



MINERALS TECHNOLOGIES INC.  
ANNUAL REPORT 2017



25  
YEARS

INNOVATION ■ LEADERSHIP ■ EXCELLENCE

# ANNUAL REPORT 2017

Minerals Technologies Inc. (MTI) is a global resource- and technology-based company that develops, produces and markets a broad range of specialty mineral, mineral-based and synthetic mineral products and supporting systems and services. The company has four reportable segments: Specialty Minerals, Performance Materials, Refractories and Energy Services.

The Specialty Minerals and Performance Materials segments produce and sell products and technologies based upon the mineral products calcium carbonate, bentonite, talc and leonardite. These minerals are used principally in the paper, metalcasting, building materials, paints and coatings, consumer products, ceramic, polymer, and food and pharmaceutical industries.

The Refractories and Energy Services segments both produce and market patented technologies, products and services. The Refractories segment produces monolithic refractory materials and specialty products, services and application equipment used primarily by the steel, non-ferrous metal industries, and other industrial refractory applications. Energy Services provides a range of offshore produced water filtration and well testing services to the worldwide oil and gas industry.

The company emphasizes research and development. By investing in the development of new technologies and advanced products, MTI has been able to anticipate and satisfy changing customer requirements and to create market opportunities through new product development and product application innovations.

MTI

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A \$1.7 BILLION GLOBAL  
MINERALS-BASED COMPANY

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THE WORLD LEADER IN PRECIPITATED  
CALCIUM CARBONATE

---

THE WORLD LEADER IN BENTONITE

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A LEADER IN MINERALS-BASED APPLICATION  
TECHNOLOGY AND INNOVATION

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## MTI AT A GLANCE

COUNTRIES

35

WORLDWIDE PRODUCTION LOCATIONS

156

R&D CENTERS

12

EMPLOYEES

3,657

Millions of Dollars,  
Except Per Share Data

December 31, 2017    December 31, 2016

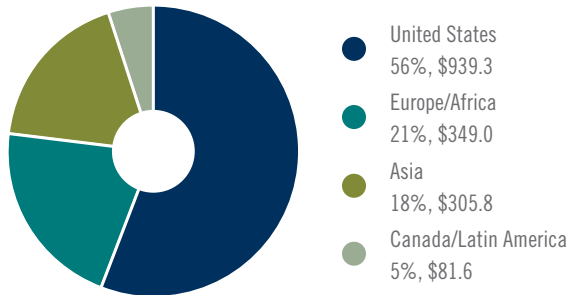
Net Sales	\$1,675.7	\$1,638.0
Performance Materials Segment	734.8	686.1
Specialty Minerals Segment	584.8	591.5
Refractories Segment	279.4	274.5
Energy Services Segment	76.7	85.9
Operating Income	263.2*	257.2*
Diluted Earnings per Share	4.59*	4.47*
Research & Development Expenses	23.7	23.8
Depreciation, Depletion & Amortization	91.0	91.9
Capital Expenditures	76.7	62.4
Net Cash Provided by Operating Activities	207.6	225.1
Number of Shareholders of Record	167	175
Number of Employees	3,657	3,583

\* Excludes Special Items

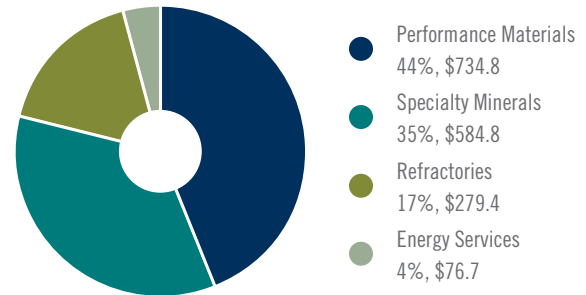
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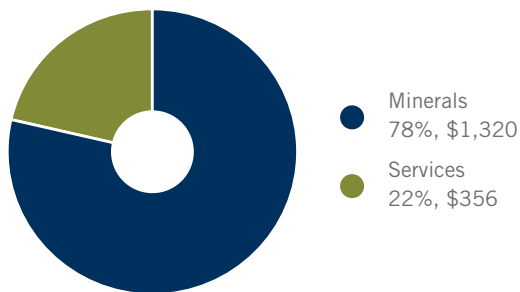
2017 NET SALES BY GEOGRAPHIC AREA  
(percentage/millions of dollars)



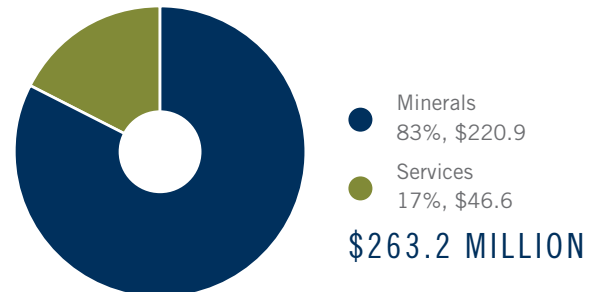
2017 NET SALES BY SEGMENT  
(percentage/millions of dollars)



2017 NET SALES BY BUSINESS TYPE  
(percentage/millions of dollars)



2017 OPERATING INCOME BY BUSINESS TYPE\*  
(percentage/millions of dollars)



\* excludes special items and unallocated corporate expenses

**2017 TOTAL NET SALES \$1.676 BILLION**

DEAR SHAREHOLDERS:

IN 2017, MTI MARKED ITS 25TH YEAR OF LEADERSHIP IN PROVIDING MINERAL SOLUTIONS TO AN INCREASING NUMBER OF WORLDWIDE MARKETS. OUR INNOVATION AND GEOGRAPHIC GROWTH INITIATIVES CONTINUE TO POSITION THE COMPANY FOR A STRONG FUTURE FINANCIAL PERFORMANCE. AT THE HEART OF THE COMPANY, OUR 3,700 EMPLOYEES WERE SHARPLY FOCUSED ON PURSUING CONTINUOUS IMPROVEMENT AND VALUE ENHANCEMENT ACTIVITIES THAT PROPELLED MTI TO ITS EIGHTH CONSECUTIVE YEAR OF RECORD PROFITABILITY.



Douglas T. Dietrich | Chief Executive Officer

We recorded earnings per share of \$4.59. Operating income was \$263 million – also a record level – and again, we generated strong margins. Cash flow from operations was \$208 million and we used this cash to strengthen the balance sheet through the repayment of debt.

25 YEARS OF ACHIEVEMENT

MTI celebrated our 25th anniversary as a public company on October 23, 2017. This marked a moment for us to look back at our achievements over the last quarter of a century, and to reflect on those who helped build the company and contribute to our success. We are in a leadership position today because our employees around the world are dedicated and committed to innovation and operational excellence. The ongoing support of our customers, shareholders, suppliers, and the communities in which we operate are reflective of our sustainable approach to creating value over the past 25 years.

2017 OVERVIEW

We made strong advances in executing on our growth strategies in 2017 by realigning the organization, and investing in innovation and targeted expansions around the world.

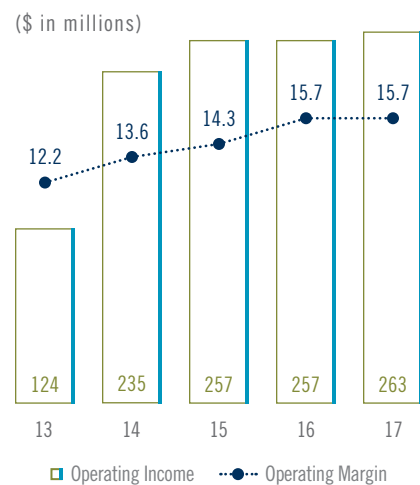
Early in the year, we combined our Performance Materials and Construction Technologies bentonite-based businesses into one operating segment. We realigned these organizations to generate operational efficiencies, drive new product offerings, and better serve customer needs.

Asia remains an area of focus for MTI's geographic expansion given the demand for our products there. We continued to receive strong pull for our innovative solutions in metalcasting, cat litter, laundry detergent, paper and packaging, along with an increasing interest in the region for our environmental technologies. We strengthened our organization and our ability to drive profitable growth in Asia by realigning our leadership, improving our commercial and manufacturing capabilities, and leveraging our government marketing initiatives.

We continued to invest in our businesses to deliver value-added solutions to our customers, with capacity expansions in both Performance Materials and Specialty Minerals globally.

Our performance in the second half of 2017, when we grew revenue by 7 percent, reflects the success of our initiatives and provided solid momentum going into 2018. Today, we are well positioned for long-term growth across all of our businesses.

OPERATING INCOME/MARGIN\*



\* excludes special items

**MTI Celebrates Its 25th Anniversary**



“WE ACHIEVED OUR EIGHTH CONSECUTIVE YEAR OF RECORD EARNINGS PER SHARE.”

**RESULTS – MINERALS BUSINESSES**

In the Performance Materials segment, revenue increased by 7 percent. Metalcasting saw strong growth of 14 percent, driven by demand in China, where we continue to penetrate the foundry market with our high-value blended greensand bond systems. In our Fabric Care product line, we ramped up an innovative new additive for dry laundry detergent, which is now shipping to global markets. In our Pet Care business, our new lightweight cat litter continues to gain traction, particularly in Asia.

