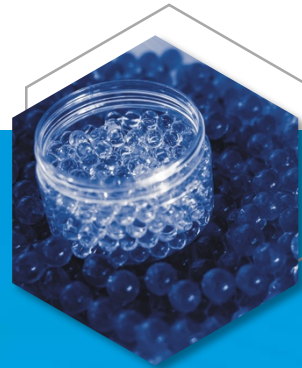




**First Quarter 2019**

**May 9, 2019 – 11:00 AM ET**



**INVESTOR PRESENTATION**

# LEGAL DISCLAIMER

## Forward-Looking Statements

Some of the information contained in this presentation, the conference call during which this presentation is reviewed and any discussions that follow constitutes “forward-looking statements”. Forward-looking statements can be identified by words such as “anticipates,” “intends,” “plans,” “seeks,” “believes,” “estimates,” “expects,” “projects” and similar references to future periods. Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Examples of forward looking statements include, but are not limited to, statements regarding our results of operations, financial condition, liquidity, prospects, growth, strategies, product and service offerings and 2019 outlook. Our actual results may differ materially from those contemplated by the forward-looking statements. We caution you, therefore, against relying on any of these forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, but are not limited to, regional, national or global political, economic, business, competitive, market and regulatory conditions, currency exchange rates and other factors, including those described in the sections titled “Risk Factors” and “Management Discussion & Analysis of Financial Condition and Results of Operations” in our filings with the SEC, which are available on the SEC’s website at [www.sec.gov](http://www.sec.gov). Any forward-looking statement made by us in this presentation, the conference call during which this presentation is reviewed and any discussions that follow speaks only as of the date on which it is made. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by applicable law.

Certain supply share statistics included in this presentation, including our estimated supply share positions, are based on management estimates.

## Non-GAAP Financial Measures

This presentation includes certain non-GAAP financial measures, including adjusted EBITDA, adjusted EBITDA margin, constant currency sales and adjusted EBITDA, adjusted net income, adjusted diluted EPS, and adjusted free cash flow, which are provided to assist in an understanding of our business and its performance. These non-GAAP financial measures should be considered only as supplemental to, and not as superior to, financial measures prepared in accordance with GAAP. Non-GAAP financial measures should be read only in conjunction with consolidated financials prepared in accordance with GAAP. Reconciliations of non-GAAP measures to the relevant GAAP measures are provided in the appendix of this presentation.

The Company is not able to provide a reconciliation of the Company’s non-GAAP financial guidance to the corresponding GAAP measures without unreasonable effort because of the inherent difficulty in forecasting and quantifying certain amounts necessary for such a reconciliation such as certain non-cash, nonrecurring or other items, including transaction and restructuring related items, that are included in net income and EBITDA as well as the related tax impacts of these items and asset dispositions/acquisitions and changes in foreign currency exchange rates that are included in cash flow, due to the uncertainty and variability of the nature and amount of these future charges and costs.

## Zeolyst Joint Venture

Zeolyst International and Zeolyst C.V. (our 50% owned joint ventures that we refer to collectively as our “Zeolyst Joint Venture”), are accounted for as an equity method investment in accordance with GAAP. The presentation of our Zeolyst Joint Venture’s sales in this presentation represents 50% of the sales of our Zeolyst Joint Venture. We do not record sales by our Zeolyst Joint Venture as revenue and such sales are not consolidated within our results of operations. However, our Adjusted EBITDA reflects our share of the earnings of our Zeolyst Joint Venture that have been recorded as equity in net income from affiliated companies in our consolidated statements of income for such periods and includes Zeolyst Joint Venture adjustments on a proportionate basis based on our 50% ownership interest. Accordingly, our Adjusted EBITDA margins are calculated including 50% of the sales of our Zeolyst Joint Venture for the relevant periods in the denominator.

# FIRST QUARTER 2019 HIGHLIGHTS

## STRATEGIC BUSINESS HIGHLIGHTS

- **Progressing on safety target**
- **Advancing portfolio strategy**
- **Enhancing commercial activities**
  - Improved pricing and successful contracting
- **Improving leverage recognized**
  - Moody's upgraded corporate family rating

## FINANCIAL HIGHLIGHTS

- **Solid Q1 performance**
  - Sales of \$359 million; Adjusted EBITDA of \$101 million with Adjusted EBITDA Margin of 26.0%<sup>1</sup>
  - Business operating results as expected
- **Our 2019 outlook on track with robust Adjusted Free Cash Flow**
  - Target of \$125 million to \$145 million
- **Debt reduction remains #1 priority**

# MACRO INDUSTRY TRENDS

Expected Secular Growth Drivers Across Our Businesses

## Turbocharged Engines

**+7%**

North America CAGR from 2018 – 2025; turbo vehicles rise to ~40% of total NA vehicles in 2025 from ~25% in 2018



## Heavy Duty Diesel Emissions

**+2x**

Global catalyst consumption growth between 2020 – 2025 with China VI implementation



