation that the shareholder is a holder of record of shares of the Corporation entitled to vote at the meeting and an agreement by the shareholder that the shareholder will appear in person or by proxy at the meeting to nominate the individual or individuals proposed in the notice; (d) a description of any agreement, arrangement or understanding with respect to such nomination; (e) with respect to each nominee for election or reelection to the Board of Directors, include a completed and signed representation and agreement required by this Section 3.15 below; and (f) the information required in Section 2.13. The Corporation may require any proposed nominee to furnish such other information as may reasonably be required by the Corporation to determine the eligibility of such proposed nominee to serve as a Director of the Corporation or that could be material to a reasonable shareholder's understanding of the independence, or lack thereof, of such nominee.

The Chairman of the meeting may, if the facts warrant, determine and declare to the meeting that any nomination made at the meeting was not made in accordance with the foregoing procedures and, in such event, the nomination shall be disregarded. Any decision by the Chairman of the meeting shall be conclusive and binding upon all shareholders of the Corporation for any purpose.

To be eligible to be a nominee for election or reelection as a Director of the Corporation, a person must deliver (in accordance with the time periods prescribed for delivery of notice under this Section 3.15) to the Secretary at the principal executive offices of the Corporation a written questionnaire with respect to the background and qualification of such person and the background of any other person or entity on whose behalf the nomination is being made (which questionnaire shall be provided by the secretary upon written request) and a written representation and agreement (in the form provided by the Secretary upon written request) that such person (A) is not and will not become a party to (1) any agreement, arrangement or understanding with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a Director of the Corporation, will act or vote on any issue or question (a "Voting Commitment") that has not been disclosed to the Corporation or (2) any Voting Commitment that could limit or interfere with such person's ability to comply, if elected as a Director of the Corporation, with such person's fiduciary duties under applicable law, (B) is not and will not become a party to any agreement, arrangement or understanding with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a Director that has not been disclosed to the company and (C) in such person's individual capacity and on behalf of any person or entity on whose behalf the nomination is being made, would be in compliance, if elected as a Director of the Corporation, and will comply with all applicable publicly disclosed corporate governance, conflict of interest, confidentiality and stock ownership and trading policies and guidelines of the Corporation.

Section 4.1. Officers

The Officers of the Corporation shall be a Chairman of the Board, a President, a Secretary, and a Treasurer, all of whom shall be elected or appointed by the Board of Directors. The Board of Directors may also elect one or more Vice Presidents, one or more Assistant Treasurers and one or more Assistant Secretaries. Any two or more offices may be held by the same person.

The Board of Directors may at any time also elect or appoint such other officers, assistant officers and agents as it shall deem necessary and as the needs of the Corporation may require. Such other officers, assistant officers and agents shall have such authority and shall perform such duties as from time to time may be prescribed by the Board of Directors.

The Officers shall be elected each year at the organization meeting of the Board of Directors, but if not so elected, they, and any assistant officers or agents the Board of Directors shall desire to appoint, may be elected from time to time during the year. It shall not be necessary for any officer of the Corporation to be a Director.

Section 4.2. The Chairman of the Board – Powers and Duties

The Chairman of the Board shall, when present, preside at all meetings of the Board and at all meetings of shareholders. He shall do and perform such duties as from time to time may be assigned to him by the Board of Directors.

Section 4.3 The President – Powers and Duties

The President shall be the chief executive and chief operating officer of the Corporation. He shall have the ordinary duties of an executive officer with responsibility for general supervision and direction of the operations of the Corporation, including strategic planning. He is authorized to execute in the name of the Corporation contracts and other documents requiring the signature of the Corporation. He shall also do and perform such other duties as from time to time may be assigned to him by the Board of Directors.

Unless otherwise ordered by the Board of Directors, the President shall have full power and authority on behalf of the Corporation to attend and act and vote at any meeting of the shareholders of any corporation in which the Corporation may hold stock, and at any such meeting shall possess and may exercise any and all the rights and powers incident to the ownership of such stock which the Corporation, as the owner thereof, might have possessed and exercised if present. The Board of Directors may, by resolution, from time to time confer like powers upon any other person or persons.

Section 4.4. The Vice President - Powers and Duties

A Vice President or Vice Presidents shall be elected by the Board of Directors, if the Board of Directors determines that such offices shall be created. The Vice President (or, if there are more than one, then each Vice President) shall have such powers and shall perform such duties as may from time to time be assigned to him or them by the Board of Directors or by the Chairman of the Board or by the President. Unless otherwise ordered by the Board of Directors, the Vice President (or Vice Presidents in order of their numbered designations) shall, in the case of the death, resignation, absence or disability of the President, perform the duties of that Officer, until the return of the President, or until the disability shall have been removed or a new President shall have been elected.