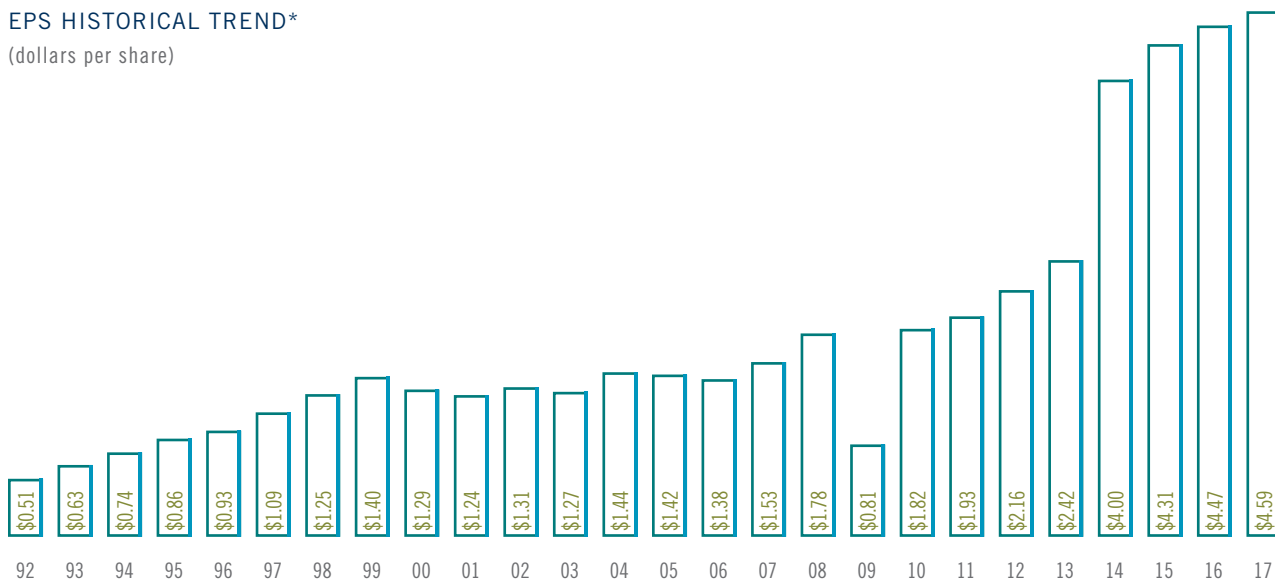
We took steps to strengthen our commercial organizations in Building Materials and Environmental Products, which resulted in significantly improved product pipelines in both businesses.

In Specialty Minerals, revenue decreased by 1 percent. Paper PCC had a challenging year, with sales declining from 2016, primarily due to paper machine closures in the U.S.; however, PCC sales increased in Europe, Latin America and Asia. Asia, in particular, continues to be a growth region for our Paper PCC business.

Penetration of our product in North America is double that of the Asia market, which continues to represent a significant growth opportunity for this business. This year, we signed two new contracts and one expansion in Indonesia, adding 245,000 metric tons of new capacity, further driving penetration of PCC into the market. We are also continuing to make progress with our innovative technologies such as NewYield® and FulFill®, further demonstrating their value to our customers.

**EPS HISTORICAL TREND\***

(dollars per share)



\*EPS from continuing operations, excluding special items Adjusted for 2012 Stock Split



“WE COMMERCIALIZED 81 NEW PRODUCTS OVER THE LAST FIVE YEARS, WHICH GENERATED APPROXIMATELY \$130 MILLION IN REVENUE IN 2017.”

We took steps to address the closures in North America by restructuring our organization and shifting resources to Asia, which will provide better long term support for the business in this growth region.

Performance Minerals continues to operate at a high level. To support continued demand for new and existing products, we made targeted capacity investments in our talc facility in Montana and our two specialty PCC plants in the U.S. and England.

Our Minerals businesses continue to be the engine of growth for the company. Each has significant opportunities for growth and are where we intend to steer our capital for new product development and geographic expansion going forward.

**RESULTS – SERVICES BUSINESSES**

Both of our Services Businesses had a stronger year, recording higher operating margins and improved profit levels over 2016.

Revenue in the Refractories segment grew 2 percent, benefiting from higher capacity utilization in worldwide steel markets. This business posted its second highest operating income in its history, driven by strong operating performance and a record level of sales of our high-tech laser measurement systems.

We restructured our Energy Services business in 2016, focusing it primarily on the areas where we have sustainable technology differentiation — offshore filtration and well testing, and produced water. Through the downturn, we maintained our strong positions in global oil and gas production markets, and this business is well positioned to grow as markets recover.

**PLATFORM FOR GROWTH**

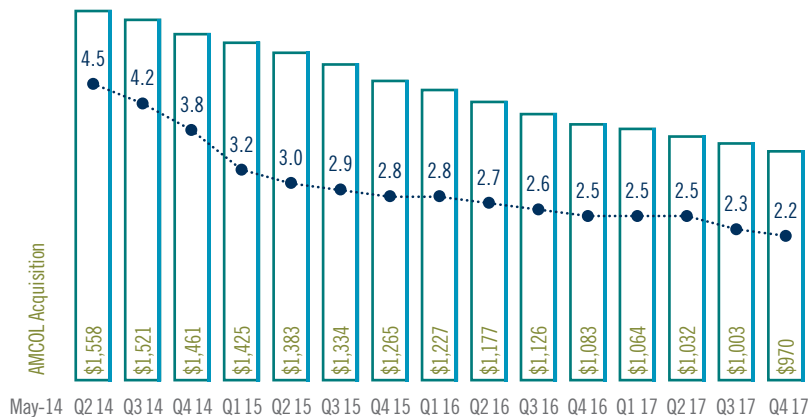
We are committed to our growth strategies of geographic expansion, new product innovation and acquisitions. Our actions this year further strengthened the positions of our businesses globally, and we made significant progress in each of our growth regions.

Innovation is a core part of our culture at MTI, and we continue to develop new products to meet our customer needs. We have built a product development portfolio with the potential to deliver significant future value. For perspective, we commercialized 81 new products over the last five years, which generated approximately \$130 million in revenue in 2017, and which have an expectation to deliver revenue of approximately \$300 million when fully realized. We will continue to drive innovation across the company and to apply a lean approach to speed the development and introduction of new products.

Acquisitions remain a key component of our strategy, and we see a number of opportunities with vertically integrated value-added minerals where we can apply our capabilities.

**DEBT REPAYMENT**

(\$ in millions)



- Cash Flow
- Leverage Ratio
- Debt Repayment of \$590 Million over past 14 quarters
- 2.2x Net Leverage Ratio at end of 2017



We strengthened our balance sheet to support this growth by paying down \$110 million of acquisition-related debt in 2017, bringing our net leverage ratio toward our target of 2 times EBITDA.

**LOOKING AHEAD**

In 2018, we are committed to advancing our growth objectives and delivering another year of strong financial performance.

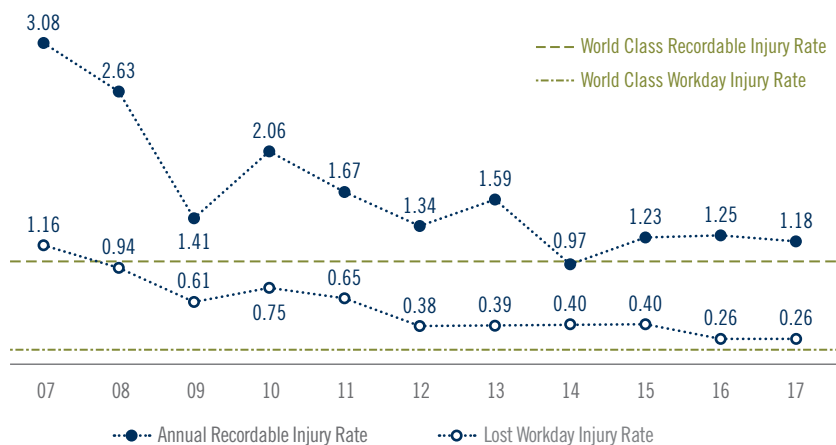
MTI is well positioned for long-term, profitable growth and enhanced shareholder value. Underpinning our strategic and

financial position are the company's 3,700 engaged employees committed to our high performance culture and its foundation in operational excellence. We believe this is a strategic differentiator for MTI that will drive the company for the next 25 years.



Douglas T. Dietrich  
Chief Executive Officer

**SAFETY: HISTORICAL INJURY RATES**  
(Injuries/100 Employees)



**OUR FOCUS ON SUSTAINABILITY**  
MTI'S VALUES ARE ROOTED IN SUSTAINABILITY AND HAVE BEEN A CORE TENET OF OUR COMPANY SINCE INCEPTION.

We manage our operations, our capital and our business opportunities in a sustainable manner, and we place the health and safety of people ahead of everything else. The company serves as a good steward of natural resources, and we employ sound environmental practices to protect the communities in which we operate, including comprehensive land reclamation activities and continuously improving our processes to prevent environmental releases.