## Silicates & Silicas

**+2 – 3%**

Global CAGR consumption from 2017 – 2022 of sodium silicates and specialty silicas



## Hydrocracking

**+6%**

Global CAGR for capacity expansions from 2018 – 2022 to meet higher standards for lower sulfur in fuels



## Transportation Safety

**+4%**

Global CAGR from 2018 – 2023 for traffic marking paints



## Polyethylene

**+4 – 5%**

Global CAGR from 2017 to 2024 for PE capacity expansions



# FIRST QUARTER 2019 FINANCIAL RESULTS

Solid Start with Operating Performance on Track

(\$ in millions)	First Quarter 2019	First Quarter 2018	\$ Change	% Change	% Constant Currency
Sales	359.2	366.2	(7.0)	(1.9%)	1.4%
Adjusted EBITDA	101.0	107.9	(6.9)	(6.4%)	(3.8%)
<i>Adjusted EBITDA Margin<sup>1</sup></i>	<i>26.0%</i>	<i>26.7%</i>		<i>(70 bps)</i>	

- Sales higher on a constant currency basis, driven by Refining Services and Performance Materials
- Adjusted EBITDA declined on expected lower sales in Zeolyst JV, offsetting continued growth in Refining Services
- Adjusted EBITDA margins down slightly on higher corporate costs (70 bps)



# REFINING SERVICES

Continued Growth from Higher Pricing

(\$ in millions)	First Quarter 2019	First Quarter 2018	\$ Change	% Change	% Constant Currency
Sales	105.8	100.7	5.1	5.1%	5.1%
Adjusted EBITDA	39.7	35.5	4.2	11.8%	11.8%
<i>Adjusted EBITDA Margin</i>	37.5%	35.3%		220 bps	

- Sales growth driven by higher pricing from contract renewals for regeneration services and virgin acid; more than offset volume decline from unplanned refinery customer outages
- Higher pricing led 12% Adjusted EBITDA growth and 220 bps margin expansion

Q1 Change Factors	
<b>Sales:</b>	%
Volume	(3.4)
Price/Mix	8.5
Currency	-
<b>Sales Change</b>	<b>5.1</b>



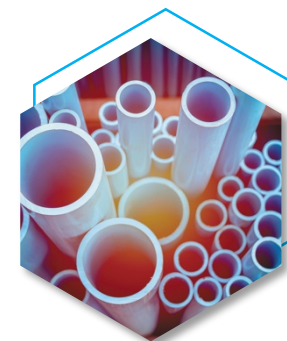
# CATALYSTS

## Lower Zeolyst JV Results on Order Timing but Margins Remain Strong

(\$ in millions)	First Quarter 2019	First Quarter 2018	\$ Change	% Change	% Constant Currency
Sales					
Silica Catalysts	15.9	16.5	(0.6)	(3.6%)	—
Zeolyst JV	29.5	38.3	(8.8)	(23.0%)	(23.0%)
Adjusted EBITDA	18.1	22.9	(4.8)	(21.0%)	(19.2%)
<i>Adjusted EBITDA Margin<sup>1</sup></i>	40.0%	41.8%		(180 bps)	

- Silica Catalyst sales flat on a constant currency basis
- Zeolyst JV sales reflect anticipated lower volume from order timing, which also negatively impacted Adjusted EBITDA and margins

Q1 Change Factors	
<b>Sales:</b>	%
Volume	(5.2)
Price/Mix	5.2
Currency	(3.6)
<b>Sales Change</b>	<b>(3.6)</b>





# PERFORMANCE MATERIALS

## Pricing Drives Sales Growth

(\$ in millions)	First Quarter 2019	First Quarter 2018	\$ Change	% Change	% Constant Currency
Sales	61.1	62.7	(1.6)	(2.6%)	2.6%
Adjusted EBITDA	10.5	12.1	(1.6)	(13.2%)	(10.7%)
<i>Adjusted EBITDA Margin</i>	17.2%	19.3%		(210 bps)	

- Sales increased on a constant currency basis on improved pricing and mix in highway safety
- Adjusted EBITDA and margins down on operating cost inflation and capacity restart to meet higher demand

Q1 Change Factors	
<b>Sales:</b>	%
Volume	(2.1)
Price/Mix	4.6
Currency	(5.1)
<b>Sales Change</b>	<b>(2.6)</b>





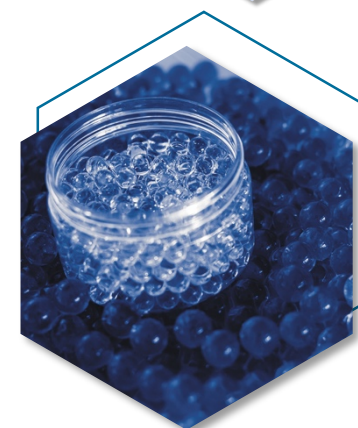
# PERFORMANCE CHEMICALS

Results In Line on a Constant Currency Basis

(\$ in millions)	First Quarter 2019	First Quarter 2018	\$ Change	% Change	% Constant Currency
Sales	180.5	190.0	(9.5)	(5.0%)	(0.5%)
Adjusted EBITDA	42.7	45.1	(2.4)	(5.3%)	(0.4%)
<i>Adjusted EBITDA Margin</i>	23.7%	23.7%		—	