Section 4.5. Treasurer - Powers and Duties

The Treasurer shall have the custody of all the funds and securities of the Corporation which may come into his hands. When necessary or proper (unless otherwise ordered by the Board of Directors) he shall (a) endorse for collection on behalf of the Corporation checks, notes and other obligations, (b) deposit the same to the credit of the Corporation in such banks or depositories as the Board of Directors may designate and (c) sign all receipts and vouchers for payments made by the Corporation. He shall, at all reasonable times, exhibit his books and accounts to the Board of Directors of the Corporation upon the request of any Director, and he shall also, if so directed by the Board of Directors, annually prepare and submit to the Annual Meeting of the shareholders a full statement of the assets and liabilities of the Corporation and of its transactions during the preceding year, and he shall have such other powers and shall perform such other duties as may be assigned to him from time to time by the Board of Directors. He shall give such bond for the faithful performance of his duties as may be required by the Board of Directors.

Section 4.6. Assistant Treasurer - Powers and Duties

Each Assistant Treasurer shall have such powers and perform such duties as may be assigned to him by the Board of Directors.

Section 4.7. Secretary - Powers and Duties

Unless otherwise ordered by the Board of Directors, the Secretary shall keep the minutes of all meetings of the shareholders and of the Board of Directors in proper books to be kept for such purpose, and shall attend to the giving of all notices by the Corporation, including notices of meetings of shareholders and of the Board of Directors. He shall have charge of the share certificate books, transfer books, capital stock ledger and such other books and papers as the Board of Directors may direct. He shall in general perform all the duties incident to the office of Secretary and shall have such other powers and perform such other duties as may be assigned to him by the Board of Directors.

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Section 4.8. Assistant Secretary - Powers and Duties

Each Assistant Secretary shall have such powers and perform such duties as may be assigned to him or them by the Board of Directors.

Section 4.9. Removal and Vacancies

The Board of Directors shall have power to remove any officer from office at any time and shall also have the power to fill any vacancies in any office occurring from whatever reason. Such power shall be exercised by a majority vote of the Directors in office at the time of such removal or vacancy, although less than a quorum.

Section 5.1. Share Certificates

Every shareholder of record shall be entitled to a share certificate representing the shares owned by him, provided that the shares represented thereby shall have been fully paid for. Such share certificate shall be signed by the Chairman of the Board, President, or a Vice President, and by the Secretary or Treasurer except where such share certificate is signed by a transfer agent or a registrar, in which case the signature of any officer of the Corporation upon such share certificate may be a facsimile, engraved or printed.

Section 5.2. Transfer of Share Certificates

The transfer of a share certificate and the shares represented thereby shall be made on the books of the Corporation only by the registered owner thereof or by his attorney duly authorized in writing to make such transfer, and only upon surrender of such share certificate, which shall be canceled at the time of transfer.

The Corporation shall be entitled to treat the holder of record of any share certificate or certificates and the shares represented thereby as the holder in fact thereof, and accordingly shall not be bound to recognize any equitable or other claim to or interest in such share certificate or certificates and shares on the part of any other person, whether or not it shall have express or other notice thereof, except as otherwise expressly provided by law or by the Articles.

Section 5.3. Lost Share Certificate

The holder of any certificate representing shares of stock of the Corporation shall immediately notify the Corporation of any mutilation, loss or destruction thereof, and the Board of Directors may, in its discretion, cause one or more new certificates for the same number of shares in the aggregate to be issued to such holder upon the surrender of the mutilated certificate, or in case of loss or destruction of the certificate, upon satisfactory proof of such loss or destruction and deposit of indemnity by bond or otherwise in such form and amount and with such surety or sureties as the Board of Directors may require to indemnify the Corporation against loss or liability by reason of the issuance of such new certificate, but the Board may, in its discretion, refuse to issue such new certificates save upon the order of some court having jurisdiction in such matters.

Section 6.1. Fiscal Year

The fiscal year of the Corporation shall be established by the Board of Directors.