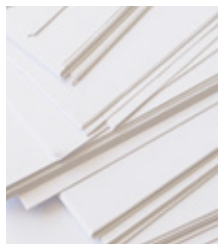
Just as we focus on continuous improvement in all facets of our business – processes, systems, products and services – we also apply the principles of Operational Excellence in our labor practices. We promote a culture of diversity and inclusion in both hiring and career advancement, and are committed to protecting and advancing human rights globally. This commitment also includes providing all MTI employees with the resources and training necessary to enable each of them to assist the company in meeting its environmental, health and safety, and business objectives.





MINERALS TECHNOLOGIES

# MINERALS BUSINESSES - \$1.320 BILLION REVENUE



### SPECIALTY MINERALS

#### PAPER PCC

Minerals Technologies is the world's leading producer of precipitated calcium carbonate (PCC), a specialty pigment for filling and coating high-quality paper. PCC provides brightness, opacity and bulk to paper and is the pigment of choice for papermakers worldwide for paper filling.

#### PERFORMANCE MINERALS

Performance Minerals consists of Specialty PCC, ground calcium carbonate (GCC) and talc. The business unit is vertically integrated from mine-to-market with three limestone facilities, two SPCC facilities and one talc operation. Performance Minerals primarily serves the construction, automotive and consumer markets.

### PERFORMANCE MATERIALS

Performance Materials is the world's leading producer of bentonite. This segment has five product lines— Metalcasting; Household, Personal Care (HPC) & Specialty Products; Environmental Products; Building Materials; and Basic Minerals, which provide a wide range of both bentonite-based and synthetic materials to various industrial and consumer markets. The segment is also a major producer of surfactant and aesthetic granules for the worldwide dry detergent market.

### 2017 MINERALS BUSINESSES RESULTS

FULL YEAR FINANCIALS\*  
(\$ in millions)

	2017	2016
Sales	1,320	1,278
Operating Income	221	224
% of Sales	16.7%	17.5%
EBITDA	290	298
% of Sales	21.9%	23.3%

\* excludes special items

### 2017 NET SALES BY PRODUCT LINE (millions of dollars)



#### SPECIALTY MINERALS \$584.8

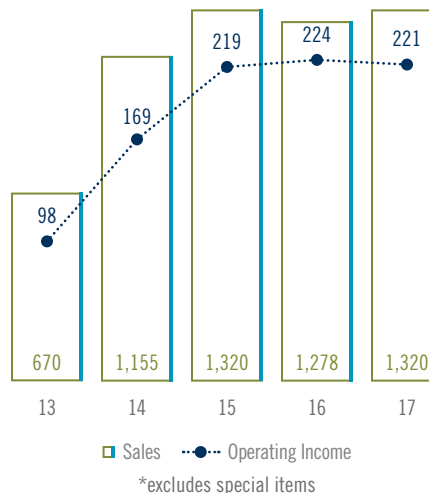
- Paper PCC \$377.7
- Specialty PCC \$66.0
- Ground Calcium Carbonate \$87.3
- Talc \$53.8



#### PERFORMANCE MATERIALS \$734.8

- Metalcasting \$294.3
- Building Materials \$78.2
- HPC & Specialty Products \$169.6
- Environmental Products \$67.7
- Basic Minerals & Other Products \$125.0

### HISTORICAL ANNUAL OPERATING RESULTS\* (\$ in millions)





MINERALS TECHNOLOGIES

# SERVICES BUSINESSES - \$356 MILLION REVENUE



### REFRACTORIES

MTI is the North American leader in the application of monolithic refractories for iron and steel making. The segment consists of engineered monolithic refractory lining systems, metallurgical wire products, bulk calcium and calcium alloy products, refractory measurement systems, and advanced carbon products. The Ferrotron unit is the market leader in laser profile measurement technology for the refractory and steel industries.



### ENERGY SERVICES

CETCO® Energy Services offers a range of patented technologies, products and services for off-shore filtration and well testing in oil and gas production throughout the world. The business unit is the leading provider of off-shore water treatment in the United States, using its key technologies to remove oil, hydrocarbons, heavy metals, toxic materials and other contaminants.

### 2017 SERVICE BUSINESSES RESULTS

FULL YEAR FINANCIALS\*  
(\$ in millions)

	2017	2016
Sales	356	360
Operating Income	47	39
% of Sales	13.1%	10.9%
EBITDA	60	61
% of Sales	16.9%	16.8%

\* excludes special items

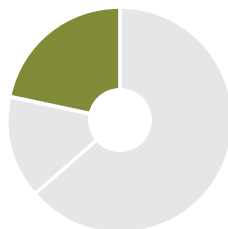
### 2017 NET SALES BY PRODUCT LINE

(millions of dollars)



REFRACTORIES  
\$279.4

- Refractories  
\$226.9
- Metallurgical Wire  
\$52.5

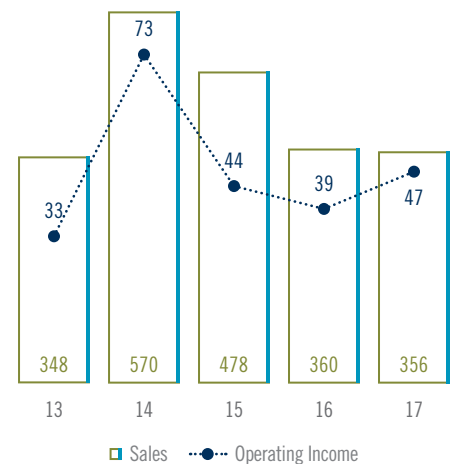


ENERGY SERVICES  
\$76.7

- Energy Services  
\$76.7

### HISTORICAL ANNUAL OPERATING RESULTS\*

(\$ in millions)

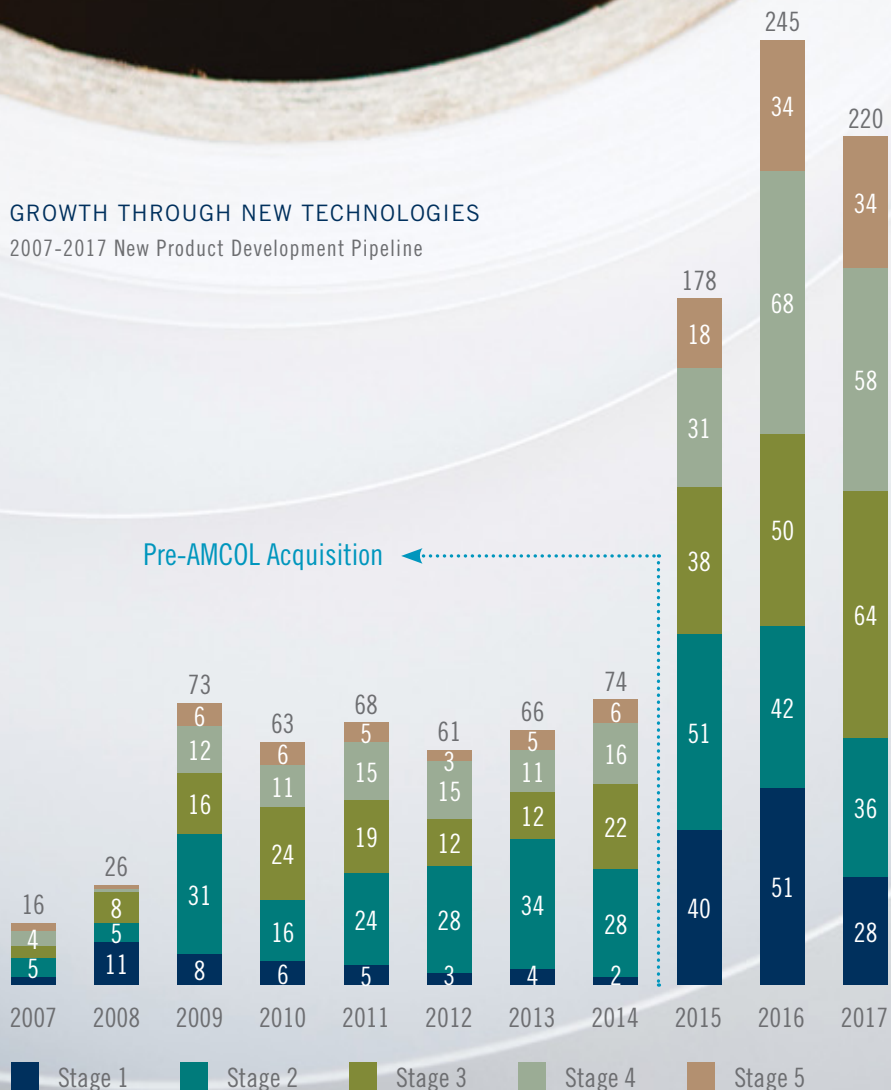


\*excludes special items

# GEOGRAPHIC EXPANSION AND NEW PRODUCT INNOVATION

MINERALS TECHNOLOGIES WILL CONTINUE TO GROW BY EXPANDING GEOGRAPHICALLY, ESPECIALLY IN ASIA, AND BY DEVELOPING AND LAUNCHING INNOVATIVE NEW PRODUCTS WORLDWIDE.