- Sales in line on a constant currency basis led by higher pricing; offset by weaker demand for consumer products
- Adjusted EBITDA and margins stable on diversity of product mix

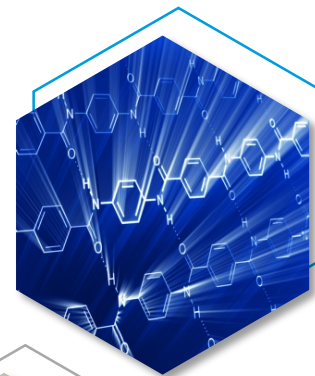
Q1 Change Factors	
<b>Sales:</b>	%
Volume	(3.4)
Price/Mix	2.9
Currency	(4.5)
<b>Sales Change</b>	<b>(5.0)</b>



# 2019 GUIDANCE

Reiterating 2019 Guidance; Adjusted Free Cash Flow of \$125 Million to \$145 Million

(\$ in millions except %)	2018 Actual	2019 Outlook
Sales	1,608.2	1,640 – 1,670
Adjusted EBITDA	464.0	470 – 485
<b>Adjusted Free Cash Flow</b>	<b>134.2</b>	<b>125 – 145</b>
Adjusted Diluted EPS	\$0.87	\$0.75 - \$0.93
Interest Expense	113.7	115 – 120
Depreciation & Amortization		
PQ	185.2	190 – 200
Zeolyst JV	12.6	14 – 16
Capital Expenditures	131.7	140 - 150
Effective Tax Rate (ex tax reform)	23.5%	mid 20%



# SILICA CATALYSTS

A Leading Global Supplier of Silica Catalysts for Polyethylene (PE) and Methyl Methacrylate (MMA)

## Global Footprint

- Manufacturing Site\*
- R&D Site



## Silica Catalysts



### Polyolefin Catalysts (~80%):

- #2 global producer of chrome on silica catalysts
- Broad IP portfolio specified at all major global PE users



### Chemical Catalysts (~20%):

- Exclusive catalyst supplier to Alpha technology for MMA global leader
- Patented fixed bed applications

## PQ Solves Customer-Specific Issues



### Customer A

A tougher HDPE resin without compromising chemical resistance for a fuel tank application to light-weight cars



### Customer B

A new HDPE grade with increased chemical resistance for 55 gallon drums to offer a differentiated product in the market



### Customer C

An improved LLDPE silica support to reduce polymer fines and reactor fouling resulting in increased production rates



### Customer D

A patented MMA catalyst in partnership with leading manufacturer to implement lower cost Alpha technology

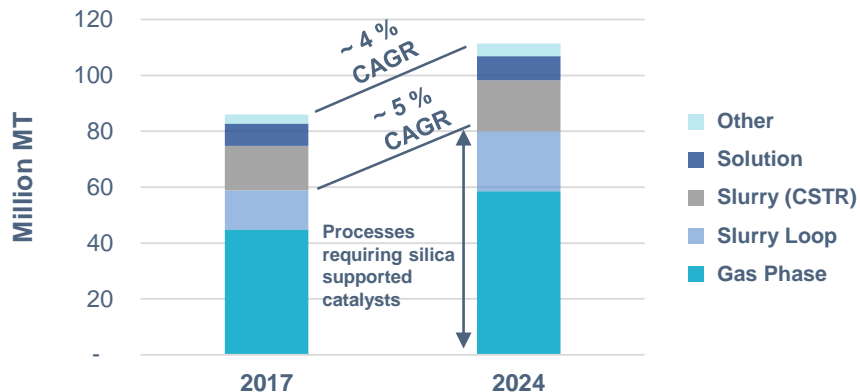
# SILICA CATALYSTS – PE and MMA

2019 Expected Growth Steady from PE, with Step-Change from MMA Refill



## POLYETHYLENE

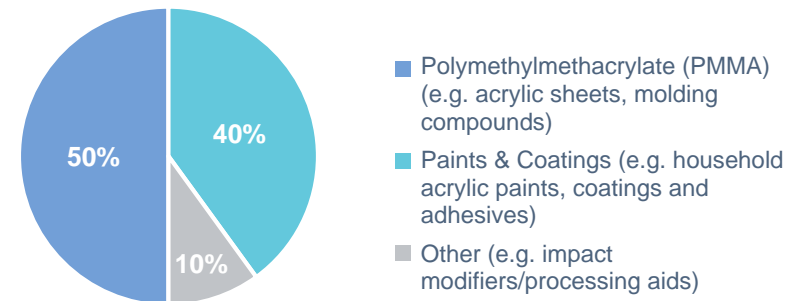
### HDPE/LLDPE Projected Capacity Expansions<sup>1</sup>