Section 7.1. Indemnification and Insurance

A. *Right to Indemnification:* Each person who was or is made a party to or is threatened to be made a party to or is involved in any action, suit or proceeding (hereinafter a "proceeding"), whether civil, criminal, administrative or investigative, including, without limitation, an action or suit by or in the right of the Corporation, by reason of the fact that he or she, or a person of whom he or she is the legal representative, is or was a director or officer of the Corporation or is or was serving at the request of the Corporation as a director or officer of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans, whether the basis of such proceeding is alleged action in an official capacity as director or officer, or in any other capacity, shall be indemnified and held harmless by the Corporation to the fullest extent and manner authorized or permitted by the laws of the Commonwealth of Pennsylvania, as the same exists or may hereafter be amended (but, in the case of any such amendment, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than said law permitted the Corporation to provide prior to such amendment), against all expense, liability and loss (including attorneys' fees, judgments, penalties, fines, ERISA excise taxes or penalties and amounts paid or to be paid in settlement) reasonably incurred or suffered by such person in connection therewith and such indemnification shall continue as to a person who as ceased to be a director or officer and shall inure to the benefit of his or her heirs, executors and administrators; provided, however, that, except as provided in subsection D hereof, the Corporation shall indemnify any such person seeking indemnification in connection with a proceeding (or part thereof) initiated by such person only if such proceeding (or part thereof) was authorized by the Board of Directors of the Corporation. The right to indemnification conferred in this Section shall be a contract right and each person to whom this right to indemnification applies shall be a third party beneficiary of such right and shall be entitled to enforce against the Corporation all indemnification and other rights granted to such person by this Section. Such right shall include the right to be paid by the Corporation the expenses incurred in any such proceeding in advance of its final disposition; provided, however, that, if the laws of the Commonwealth of Pennsylvania require, the payment of such expenses incurred by a director or officer in advance of the final disposition of a proceeding shall be made only upon delivery to the Corporation of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified under this Section or otherwise. The Corporation may, by action of its Board of Directors, provide indemnification to employees, agents or fiduciaries of the Corporation or to any person who is or was serving at the request of the Corporation as an employee, agent or fiduciary of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to any employee benefit plan, with the same or lesser scope and effect as set forth herein and in the other subsections of this Section. If and to the extent that the laws of the Commonwealth of Pennsylvania require that indemnification be provided in a given instance only if the person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal proceeding, had no reasonable cause to believe his or her conduct was unlawful, then termination of any proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not of itself create a presumption that the person did not act in good faith and in a manner which he or she reasonably believed to be in or not opposed to the best interests of the Corporation, and, with respect to any criminal proceeding, that he or she had reasonable cause to believe that his or her conduct was unlawful. Termination of any proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent, shall not of itself be a determination by a court that the act or failure to act giving rise to a claim for indemnification constituted willful misconduct or recklessness.

B. *Denial of Right to Indemnification:* Indemnification under subsection A above shall be made by the Corporation unless a determination is reasonably and promptly made that indemnification of a director or officer is not proper in the circumstances because of grounds for denying indemnification under this Section or under applicable law. Such determination may be made only (i) by the Board of Directors by a majority vote of a quorum consisting of directors who were not parties to such proceeding ("disinterested

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directors"), or (ii) if such quorum is not obtainable, or even if obtainable, if a quorum of disinterested directors so directs, by independent legal counsel in a written opinion, or (iii) by the shareholders.

C. *Expenses in Successful Defense:* Notwithstanding any other provisions of this Section, to the extent that a director or officer of the Corporation has been successful on the merits or otherwise in defense of any proceeding referred to in subsection A above or in defense of any claim, issue or matter therein, he shall be indemnified against expenses (including attorneys' fees) actually and reasonably incurred by him in connection therewith.

D. *Right of Claimant to Bring Suit:* If a claim under subsection A of this Section is not paid in full by the Corporation within thirty (30) days after a written claim has been received by the Corporation, the claimant may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim and, if successful in whole or in part, the claimant shall be entitled to be paid also the expense of prosecuting such claim. It shall be a defense to any such action (other than an action brought to enforce a claim for expenses incurred in defending any proceeding in advance of its final disposition where the required undertaking, if any is required, has been tendered to the Corporation) that the claimant has not met the standards of conduct which make it permissible under the laws of the Commonwealth of Pennsylvania for the Corporation to indemnify the claimant for the amount claimed, but the burden of proving such defense shall be on the Corporation. Neither the failure of the Corporation (including its Board of Directors, independent legal counsel, or its shareholders) to have made a determination prior to the commencement of such action that indemnification of the claimant is proper in the circumstances because he or she has met the applicable standard of conduct set forth in the laws of the Commonwealth of Pennsylvania, nor an actual determination by the Corporation (including its Board of Directors, independent legal counsel, or its shareholders) that the claimant has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that the claimant has not met the applicable standard of conduct.