GROWTH THROUGH NEW TECHNOLOGIES  
2007-2017 New Product Development Pipeline



## SPECIALTY MINERALS

THE FOCUS ON EXPANSION IN ASIA IS BASED UPON THE SUBSTANTIAL POTENTIAL TO PENETRATE THE PAPER MARKET BY SUBSTITUTING THE COMPANY'S HIGHER-VALUE PRODUCTS IN THIS REGION.

### PAPER PCC

As the originator of the “satellite” concept where production facilities are built on site at paper mills, and as the worldwide leader in production of precipitated calcium carbonate (PCC), MTI has the potential to nearly double its existing 3.1 million tons of PCC produced worldwide by executing this strategy in Asia, where the paper industry continues to grow.

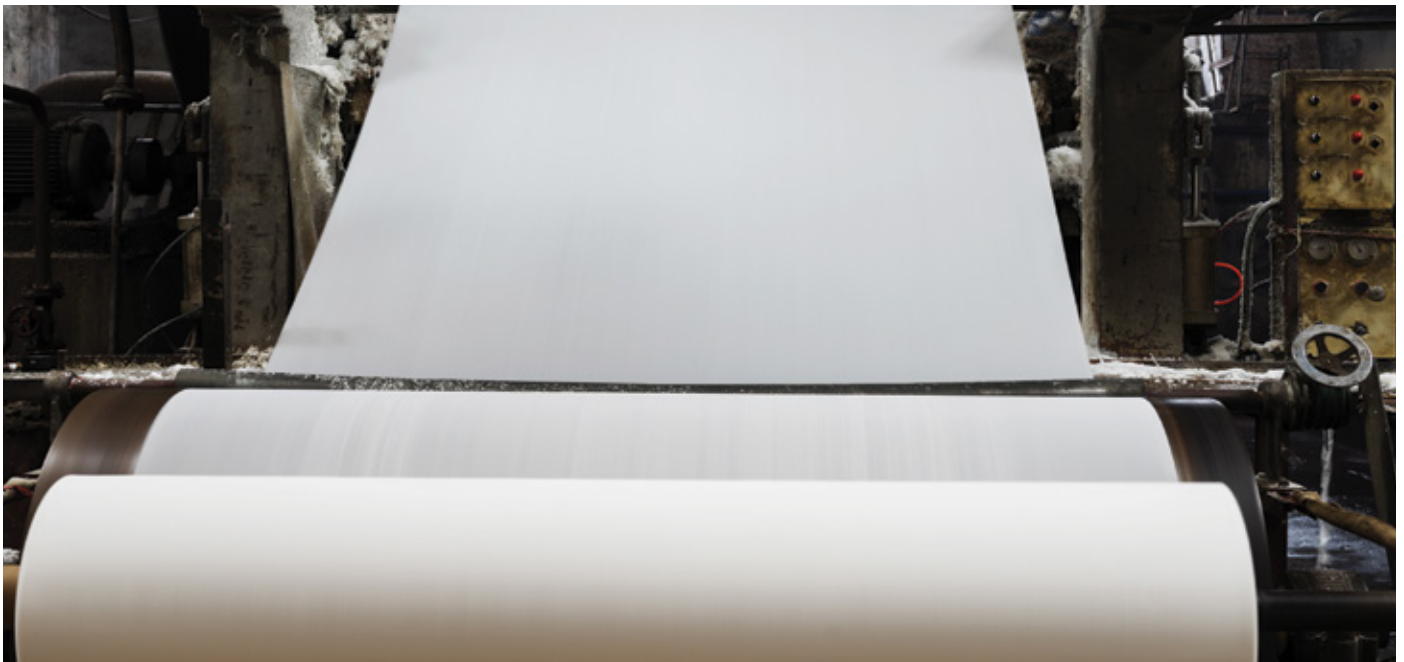
PCC is the filler of choice for papermakers worldwide because it improves brightness, opacity and bulk in the paper sheet, while

saving papermakers considerable costs because PCC replaces more expensive wood fiber. Looking at paper in China specifically, the current penetration of PCC used as a filling or coating pigment is about 10 percent as measured by tons of PCC produced compared with tons of printing and writing paper produced. In the United States and Europe, that ratio of PCC produced to tons of paper produced is closer to 20 percent. MTI has been actively marketing PCC to papermakers throughout China and other parts of Asia with good success. The company has signed seven additional satellite agreements in China since 2012, and two new satellite agreements in Indonesia. MTI will also continue to advance its PCC technology in India, where it has been able to establish leadership in the market with five satellite PCC plants in the last eight years.

We are also encouraged by the increased interest from papermakers conducting trials with our PCC, our FulFill® high-filler technology, as well as evaluating our NewYield® platform of technologies that will drive further penetration of PCC. FulFill® technology allows papermakers to increase the amount of PCC in paper, replacing more expensive fiber. The NewYield® platform of

technologies converts a papermaker's waste stream into a usable pigment. The waste stream in question is predominantly in China where environmental regulations prohibit burning or landfilling the material. NewYield® provides papermakers with a number of benefits. It eliminates landfill costs, provides an effective paper filler and reduces emissions and energy costs. The prospects for these new technologies in China are bright, and we are pursuing more than 20 opportunities in the region for PCC filler and new satellites.

Further, we are engaged in discussions with packaging manufacturers in several locations around the globe for use of our coating products for various applications, including white container board and boxboard packaging. In addition, we have new technologies for brown box packaging.





## SPECIALTY MINERALS

IN THE LAST THREE YEARS, PERFORMANCE MINERALS, WHICH SERVES THE CONSTRUCTION, AUTOMOTIVE AND CONSUMER MARKETS, HAS COMMERCIALIZED MORE THAN 10 NEW GROUND CALCIUM CARBONATE, TALC AND SPECIALTY PCC PRODUCTS THAT PROVIDE VALUE TO THEIR CUSTOMERS.

## PERFORMANCE MINERALS

MTI mines and processes natural mineral products, primarily limestone and talc, and manufactures lime, a limestone-based product. We operate three calcium carbonate mines in the United States and the United Kingdom, and one talc mine in the United States. Our high quality limestone, dolomitic limestone, and talc products are defined primarily by the chemistry and color characteristics of the ore bodies.

We are currently completing three production capacity expansions to keep pace with growing customer demand for our new products.



## PERFORMANCE MATERIALS

### METALCASTING

MTI has a significant and growing position in the foundry market globally, driven by our penetration through substitution strategy. Currently, about 90 percent of foundries in the U.S. and Europe use a pre-mixed greensand bond formulation—like that made by MTI—to form their castings. In China, that ratio is closer to 8 percent. This difference offers MTI a great opportunity to penetrate this market by helping foundries reduce costs and improve quality. The company's higher-value products allow Chinese foundries to move up the value chain.

Additionally, we are beginning to see accelerating growth in our Metalcasting business in Southeast Asia as well as India, the world's second largest ferrous casting market.

### PET CARE

In our Pet Care business, Performance Materials continues to roll out its lightweight cat litter, which is half the weight of normal litter, to major retailers in North America, and has opportunities for this product line in Asia. Pet Care product sales have continued to grow rapidly in China as GDP increases and more people obtain domesticated animals.



### FABRIC CARE

In Fabric Care, the company is advancing its surfactant and aesthetic granules in laundry detergents in developing countries with major, worldwide detergent makers. We're currently scaling up a key new additive for dry laundry detergent at our U.K. Fabric Care facility and our customers are beginning to roll out this product in their formulations to target markets worldwide. We expect to see demand continue to increase in 2018.

### BUILDING MATERIALS AND ENVIRONMENTAL PRODUCTS

Building Materials provides products worldwide across a broad range of construction projects, including bentonite-based waterproofing for underground structures and drilling applications including foundation, slurry wall, tunneling, water well, and horizontal drilling.

Environmental Products provides solutions for containment and remediation of pollutants, including groundwater treatment, solidification and stabilization, and sediment remediation for commercial, industrial and infrastructure construction. Its state-of-the-art geosynthetic clay lining (GCL) technologies, like its Resistex® line, can solve such environmental

issues as containment of coal ash generated by coal-fired power plants, and red mud, which is a highly caustic byproduct from alumina manufacturing. In addition, the strengthening environmental regulations in China are driving demand for our unique solutions to address environmental issues in the region.

Our Building Materials and Environmental Products groups have a growing pipeline of sales opportunities for our newest technologies.

### BASIC MINERALS

Our Basic Minerals group provides drilling fluid additives, drilling products and ferro alloys used in a wide variety of end markets and industrial applications.











## CHINA GOVERNMENT MARKETING

MTI IS ACTIVELY ENGAGED IN A CHINA GOVERNMENT MARKETING INITIATIVE TO ASSURE THAT THE COMPANY'S TECHNOLOGIES BECOME THE INDUSTRY STANDARD ENDORSED BY GOVERNMENT AGENCIES.