- PE catalysts demand driven by petrochemical 30+ expected new capacity investments
- ~80% of new capacity would require silica supported catalysts
- Specified supplier to top 3 key licensors of gas phase and slurry loop technology

## METHYL METHACRYLATE

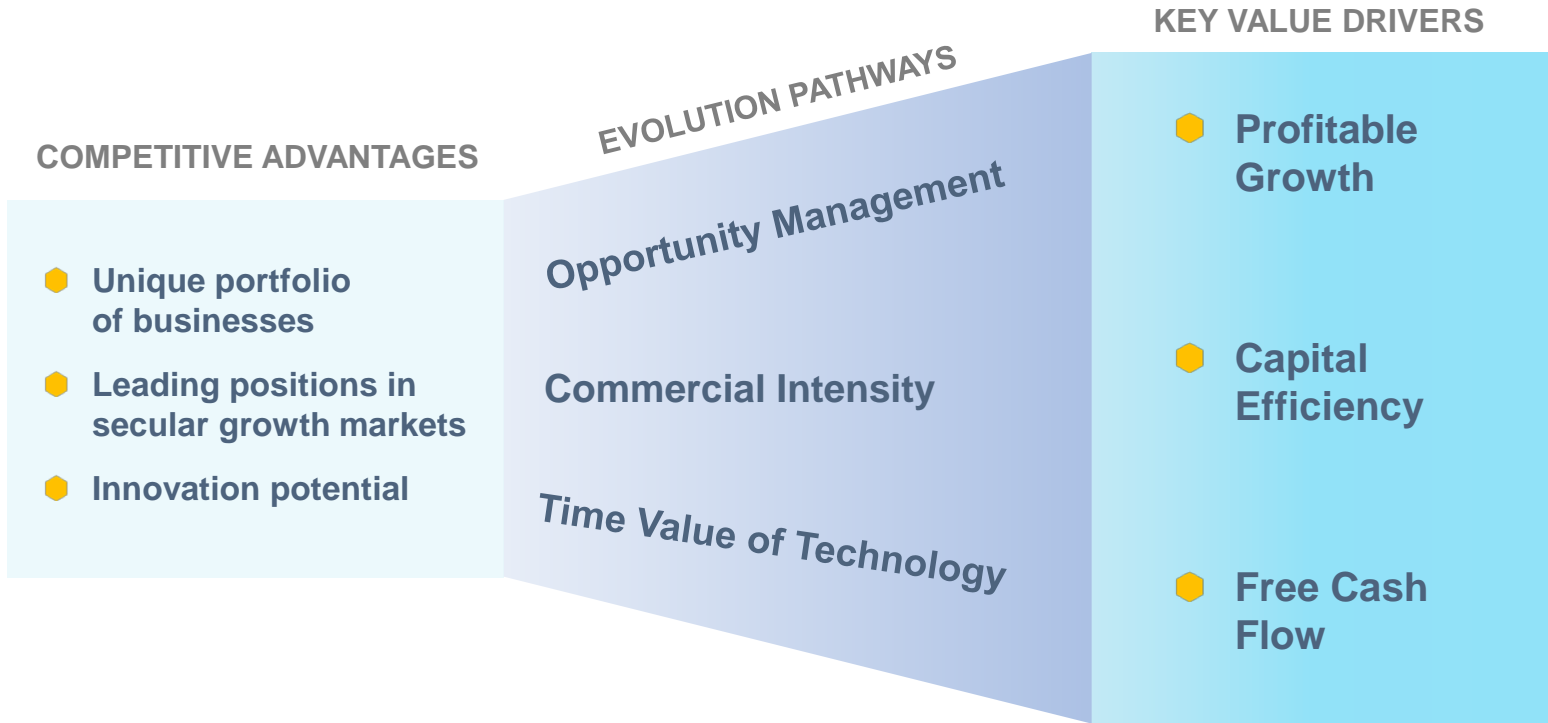
### Global Consumption End Uses



- Demand from diverse and wide range of end market uses
- Exclusive multi-year all needs supply contract with global MMA leader
- Demand for catalysts driven by timing of customer change-outs

# PORTFOLIO STRENGTHS AND PRIORITIES

Drive Shareholder Value



# APPENDIX



# ADJUSTED FREE CASH FLOW

First Quarter 2019 Versus 2018

(\$ in millions)	Q1 2019	Q1 2018
<b>Cash Flow from Operations before interest and tax</b>	<b>54.9</b>	<b>43.0</b>
Less:		
Cash paid for taxes	4.4	4.4
Cash paid for interest <sup>1</sup>	23.7	16.6
<b>Cash Flow from Operations</b>	<b>26.8</b>	<b>22.0</b>
Less: Purchases of property, plant and equipment <sup>2</sup>	33.6	33.3
<b>Free Cash Flow</b>	<b>(6.8)</b>	<b>(11.3)</b>
Plus: Net interest proceeds on currency swaps	3.9	—
<b>Adjusted Free Cash Flow</b>	<b>(2.9)</b>	<b>(11.3)</b>