E. *Non-Exclusivity of Rights:* The rights to indemnification and the payment of expenses incurred in a proceeding in advance of its final disposition conferred in this Section shall not be exclusive of any right which any person may have or hereafter acquire under any statute, provision of the Articles of Incorporation, By-Law, agreement, vote of shareholders or disinterested directors or otherwise.

F. *Insurance:* The Corporation may maintain insurance, at its expense, to protect itself and any director, officer, employee, agent or fiduciary of the Corporation or another corporation, partnership, joint venture, trust or other enterprise against any expense, liability or loss, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the laws of the Commonwealth of Pennsylvania.

G. *Interpretations:* For purposes of this Section:

(a) References to "the Corporation" shall upon written resolution of the Board of Directors of the Corporation include, in addition to the Corporation, any constituent corporation (including any constituent of a constituent) absorbed in a consolidation or merger which, if its separate existence had continued, would have had the power and authority to indemnify its directors or officers, so that any person who is or was a director or officer of such constituent corporation, or is or was serving at the request of such constituent corporation as a director or officer of another corporation, shall for purposes of this Section be deemed to hold the same position in the Corporation as he or she held in such constituent corporation.

(b) A person who acted in good faith and in a manner he or she reasonably believed to be in the interest of the participants and beneficiaries of an employee benefit plan shall be deemed

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to have acted in a manner "not opposed to the best interests of the Corporation" as referred to in this Section.

H. *Amendment or Repeal:* This Section may hereafter be amended or repealed; provided, however, that no amendment or repeal shall reduce, terminate or otherwise adversely affect the right of a person who is or was a director or officer to obtain indemnification or advancement of expenses with respect to a proceeding that pertains to or arises out of actions or omissions that occur prior to the effective date of such amendment or repeal, which date cannot be retroactive.

Section 8.1. Inapplicability of Section 910 of the Pennsylvania Business Corporation Law

Sections 2541 through 2548, Sections 2561 through 2567, and Sections 2571 through 2575 of The Pennsylvania Business Corporation Law shall not be applicable to the Corporation.

Section 8.2. Amendments to By-Laws

The holders of all the shares outstanding and entitled to vote may, by a majority vote, make, alter, amend or repeal any provision of these By-Laws at any Annual or Special Meeting duly convened after notice to the shareholders of such purpose.

The Board of Directors, by a majority vote of the members thereof, may make, alter, amend or repeal any provisions of these By-Laws at any Regular or Special Meeting, duly convened after notice to the Directors of such purpose. The shareholders shall have the right to change such action by a majority vote of the shareholders entitled to vote thereon at any Annual or Special Meeting duly convened after notice to the shareholders of such purpose.

**AMENDMENT NO. 1 TO THE
QUAKER HOUGHTON
RETIREMENT SAVINGS PLAN**

(As Amended and Restated January 1, 2020)

WHEREAS, Quaker Chemical Corporation d/b/a Quaker Houghton (the "Company") adopted the Quaker Houghton Retirement Savings Plan, as amended and restated effective January 1, 2020 (the "Plan");

WHEREAS, the Company desires to amend the Plan to make certain changes to the Plan's automatic contribution feature; and

WHEREAS, pursuant to Section 8.1 of the Plan, the Retirement Savings Plan Committee has the right to amend the Plan at any time, subject to certain inapplicable limitations.

NOW, THEREFORE, effective as of March 1, 2020, the Plan shall be, and hereby is, amended as follows:

Effective as of March 1, 2020, the second sentence of Section 4.2(a)(ii)(A) of the Plan ("Automatic Election") is hereby amended to read as follows:

"For Eligible Employees hired on or after March 1, 2020, such deemed election shall become effective starting with the paycheck for the first pay date on or after the 30th day following the Eligible Employee's employment commencement date."

IN WITNESS WHEREOF, Quaker Chemical Corporation d/b/a Quaker Houghton has caused these presents to be duly executed on this 25th day of February, 2020.

QUAKER CHEMICAL CORPORATION
D/B/A QUAKER HOUGHTON

Attest: /s/ ROBERT T. TRAUB

By: /s/ MARY DEAN HALL
Mary Dean Hall

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: May 11, 2020

/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: May 11, 2020

/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 March 31, 2020 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: May 11, 2020

/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 March 31, 2020 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: May 11, 2020

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