Part of that initiative resulted in the company, in partnership with Sun Paper and Tsinghua University School of Environment, being chosen as one of six EcoPartnerships to pilot innovation with its NewYield® process technology aimed at reducing soil and ground water pollution by converting a waste stream from the papermaking process into a usable filler pigment for paper.

Through the EcoPartnership, Minerals Technologies, Sun Paper and Tsinghua University are demonstrating the capability to repurpose essentially 100 percent of a specific

waste stream generated in the papermaking process, providing a roadmap for the Chinese pulp and paper industry to reduce the adverse impact on soil and groundwater. The partnership resulted in a pilot plant to test and demonstrate the new technology in 2017. The results have been very positive. We will continue to work with our partners in China to innovate ways to localize the technology to China, evaluate the results of the technology deployment, recommend policy and regulatory action, and assess the steps necessary to drive change throughout the Chinese pulp and paper industry.





## REFRACTORIES

MINTEQ R&D HAS DEVELOPED A PORTFOLIO OF HIGHLY DURABLE MONOLITHIC REFRACTORY PRODUCTS THAT SPAN A RANGE OF APPLICATIONS IN BOTH BASIC OXYGEN AND ELECTRIC ARC FURNACES. THIS NEW PRODUCT PORTFOLIO IS GAINING BROADER MARKET ACCEPTANCE AND DEMONSTRATING THAT IT CAN DELIVER SIGNIFICANT VALUE TO CUSTOMERS.

Minteq's refractory products are an economical solution for steel customers, are especially easy to apply to the furnaces, and provide extended service life.

Minteq's technical service staff and application equipment assist customers in achieving desired productivity objectives. Our laser measurement systems also remain in strong demand and had record sales in 2017. Over the past several years, the Refractories segment has continued to develop, reformulate, and optimize its products and application technology to maintain its competitive advantage in the marketplace.





## ENERGY SERVICES

THE ENERGY SERVICES SEGMENT IS PRIMARILY FOCUSED ON OFFSHORE FILTRATION AND WELL TESTING.

The segment's filtration business has the most advanced technology for filtering produced water generated from offshore oil rigs, and we are actively working with oil companies in every major offshore oil basin.

Orca™ consulting services utilizes Energy Services' expertise to help customers solve produced water problems. The primary new technology the segment is commercializing is its Angler™ filtration system that filters produced water from offshore rigs four times faster than conventional practices and requires one-tenth the space.



# OPERATIONAL EXCELLENCE

MTI'S CULTURE IS ROOTED IN OPERATIONAL EXCELLENCE (OE) AND CONTINUOUS IMPROVEMENT IN EVERYTHING WE DO. WE TRAIN EVERY EMPLOYEE IN LEAN CONCEPTS AND THE USE OF LEAN TOOLS TO HELP THEM SOLVE PROBLEMS.

Today, all employees, from senior management to operators on the shop floor, follow these principles of Continuous Improvement to seek ways to reduce waste.

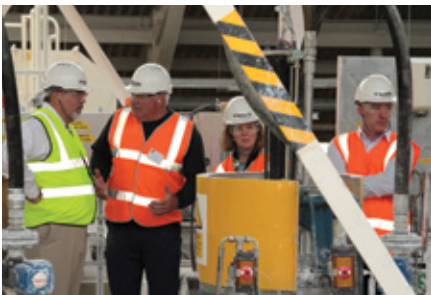
In 2017, MTI employees held more than 6,000 Kaizen events, which are highly focused improvement workshops around the world, which translates into 15 of these occurring



every day. The company's 3,700 employees also made in excess of 53,000 suggestions—of which nearly 70 percent were implemented.

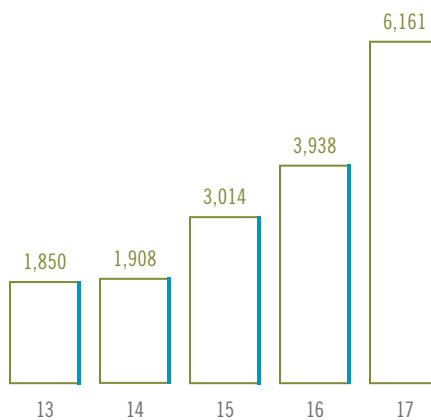
The result for 2017 was a 6-percent improvement in productivity that saved \$4 million. Moreover, 2017 marked the eighth consecutive year MTI has improved productivity—measured in tons-produced-per-hour—by more than 5 percent.

OE is an integral part of MTI's operating philosophy that is deeply embedded in the company culture as an important vehicle to make the company leaner, more competitive and ultimately more profitable.



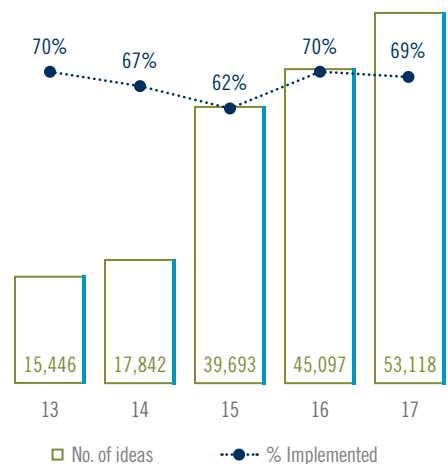
## KAIZEN EVENTS

# of Kaizen Events (by year)



## GLOBAL SUGGESTION SYSTEM

# of Suggestions (by year)



**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

**FORM 10-K**

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2017

**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 1-11430

**MINERALS TECHNOLOGIES INC.**

(Exact name of registrant as specified in its charter)

**Delaware**  
(State or other jurisdiction of  
incorporation or organization)

**25-1190717**  
(I.R.S. Employer  
Identification Number)

**622 Third Avenue**  
**38<sup>th</sup> Floor**  
**New York, New York**  
(Address of principal executive office)

**10017-6707**  
(Zip Code)

**(212) 878-1800**

(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, \$.10 par value	New York Stock Exchange

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

None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes  No

Indicate by check mark if Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act.

Yes  No

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes  No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files).

Yes  No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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  Accelerated Filer  Non-accelerated Filer  Smaller Reporting Company  Emerging Growth Company   
(Do not check if 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 Act). Yes  No

The aggregate market value of the voting stock held by non-affiliates of the Registrant, based upon the closing price at which the stock was sold as of July 2, 2017, was approximately \$2.3 billion. Solely for the purposes of this calculation, shares of common stock held by officers, directors and beneficial owners of 10% or more of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 7, 2018, the Registrant had outstanding 35,434,555 shares of common stock, all of one class.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's Proxy Statement for its 2018 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K.

**MINERALS TECHNOLOGIES INC.**  
**2017 FORM 10-K ANNUAL REPORT**  
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## PART I

### Item 1. Business

Minerals Technologies Inc. (together with its subsidiaries, the "Company", "we", "us" or "our") is a resource- and technology-based company that develops, produces, and markets on a worldwide basis a broad range of specialty mineral, mineral-based and synthetic mineral products and supporting systems and services.

During the first quarter of 2017, the Company announced the reorganization of its Performance Materials and Construction Technologies business segments into one operating segment, in order to generate greater alignment, speed decision making and accelerate growth.

The Company now has four reportable segments: Specialty Minerals, Performance Materials, Refractories and Energy Services.

- The Specialty Minerals segment produces and sells the synthetic mineral product precipitated calcium carbonate ("PCC") and processed mineral product quicklime ("lime"), and mines mineral ores then processes and sells natural mineral products, primarily limestone and talc. This segment is a leading supplier globally of PCC products to the paper industry. This segment's products are used principally in the paper, building materials, paint and coatings, glass, ceramic, polymer, food, automotive and pharmaceutical industries.
- The Performance Materials segment is a leading supplier of bentonite and bentonite-related products, chromite and leonardite. This segment also provides products for non-residential construction, environmental and infrastructure projects worldwide, serving customers engaged in a broad range of construction projects.
- The Refractories segment produces monolithic and shaped refractory materials and specialty products. It also provided services and sells application and measurement equipment, calcium metal and metallurgical wire products. Refractories segment products are primarily used in high-temperature applications in the steel, non-ferrous metal and glass industries.
- The Energy Services segment provides services to improve the production, costs, compliance, and environmental impact of activities performed in the oil and gas industry. This segment offers a range of services for off-shore filtration and well testing to the worldwide oil and gas industry.

The following table sets forth the percentage of our revenues generated from each segment for each of our last three fiscal years:

Percentage of Net Sales	2017	2016	2015
Specialty Minerals	35%	36%	35%
Performance Materials	44%	42%	39%
Refractories	17%	17%	16%
Energy Services	4%	5%	10%
Total	100%	100%	100%

The Company maintains a research and development focus. The Company's research and development capability for developing and introducing technologically advanced new products has enabled the Company to anticipate and satisfy changing customer requirements, creating market opportunities through new product development and product application innovations.