# SUPPLEMENTAL INFORMATION

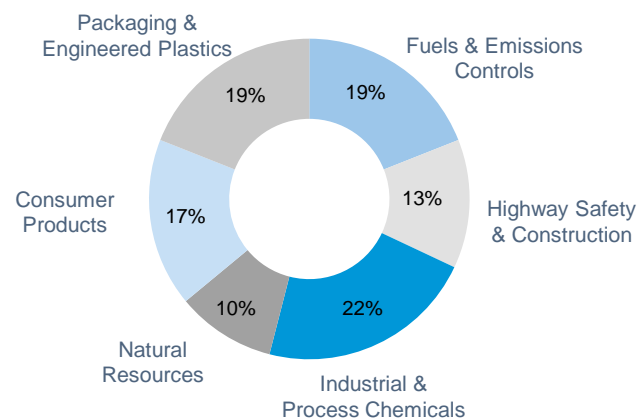
## First Quarter 2019 Capital Expenditures, Capitalization and Sales by End Use

CAPITAL EXPENDITURES <sup>1</sup> (\$ in millions)	March 31, 2019	March 31, 2018
Maintenance <sup>2</sup>	26.8	28.6
Growth <sup>3</sup>	6.8	4.7
<b>Total</b>	<b>33.6</b>	<b>33.3</b>

% OF SALES GROWTH BY END USE <sup>4</sup>	
Fuels & Emissions Controls	( 4%)
Highway Safety & Construction	+ 5%
Industrial & Process Chemicals	( 5%)
Natural Resources	+ 4%
Consumer Products	( 11%)
Packaging & Engineered Plastics	( 5%)

CAPITALIZATION	March 31, 2019
<b>Debt:</b>	<b>(\$ in millions)</b>
ABL Revolving Credit Facility	2.0
USD First Lien Term Loan	1,157.5
First Lien Secured Notes	625.0
<b>Total First Lien Debt</b>	<b>1,784.5</b>
Senior Unsecured Notes	295.0
Other debt	67.3
<b>Total Debt</b>	<b>2,146.8</b>
Cash	52.3
<b>Net Debt</b>	<b>2,094.5</b>
<b>Net Debt/Adjusted EBITDA</b>	<b>4.6x</b>

### % OF SALES BY END USE<sup>4</sup>



- (1) Excludes the Company's proportionate share of capital expenditures from the Zeolyst Joint Venture
- (2) Includes the cash impact from changes in capital expenditures in accounts payable and capitalized interest
- (3) Growth capital includes capital used to reduce fixed costs
- (4) Sales includes proportionate 50% share of sales from Zeolyst Joint Venture

# QUARTERLY SEGMENT SALES AND ADJUSTED EBITDA

## First Quarter 2019 and Year 2018

(\$ in millions except %, unaudited)	Three Months Ended	Three Months Ended				Year Ended
	March 31, 2019	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018
<b>Sales:</b>						
Refining Services	105.8	100.7	112.1	123.4	119.4	455.6
Silica Catalysts	15.9	16.5	17.3	16.3	22.0	72.1
Performance Materials	61.1	62.7	126.5	115.4	73.7	378.3
Performance Chemicals	180.5	190.0	183.8	174.7	168.8	717.3
Inter-company sales eliminations	(4.1)	(3.7)	(5.0)	(2.6)	(3.8)	(15.1)
<b>Total sales</b>	<b>359.2</b>	<b>366.2</b>	<b>434.7</b>	<b>427.2</b>	<b>380.1</b>	<b>1,608.2</b>
Zeolyst joint venture net sales	29.5	38.3	49.5	32.3	36.6	156.7
<b>Adjusted EBITDA:</b>						
Refining Services	39.7	35.5	41.3	49.6	50.1	176.5
Catalysts <sup>1</sup>	18.1	22.9	23.6	15.7	18.9	81.1
Performance Materials	10.5	12.1	28.6	21.3	10.5	72.5
Performance Chemicals	42.7	45.1	44.8	41.8	39.2	170.9
<b>Total Segment Adjusted EBITDA</b>	<b>111.0</b>	<b>115.6</b>	<b>138.3</b>	<b>128.4</b>	<b>118.7</b>	<b>501.0</b>
Corporate	(10.0)	(7.7)	(9.4)	(10.3)	(9.6)	(37.0)
<b>Total Adjusted EBITDA</b>	<b>101.0</b>	<b>107.9</b>	<b>128.9</b>	<b>118.1</b>	<b>109.1</b>	<b>464.0</b>
<b>Adjusted EBITDA Margin:</b>						
Refining Services	37.5%	35.3%	36.8%	40.2%	42.0%	38.7%
Catalysts <sup>1</sup>	40.0%	41.8%	35.3%	32.3%	32.3%	35.4%
Performance Materials	17.2%	19.3%	22.6%	18.5%	14.2%	19.2%
Performance Chemicals	23.7%	23.7%	24.4%	23.9%	23.2%	23.8%
<b>Total Adjusted EBITDA Margin<sup>1</sup></b>	<b>26.0%</b>	<b>26.7%</b>	<b>26.6%</b>	<b>25.7%</b>	<b>26.2%</b>	<b>26.3%</b>

# SALES AND ADJUSTED EBITDA MAJOR CHANGE FACTORS

First Quarter 2019

## SALES

Sales (in \$ millions and %)	Three months ended March 31, 2019									
	PQ Group Holdings Inc.		Refining Services		Catalysts		Performance Materials		Performance Chemicals	
<b>Sales:</b>	\$	%	\$	%	\$	%	\$	%	\$	%
Volume	(12.7)	(3.4)	(3.5)	(3.4)	(0.9)	(5.2)	(1.3)	(2.1)	(6.5)	(3.4)
Price/Mix	18.0	4.9	8.6	8.5	0.9	5.2	2.9	4.6	5.6	2.9
Currency	(12.3)	(3.4)	-	-	(0.6)	(3.6)	(3.2)	(5.1)	(8.6)	(4.5)
<b>Sales Change</b>	<b>(7.0)</b>	<b>(1.9)</b>	<b>5.1</b>	<b>5.1</b>	<b>(0.6)</b>	<b>(3.6)</b>	<b>(1.6)</b>	<b>(2.6)</b>	<b>(9.5)</b>	<b>(5.0)</b>

## ADJUSTED EBITDA

Adjusted EBITDA (in \$ millions and %)	Three months ended March 31, 2019									
	PQ Group Holdings Inc.		Refining Services		Catalysts		Performance Materials		Performance Chemicals	
<b>Adjusted EBITDA:</b>	\$	%	\$	%	\$	%	\$	%	\$	%
Volume/Mix	(12.4)	(11.6)	(2.4)	(6.7)	(10.2)	(44.6)	-	-	0.1	0.2
Price	18.2	17.0	8.6	24.1	1.2	5.3	2.9	23.9	5.6	12.4
Variable Cost	(5.8)	(5.4)	(1.2)	(3.4)	0.9	3.9	(1.4)	(11.5)	(4.1)	(9.1)
Currency	(2.8)	(2.6)	-	-	(0.4)	(1.8)	(0.3)	(2.5)	(2.2)	(4.8)
Other	(4.1)	(3.8)	(0.8)	(2.2)	3.7	16.2	(2.8)	(23.1)	(1.8)	(4.0)
<b>Adjusted EBITDA Change</b>	<b>(6.9)</b>	<b>(6.4)</b>	<b>4.2</b>	<b>11.8</b>	<b>(4.8)</b>	<b>(21.0)</b>	<b>(1.6)</b>	<b>(13.2)</b>	<b>(2.4)</b>	<b>(5.3)</b>