### Specialty Minerals Segment

#### *PCC Products and Markets*

The Company's PCC product line net sales were \$443.7 million, \$452.2 million and \$488.1 million for the years ended December 31, 2017, 2016 and 2015, respectively. The Company's sales of PCC have been, and are expected to continue to be, made primarily to the printing and writing papers segment of the paper industry. The Company also produces PCC for sale to companies in the polymer, food and pharmaceutical industries.

#### *PCC Products - Paper*

In the paper industry, the Company's PCC is used:

- As a filler in the production of coated and uncoated wood-free printing and writing papers, such as office papers;
- As a filler in the production of coated and uncoated groundwood (wood-containing) paper such as magazine and catalog papers; and
- As a coating pigment for both wood-free and groundwood papers.

The Company's Paper PCC product line net sales were \$377.7 million, \$387.9 million and \$423.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Approximately 23% of the Company's sales consist of PCC sold to papermakers from "satellite" PCC plants. A satellite PCC plant is a PCC manufacturing facility located near a paper mill, thereby eliminating costs of transporting PCC from remote production sites to the paper mill. The Company believes the competitive advantages offered by improved economics and superior optical characteristics of paper produced with PCC manufactured by the Company's satellite PCC plants resulted in substantial growth in the number of the Company's satellite PCC plants since the first such plant was built in 1986. For information with respect to the locations of the Company's PCC plants as of December 31, 2017, see Item 2, "Properties," below.

The Company currently manufactures several customized PCC product forms using proprietary processes. Each product form is designed to provide optimum balance of paper properties including brightness, opacity, bulk, strength and improved printability. The Company's research and development and technical service staff focuses on expanding sales from its existing and potential new satellite PCC plants, as well as, developing new technologies for new applications. These technologies include, among others, acid-tolerant ("AT<sup>®</sup>") PCC, which allows PCC to be introduced to the large wood-containing segment of the printing and writing paper market, OPACARB<sup>®</sup> PCC, a family of products for paper coating, our FulFill<sup>®</sup> family of products, a system of high-filler technologies that offers papermakers a variety of efficient, flexible solutions which decrease dependency on natural fibers, and New Yield<sup>®</sup>, an innovative technology that converts a paper and pulp mill waste stream into a functional pigment for filling paper.

The Company owns, staffs, operates and maintains all of its satellite PCC facilities, and owns or licenses the related technology. Generally, the Company and its paper mill customers enter into long-term evergreen agreements, initially ten years in length, pursuant to which the Company supplies substantially all of the customer's precipitated calcium carbonate filler requirements. The Company is generally permitted to sell to third-parties PCC produced at a satellite plant in excess of the host paper mill's requirement.

The Company also sells a range of PCC products to paper manufacturers from production sites not associated with paper mills. These merchant facilities are located at Adams, Massachusetts and Lifford, United Kingdom.

#### *PCC Markets - Paper*

*Uncoated Wood-Free Printing and Writing Papers – North America.* Beginning in the mid-1980's, as a result of a concentrated research and development effort, the Company's satellite PCC plants facilitated the conversion of a substantial percentage of North American uncoated wood-free printing and writing paper producers to lower-cost alkaline papermaking technology. The Company estimates that during 2017, more than 90% of North American uncoated wood-free paper was produced employing alkaline technology. Presently, the Company owns and operates 14 commercial satellite PCC plants located at paper mills that produce uncoated wood-free printing and writing papers in North America.

*Uncoated Wood-Free Printing and Writing Papers – Outside North America.* The Company estimates the amount of uncoated wood-free printing and writing papers produced outside of North America at facilities that can be served by satellite and merchant PCC plants is more than twice as large (measured in tons of paper produced) as the North American uncoated wood-free paper market currently served by the Company. The Company believes that the superior brightness, opacity and bulking characteristics offered by its PCC products allow it to compete with suppliers of ground limestone and other filler products outside of North America. Presently, the Company owns and operates 29 commercial satellite PCC plants located at paper mills that produce uncoated wood-free printing and writing papers outside of North America.

*Uncoated Groundwood Paper.* The uncoated groundwood paper market, including newsprint, represents approximately 20% of worldwide paper production. Paper mills producing wood-containing paper still generally employ acid papermaking technology. The conversion to alkaline technology by these mills has been hampered by the tendency of wood-containing papers to darken in an alkaline environment. The Company has developed proprietary application technology for the manufacture of high-quality groundwood paper in an acidic environment using PCC (AT<sup>®</sup> PCC). Furthermore, as groundwood or wood-containing paper mills use larger quantities of recycled fiber, there is a trend toward the use of neutral papermaking technology in this segment for which the Company presently supplies traditional PCC chemistries. The Company now supplies PCC at 6 groundwood paper mills around the world and licenses its technology to a ground calcium carbonate producer to help accelerate the conversion from acid to alkaline papermaking.

*Coated Paper.* The Company continues to pursue satellite PCC opportunities in coated paper markets where our products provide unique performance and/or cost reduction benefits to papermakers and printers. Our Opacarb product line is designed to create value to the papermaker and can be used alone or in combination with other coating pigments. PCC coating products are produced at 8 of the Company's PCC plants worldwide.

### *Specialty PCC Products and Markets*

The Company also produces and sells a full range of dry PCC products on a merchant basis for non-paper applications. The Company's Specialty PCC product line net sales were \$66.0 million, \$64.3 million and \$64.8 million for the years ended December 31, 2017, 2016 and 2015, respectively. The Company sells surface-treated and untreated grades of PCC to the polymer industry for use in automotive and construction applications, and to the adhesives and printing inks industries. The Company's PCC is also used by the food and pharmaceutical industries as a source of calcium in tablets and food applications, as a buffering agent in tablets, and as a mild abrasive in toothpaste. The Company produces PCC for specialty applications from production sites at Adams, Massachusetts and Lifford, England.

### *Processed Minerals - Products and Markets*

The Company mines and processes natural mineral products, primarily limestone and talc. The Company also manufactures lime, a limestone-based product. The Company's net sales of processed mineral products were \$141.1 million, \$139.3 million and \$136.5 million for the years ended December 31, 2017, 2016 and 2015, respectively. Net sales of talc products were \$53.8 million, \$55.7 million and \$55.9 million for the years ended December 31, 2017, 2016 and 2015, respectively. Net sales of ground calcium carbonate ("GCC") products, which are principally lime and limestone, were \$87.3 million, \$83.6 million and \$80.6 million for the years ended December 31, 2017, 2016 and 2015, respectively.

The Company mines and processes GCC products at its reserves in the eastern and western parts of the United States. GCC is used and sold in the construction, automotive and consumer markets.

Lime produced at the Company's Adams, Massachusetts, and Lifford, United Kingdom, facilities is used primarily as a raw material for the manufacture of PCC at these sites and is sold commercially to various chemical and other industries.

The Company mines, beneficiates and processes talc at its Barretts site, located near Dillon, Montana. Talc is sold worldwide in finely ground form for ceramic applications and in North America for paint and coatings and polymer applications. Because of the exceptional chemical purity of the Barretts ore, a significant portion of worldwide automotive catalytic converter ceramic substrates contain the Company's Barretts talc.

Our high quality limestone, dolomitic limestone, and talc products are defined primarily by the chemistry and color characteristics of the ore bodies. Ore samples are analyzed by x-ray fluorescence (XRF) and other techniques to determine purity and more generally by Hunter brightness measurement to determine dry brightness and the Hunter yellowness (b) value. We serve multiple markets from each of our operations, each of which has different requirements relating to a combination of chemical and physical properties.

### **Performance Materials Segment**

The Performance Materials segment is a leading supplier of bentonite and bentonite-related products. Bentonite is a sedimentary deposit containing greater than 50% montmorillonite and is volcanic in origin. It is surface mined and then dried, crushed, sent through grinding mills where it is sized to customer requirements, and transferred to silos for automatic bagging or bulk shipment. The processed bentonite may be chemically modified. Bentonite's unique chemical structure gives it a diverse range of capabilities, enabling it to act as a thickener, sealant, binder, lubricant or absorption agent. From a commercial standpoint, there are two primary types of natural bentonite, sodium and calcium. Sodium-bentonite is characterized by its ability to absorb large amounts of water and form viscous, thixotropic suspensions. Calcium-bentonite, in contrast, is characterized by its low water absorption and swelling capabilities and its inability to stay suspended in water. Each type of bentonite has its own unique applications. This segment also supplies chromite and leonardite, which is primarily used in metalcasting, drilling fluid additive, and agricultural applications. The principal products of this segment are marketed under various registered trade names, including VOLCLAY<sup>®</sup>, PANTHER CREEK<sup>®</sup>, PREMIUM GEL<sup>®</sup>, ADDITROL<sup>®</sup>, ENERSOL<sup>®</sup>, RAFINOL<sup>®</sup> and Hevi-Sand<sup>®</sup>.

In addition, the segment provides products for non-residential construction, environmental and infrastructure projects worldwide. It serves customers engaged in a broad range of construction projects, including site remediation, concrete waterproofing for underground structures, liquid containment on projects ranging from landfills to flood control, and drilling applications including foundation, slurry wall, tunneling, water well, and horizontal drilling.

The Performance Materials segment has five product lines – metalcasting; household, personal care and specialty products; basic minerals, environmental products and building materials.

### *Metalcasting - Products and Markets*

The metalcasting product line produces custom-blended mineral and non-mineral products to strengthen sand molds for casting auto parts, farm and construction equipment, oil and gas production equipment, power generation turbine castings and rail car components. These products help our customers in the foundry and casting industry to improve productivity by reducing scrap from metalcasting defects and poor surface quality. The ADDITROL<sup>®</sup> blends also improve the efficiency and recycling of sand blends in mold sand systems by lowering clay consumption, and improve air quality by reducing volatile organic compound emissions. Our

mine to mold operational capability has resulted in providing a consistent high quality product, technical support and reliable on-time delivery service valued by our customers.

In the ferrous casting market, the Company specializes in blending bentonite of various grades by themselves or with mineral binders containing sodium bentonite, calcium bentonite, seacoal and other ingredients. In the steel alloy casting market, the Company sells chromite products with a particle size distribution specific to customers' needs. One of chromite's qualities is its ability to conduct heat. Thus, the Company markets the product for use in making very large, high integrity, steel alloy castings where the chromite is better suited to withstand the high heat and pressure associated with the casting process.

In January 2015, the Company announced that it entered into an agreement with Glencore in South Africa, where the Company mines chromite. Under the agreement, Glencore supplies specialty sand chromite products from the Glencore-Merafe joint venture that will be exclusively distributed by the Company in certain territories, including the Americas. This product line was originally sold into the U.S. by the American Colloid Company (ACC) and over the past 90 years has grown in its use throughout the world including China, Thailand, Korea, Australia and Southeast Asia. Over the past three years, the Company has focused on further investment in China and India, where we saw significant sales growth in 2017.

The Company's metalcasting product line net sales were \$294.3 million in 2017, \$258.0 million in 2016 and \$266.4 million in 2015.

#### *Household, Personal Care and Specialty Products - Products and Markets*

The household, personal care and specialty products contain pet litter, fabric care, health and beauty, and agricultural specialty products.

The pet litter products include sodium bentonite-based scoopable (clumping), traditional and alternative cat litters sold to grocery and drug stores, mass merchandisers, wholesale clubs and pet specialty stores throughout North America, Europe and Asia. The Company's scoopable products' clump-forming capability traps urine, thereby reducing waste by allowing for easy removal of only the odor-producing elements from the litter box. The Company is primarily a provider of private-label cat litter to retail partners, as well as a provider of bulk cat litter to national brands and other private label packaging companies. In North America, these products are sold from three principal sites from which we package and distribute finished goods, as well as ship bulk material via rail cars. The Company's internal transportation group provides logistics services and is a key component of our capability in supplying customers on a national basis.

The Company supplies fabric care products and additives consisting of high-grade, agglomerated bentonite and other mineral additives that perform as softening agents in certain powdered-detergent formulations or act as carriers for colorants, surfactants and fragrances. These fabric care products are not only cost-effective but also provide product development capabilities to adapt along with our customers' requirements globally.

The Company manufactures personal care products consisting of polymer delivery systems and purified grades of bentonite ingredients for sale to manufacturers of skin care products. The polymers are used to deliver high-value active ingredients and the bentonite-based materials act as thickening, suspension and dispersion agent emollients for topical skin care formulations. The personal care products range from ingredient sales to fully formulated finished goods.

Specialty Materials include bentonite and leonardite based proprietary solutions for agricultural and industrial applications. Agricultural uses include crop harvest enhancements, natural animal health feed additives and vegetable cooking oil clarification.

The Company's household, personal care and specialty product line net sales were \$169.6 million in 2017, \$171.2 million in 2016 and \$172.7 million in 2015.

#### *Basic Minerals – Products and Markets*

Basic minerals and other products line contains sales of bentonite, chromite and leonardite to a variety of end markets and industrial application, including the following:

*Drilling Fluid Additives:* Sodium bentonite and leonardite are components of certain drilling fluids used in oil and gas well drilling. Bentonite imparts thickening and suspension properties that facilitate the transport of rock cuttings to the surface during the drilling process. It also contributes to a drilling fluid's ability to lubricate the drill bit and coat the underground formations to prevent hole collapse and drill-bit seizing. We market our drilling fluid additives under our own and private-label trade names. At least two drilling fluid service competitors have captive bentonite operations while others are party to long-term bentonite supply agreements. The potential customers for our products, therefore, are generally limited to those service organizations that are neither vertically integrated nor have long-term supply arrangements with other bentonite producers. Our primary trademark for this application is the trade name PREMIUM GEL®.

*Drilling Products:* Drilling products are used in environmental and geotechnical drilling applications, horizontal directional drilling, mineral exploration and foundation construction. The products are used to install monitoring wells, facilitate horizontal and water well drilling, and seal abandoned exploration drill holes. VOLCLAY GROUT™, HYDRAUL-EZ®, BENTOGROUT® and



VOLCLAY TABLETS™ are among the trade names for products used in these applications. Ground source heat loop systems utilizing GEOTHERMAL GROUT™ represent a developing area for drilling products. The Company also offers a range of drilling products used in the excavation of foundations for large buildings, bridges and dams; these products include SHORE PAC® and PREMIUM GEL®. The end-users for these products are typically small well drilling companies and general contractors.

*Ferro Alloys:* A by-product of our chromite processing operations for foundry products includes a chromite ore which has physical properties suited for use in producing ferrochrome. The ore generally needs to have chromite content in excess of 42% to meet metallurgical grade specifications. Manufacturers of stainless steel are the primary users of ferrochrome.

*Other Industrial:* The Company produces bentonite and bentonite blends for the construction industry to be used as a plasticizing agent in cement, and plaster and bricks. The Company also supplies bentonite to help pelletize other materials for ease of use. Examples of this application include the pelletizing of iron ore.

This product line also includes sales from our internal transportation and logistics group. The Company's basic minerals product line net sales were \$125.0 million in 2017, \$103.9 million in 2016 and \$106.0 million in 2015.

#### *Environmental Products - Products and Markets*

The environmental product line includes bentonite and polymer lining technologies, as well as, other environmental remediation applications.

The Company sells lining and other products for a variety of applications, most of which are directed to preserving or remediating environmental issues. The Company helps customers protect ground water and soil through the sale of geosynthetic clay liner products containing bentonite. These products are marketed under the RESISTEX® and BENTOMAT® trade names principally for lining and capping landfills, mine waste disposal sites and industrial waste storage sites, such as, bauxite residue and coal ash waste. The Company also provides associated geosynthetic materials for these applications, including geotextiles and drainage geocomposites.

Environmental Products also includes specialized technologies to mitigate vapor intrusion in new building construction. The Company's innovative vapor barrier systems prevent potentially harmful vapors from entering occupied space, thus facilitating low-risk redevelopment. The Company also provides reactive capping technologies and solutions to effectively contain residual contamination, reduce costs associated with ex-situ remedies, and aid in environmental protection. Products offered include Liquid Boot®, a liquid applied vapor barrier system; REACTIVE CORE-MAT™, an in-situ sediment capping material; ORGANOCLAY®, which absorbs organic containments; and QUIK-SOLID®, a super absorbent media.

The Company's environmental product line net sales were \$67.7 million in 2017, \$78.9 million in 2016 and \$69.7 million in 2015.

#### *Building Materials – Products and Markets*

The building materials product line includes various active and passive products for waterproofing of underground structures, commercial building envelopes and tunnels.

The Company offers a wide variety of active and passive waterproofing and greenroof technologies for use in protecting the building envelope of non-residential construction, including buildings, subways, and parkway systems. Our products include VOLTEX®, a waterproofing composite comprised of two polypropylene geotextiles filled with sodium bentonite; ULTRASEAL®, an advanced membrane using a unique active polymer core; and COREFLEX®, featuring heat-welded seams for protection of critical infrastructure. In addition to these membrane materials, we also provide roofing products and a variety of sealants and other accessories required to create a functional waterproofing system. The end-users of these products are generally building sub-contractors who are responsible for installing the products.

The Company's building materials product line net sales were \$78.2 million in 2017, \$74.1 million in 2016 and \$80.0 million in 2015.

### **Refractories Segment**

#### *Refractory - Products and Markets*

The Company offers a broad range of monolithic and pre-cast refractory products and related systems and services. The Company's Refractory segment net sales were \$279.4 million, \$274.5 million and \$295.9 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Refractory product sales are often supported by Company-supplied proprietary application equipment, laser measurement systems and on-site technical service support. The Company's proprietary application equipment is used to apply refractory materials to the walls of steel-making furnaces and other high temperature vessels to maintain and extend their useful life. Net sales of refractory products, including those for non-ferrous applications, were \$226.9 million, \$219.0 million and \$230.7 million for the years ended December 31, 2017, 2016 and 2015, respectively. The Company's proprietary application systems, such as its MINSCAN®, allow for

remote-controlled application of the Company's refractory products in steel-making furnaces, as well as, in steel ladles. Since the steel-making industry is characterized by intense price competition, which results in a continuing emphasis on increased productivity, these application systems and the technologically advanced refractory materials developed in the Company's research laboratories have been well accepted by the Company's customers. These products allow steel makers to improve their performance through, among other things, the application of monolithic refractories to furnace linings while the furnace is at operating temperature, thereby eliminating the need for furnace cool-down periods and steel-production interruption. The result is a lower overall cost for steel produced by steel makers. The Company also pursues cost-per-ton refractory contracts, where, together with other refractory companies, the Company is responsible for coordinating refractory maintenance of the steel furnaces and other steel production vessels. These opportunities provide longer-term stability and a closer working relationship with the customer.