# RECONCILIATION OF NET INCOME TO SEGMENT ADJUSTED EBITDA

## First Quarter 2019 and Year 2018

(\$ in millions)	Three Months Ended	Three Months Ended				Year Ended
	March 31, 2019	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018
<b>Reconciliation of net income (loss) attributable to PQ Group Holdings Inc. to Segment Adjusted EBITDA</b>						
Net income attributable to PQ Group Holdings Inc.	3.2	0.2	15.8	14.2	28.1	58.3
Provision for (benefit from) income taxes	2.4	(0.5)	13.6	8.5	7.4	29.0
Interest expense	28.6	29.2	27.2	28.2	29.1	113.7
Depreciation and amortization	45.9	48.5	47.0	43.8	45.9	185.2
<b>EBITDA</b>	<b>80.1</b>	<b>77.4</b>	<b>103.6</b>	<b>94.7</b>	<b>110.5</b>	<b>386.2</b>
Joint venture depreciation, amortization and interest <sup>a</sup>	3.8	3.3	2.6	3.3	3.4	12.6
Amortization of investment in affiliate step-up <sup>b</sup>	2.6	1.7	1.7	1.7	1.5	6.6
Amortization of inventory step-up <sup>c</sup>	—	1.6	—	—	—	1.6
Debt extinguishment costs	—	5.9	—	0.9	1.0	7.8
Net loss on asset disposals <sup>d</sup>	0.8	1.2	4.8	5.2	(4.6)	6.6
Foreign currency exchange (gain) loss <sup>e</sup>	(2.7)	5.1	6.8	3.5	(1.6)	13.8
LIFO expense <sup>f</sup>	10.2	4.9	0.1	0.9	2.5	8.4
Transaction and other related costs <sup>g</sup>	0.1	0.4	0.3	0.2	—	0.9
Equity-based and other non-cash compensation	3.4	3.8	3.8	4.3	7.6	19.5
Restructuring, integration and business optimization expenses <sup>h</sup>	0.7	1.1	2.4	2.2	8.3	14.0
Defined benefit plan pension cost <sup>i</sup>	1.0	0.6	(0.4)	0.1	(1.1)	(0.8)
Gain on contract termination <sup>j</sup>	—	—	—	—	(20.6)	(20.6)
Other <sup>k</sup>	1.0	0.9	3.2	1.1	2.2	7.4
<b>Adjusted EBITDA</b>	<b>101.0</b>	<b>107.9</b>	<b>128.9</b>	<b>118.1</b>	<b>109.1</b>	<b>464.0</b>
Unallocated corporate costs	10.0	7.7	9.4	10.3	9.6	37.0
<b>Total Segment Adjusted EBITDA<sup>1</sup></b>	<b>111.0</b>	<b>115.6</b>	<b>138.3</b>	<b>128.4</b>	<b>118.7</b>	<b>501.0</b>
<b>EBITDA Adjustments by Line Item</b>						
<b>EBITDA</b>	<b>80.1</b>	<b>77.4</b>	<b>103.6</b>	<b>94.7</b>	<b>110.5</b>	<b>386.2</b>
Cost of goods sold	10.8	7.3	2.6	2.1	4.3	16.3
Selling, general and administrative expenses	4.4	4.9	4.8	5.4	7.9	23.0
Other operating expense, net	1.8	2.4	7.2	7.3	(17.8)	(0.9)
Equity in net (income) loss from affiliated companies	2.6	1.7	1.7	1.7	1.5	6.6
Other expense (income), net <sup>2</sup>	(2.5)	10.9	6.4	3.6	(0.7)	20.2
Joint venture depreciation, amortization and interest(a)	3.8	3.3	2.6	3.3	3.4	12.6
<b>Adjusted EBITDA</b>	<b>101.0</b>	<b>107.9</b>	<b>128.9</b>	<b>118.1</b>	<b>109.1</b>	<b>464.0</b>

# RECONCILIATION OF QUARTERLY NET INCOME TO ADJUSTED NET INCOME AND ADJUSTED DILUTED EARNINGS PER SHARE

First Quarter 2019 and Year 2018

(\$ in millions except per share data)	Three Months Ended	Three Months Ended				Year Ended
	March 31, 2019	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018
Net Income (loss)	3.5	0.5	16.2	14.4	28.5	59.6
Less: Net income (loss) attributable to the non-controlling interest	0.3	0.3	0.4	0.2	0.3	1.3
Net Income (loss) attributable to PQ Group Holdings, Inc. <sup>1</sup>	3.2	0.2	15.8	14.2	28.2	58.3
Amortization of investment in affiliate step-up <sup>b</sup>	1.6	1.2	1.0	0.9	1.1	4.2
Amortization of inventory step-up <sup>c</sup>	—	1.1	—	—	—	1.0
Debt extinguishment costs	—	4.1	—	0.2	0.5	4.9
Net loss on asset disposal <sup>d</sup>	0.5	0.8	3.1	2.9	(2.7)	4.1
Foreign currency exchange loss <sup>e</sup>	(2.0)	2.9	5.2	4.0	(3.9)	8.2
LIFO expense <sup>f</sup>	6.5	3.4	—	0.3	1.6	5.3
Transaction and other related costs <sup>g</sup>	0.1	0.3	0.2	0.1	—	0.6
Equity-based and other non-cash compensation	2.2	2.6	2.5	2.2	7.6	14.9
Restructuring, integration and business optimization expenses <sup>h</sup>	0.5	0.7	1.6	1.2	5.3	8.8
Defined benefit pension plan cost <sup>i</sup>	0.6	0.4	(0.3)	0.1	(0.7)	(0.5)
Gain on contract termination <sup>j</sup>	—	—	—	—	(13.0)	(13.0)
Other <sup>k</sup>	0.6	0.7	2.0	0.4	1.4	4.6
Adjusted net income, including tax reform and non-cash GILTI tax	13.8	18.4	31.1	26.5	25.4	101.4
Impact of tax reform <sup>2</sup>	—	—	1.1	(2.5)	(4.5)	(6.0)
Impact of non-cash GILTI tax <sup>3</sup>	3.7	2.5	5.0	11.4	2.2	21.2
Adjusted net income	17.5	20.9	37.2	35.4	23.1	116.6
Diluted net income (loss) per share:	0.02	0.00	0.12	0.11	0.21	0.43
Adjusted diluted net income per share:	0.13	0.16	0.28	0.26	0.17	0.87
Diluted Weighted Average shares outstanding	134.9	133.9	134.2	134.6	135.0	134.7

- (1) For additional information with respect to each adjustment, see "Reconciliations of Non-GAAP Financial Measures" within this appendix  
(2) Represents the provisional benefit (loss) for the impact of the U.S. Tax Cuts and Jobs Act of 2017 and the Dutch Tax Plan 2019 recorded in Net Income  
(3) Represents the impact associated with Tax Cuts and Jobs Act of 2017 Global Intangible Low Taxed Income ("GILTI"). The Company is required to record a non-cash provision on GILTI as a result of having a U.S. Net Operating Loss ("NOL") which precludes us from using foreign tax credits ("FTCs") to offset the GILTI until the NOL is fully utilized. As this provision does not impact our cash taxes and we will be able to utilize FTCs to offset GILTI once the NOLs are utilized, we do not view this as core to our ongoing business operations

# RECONCILIATION OF NON-GAAP FINANCIAL MEASURES

## Descriptions to PQ Non-GAAP Reconciliations

- a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Catalysts segment includes our 50% interest in our Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of our Zeolyst Joint Venture.
- b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in our Zeolyst Joint Venture as a result of the Business Combination. We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of our Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with inventory, fixed assets and intangible assets, including customer relationships and technical know-how.
- c) As a result of the Sovitec acquisition and the Business Combination, there was a step-up in the fair value of inventory, which is amortized through cost of goods sold in the statements of income.
- d) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.
- e) Reflects the exclusion of the foreign currency transaction gains and losses in the statements of income primarily related to the Euro denominated term loan (which was settled as part of the February 2018 term loan refinancing) and the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.
- f) Represents non-cash adjustments to the Company's LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.
- g) Relates to certain transaction costs described in our condensed consolidated financial statements as well as other costs related to several transactions that are completed, pending or abandoned and that we believe are not representative of our ongoing business operations.
- h) Includes the impact of restructuring, integration and business optimization expenses which are incremental costs that are not representative of our ongoing business operations.
- i) Represents adjustments for defined benefit pension plan costs in our statements of income. More than two-thirds of our defined benefit pension plan obligations are under defined benefit pension plans that are frozen, and the remaining obligations primarily relate to plans operated in certain of our non-U.S. locations that, pursuant to jurisdictional requirements, cannot be frozen. As such, we do not view such expenses as core to our ongoing business operations.
- j) Represents a non-cash gain on the write-off of the remaining liability under a contractual supply arrangement. As part of Eco's acquisition of substantially all of the assets of Solvay USA Inc's sulfuric acid refining services business unit on December 1, 2014, we recognized a liability as part of business combination accounting related to our obligation to serve a customer under a pre-existing unfavorable supply agreement. In December 2018, the customer who was party to the agreement closed its facility, and as a result, we were relieved from our obligation to continue to supply the customer on the below market contract. Because the fair value of the unfavorable contract liability was recognized as part of the application of business combination accounting, and since the write-off of the remaining liability was non-cash in nature, we believe this gain is a special item that is not representative of our ongoing business operations.
- k) Other costs consist of certain expenses that are not core to our ongoing business operations, including environmental remediation-related costs associated with the legacy operations of our business prior to the Business Combination, capital and franchise taxes, non-cash asset retirement obligation accretion and the initial implementation of procedures to comply with Section 404 of the Sarbanes-Oxley Act. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

# CONSTANT CURRENCY SALES AND ADJUSTED EBITDA

First Quarter 2019 Versus 2018

(\$ in millions except %, unaudited)	Three Months Ended March 31, 2019			Three Months Ended March 31, 2018	Constant Currency % Change
	As Reported	FX Impact	Constant Currency	As Reported	
<b>Sales:</b>	\$	\$	\$	\$	%
Refining Services	105.8	—	105.8	100.7	5.1
Silica Catalysts	15.9	0.6	16.5	16.5	—
Performance Materials	61.1	3.2	64.3	62.7	2.6
Performance Chemicals	180.5	8.6	189.1	190.0	(0.5)
Inter-company sales eliminations	(4.1)	(0.1)	(4.2)	(3.7)	13.5
<b>Total sales</b>	<b>359.2</b>	<b>12.3</b>	<b>371.5</b>	<b>366.2</b>	<b>1.4</b>
Zeolyst joint venture net sales	29.5	—	29.5	38.3	(23.0)
<b>Adjusted EBITDA:</b>	\$	\$	\$	\$	%
Refining Services	39.7	—	39.7	35.5	11.8
Catalysts <sup>1</sup>	18.1	0.4	18.5	22.9	(19.2)
Performance Materials	10.5	0.3	10.8	12.1	(10.7)
Performance Chemicals	42.7	2.2	44.9	45.1	(0.4)
<b>Total Segment Adjusted EBITDA</b>	<b>111.0</b>	<b>2.9</b>	<b>113.9</b>	<b>115.6</b>	<b>(1.5)</b>
Corporate	(10.0)	(0.1)	(10.1)	(7.7)	31.2
<b>Total Adjusted EBITDA</b>	<b>101.0</b>	<b>2.8</b>	<b>103.8</b>	<b>107.9</b>	<b>(3.8)</b>





# PQ Corporation