The Company's technical service staff and application equipment assist customers to achieve desired productivity objectives. The Company's technicians are also able to conduct laser measurement of refractory wear, sometimes in conjunction with robotic application tools, to improve refractory performance at many customer locations. The Company believes that these services, together with its refractory product offerings, provide it with a strategic marketing advantage.

Over the past several years, the Refractories segment has continued to develop, reformulate, and optimize its products and application technology to maintain its competitive advantage in the market place. Some of the products the Company has developed and optimized in the past several years include:

- **HOTCRETE®**: High durability shotcrete products for applications at high temperatures in ferrous applications, such as, steel ladles, electric arc furnaces (EAF) and basic oxygen furnaces (BOF) furnaces.
- **FASTFIRE®**: High durability castable and shotcrete products in the non-ferrous and ferrous industries with the added benefit of rapid dry-out capabilities.
- **OPTIFORM®**: A system of products and equipment for the rapid continuous casting of refractories for applications, such as, steel ladle safety linings.
- **ENDURATEQ®**: A high durability refractory shape for glass contact applications, such as, plungers and orifice rings.
- **DECTEQ™**: A system for the automatic control of electrical power feeding electrodes used in electric arc steel making furnaces.
- **LACAM® Torpedo**: A laser scanning system that measures the refractory lining thickness inside a Hot Iron (Torpedo) Ladle. The torpedo ladles transport liquid iron from a blast furnace to the steel plant.
- **LACAM®**: A new, fourth generation Lacam® laser measurement device for use in the worldwide steel industry that is 17 times faster than the previous version. This new technology provides the fastest and most accurate laser scanning for hot surfaces available today.

The principal market for the Company's refractory products is the steel industry. Management believes that certain trends in the steel industry will provide growth opportunities for the Company within select geographic regions (e.g., China, Middle East, Eastern Europe and India). These trends include growth and quality improvements regarding the development of improved manufacturing processes, such as, thin-slab casting, the trend in North America to shift production from integrated mills to electric arc furnaces (mini-mills) and the ever-increasing need for improved productivity and longer lasting refractories.

The Company sells its refractory products in the following markets:

*Steel Furnace.* The Company sells gunnable monolithic refractory products and application systems to users of basic oxygen furnaces and electric arc furnaces for application on furnace walls to prolong the life of furnace linings.

*Other Iron and Steel.* The Company sells monolithic refractory materials and pre-cast refractory shapes for iron and steel ladles, vacuum degassers, continuous casting tundishes, blast furnaces and reheating furnaces. The Company offers a full line of materials to satisfy most continuous casting refractory applications. This full line consists of gunnable materials, refractory shapes and permanent linings.

*Industrial Refractory Systems.* The Company sells refractory shapes and linings to non-steel refractories consuming industries including glass, cement, aluminum and petrochemicals, power generation and other non-steel industries. The Company also produces a specialized line of carbon composites and pyrolytic graphite primarily sold under the PYROID® trademark, primarily to the aerospace and electronics industries.

#### *Metallurgical Products and Markets*

The Company produces a number of other technologically advanced products for the steel industry, including calcium metal, metallurgical wire products and a number of metal treatment specialty products. Net sales of metallurgical products were \$52.5 million, \$55.5 million and \$65.2 million for the years ended December 31, 2017, 2016 and 2015, respectively. The Company manufactures calcium metal at its Canaan, Connecticut, facility and purchases calcium in international markets. Calcium metal is used in the manufacture of the Company's PFERROCAL® solid-core calcium wire, and is also sold for use in the manufacture of batteries and magnets. We also manufacture cored wires at our Canaan, Connecticut and Hengelo, Netherlands, manufacturing sites.

The Company sells metallurgical wire products and associated wire-injection equipment for use in the production of high-quality steel. These metallurgical wire products are injected into molten steel to improve castability and reduce imperfections.

## **Energy Services Segment**

The Energy Services segment provides services to improve the production, costs, compliance, and environmental impact of activities performed in the oil and gas industry. The composition of customers within this segment varies from year to year and is significantly dependent on the type of activities each customer is undertaking within the year, regulations, and overall dynamics of the oil and gas industry. Due to the weak market conditions in the oil and gas sector, the Company exited the U.S. on-shore Nitrogen and Well Testing service lines during the second quarter of 2016. As a result, the Company currently provides services for off-shore filtration and well testing to the worldwide oil and gas industry. Services are provided through subsidiaries located in Australia, Brazil, Malaysia, Nigeria, Mexico, Indonesia, Saudi Arabia, the United Kingdom, and the U.S., in the Gulf of Mexico. Energy Services segment's net sales were \$76.7 million, \$85.9 million and \$182.2 million for the years ended December 31, 2017, 2016 and 2015, respectively.

### *Principal Services*

The Company provides the following principal services:

*Water Treatment / Filtration:* The Company helps customers comply with regulatory requirements by providing equipment, technologies, personnel and filtration media to treat waste water generated during oil production.

The Company specializes in water treatment processes and technologies to remove oil, hydrocarbons, heavy metals, solids, toxic materials and other contaminants from customers' operation wastewater stream through mechanical and chemical means.

*Well Testing:* The Company provides equipment and personnel to help customers control well production, as well as, to clean up, unload, separate, measure component flow, and capture fluids from oil and gas wells.

The Company delivers complete well testing solutions and effective operations in all testing environments.

## **Marketing and Sales**

The Company relies principally on its worldwide direct sales force to market its products. The direct sales force is augmented by technical service teams that are familiar with the industries to which the Company markets its products, and by several regional distributors. The Company's sales force works closely with the Company's technical service staff to solve technical and other issues faced by the Company's customers.

In the Specialty Minerals segment, the Company's technical service staff assists paper producers in ongoing evaluations of the use of PCC for paper coating and filling applications.

In the Performance Materials segment, the Company's industry-specialized sales group and technically oriented sales persons provide expertise not only to educate our customers on the bentonite blend properties but also to aid them in producing castings efficiently. Certain of our products are distributed through networks of distributors and representatives, who warehouse specific products at strategic locations. In addition, the sales and distribution of environmental products and building materials are primarily performed through the Company's own personnel and facilities. Our staff includes sales professionals and technical support engineers who analyze the suitability of our products in relation to the customer's specific application and the conditions that products will endure or the environment in which they will operate.

In the Refractory segment, the Company's technical service personnel advise on the use of refractory materials, and, in many cases pursuant to service agreements, apply the refractory materials to the customers' furnaces and other vessels.

In the Energy Services segment, the Company's employees sell the services on a direct basis.

Continued use of skilled technical service teams is an important component of the Company's business strategy. The Company works closely with its customers to ensure that their requirements are satisfied, and it often trains and supports customer personnel in the use of the Company's products. The Company oversees domestic marketing and sales activities principally from Bethlehem, Pennsylvania and Hoffman Estates, Illinois, and from regional sales offices located elsewhere in the United States. The Company's international marketing and sales efforts are directed from regional centers located in India, the United Kingdom, Brazil, and China. The Company believes that its worldwide network of sales personnel and manufacturing sites facilitates the continued international expansion.

## **Raw Materials**

The Company depends in part on having an adequate supply of raw materials for its manufacturing operations, particularly lime and carbon dioxide for the PCC product line, and magnesia and alumina for its Refractory operations. We also depend on having an adequate supply of bentonite, leonardite and chromite for our Performance Materials segment and limestone and talc for our Processed

Minerals product line. Supplies of bentonite, leonardite, chromite, limestone and talc are provided through the Company's own mining operations and we depend on having adequate access to ore reserves of appropriate quality at such mining operations.

The Company uses lime in the production of PCC and is a significant purchaser of lime worldwide. Generally, the lime utilized in our business is readily available from numerous sources and we purchase lime under long-term supply contracts from unaffiliated suppliers located in close geographic proximity to the Company's PCC plants. We also produce lime at our Adams, Massachusetts facility and our Lifford, UK facility, although most of the lime produced at our Adams facility and all of the lime produced at our Lifford facility is consumed in the production of Specialty PCC at the plant. We currently supply some quantities of lime to third parties that are in close proximity to our Adams plant and could supply small quantities of lime to certain of our PCC satellite facilities that are in close geographic proximity to the Adams plant. Carbon dioxide is readily available in exhaust gas from the host paper mills, or other operations at our merchant facilities.

The principal raw materials used in the Company's monolithic refractory products are refractory-grade magnesia and various forms of alumina silicates. Approximately 57% percent of the Company's magnesia requirements were purchased from sources in China over the past five years. The price and availability of bulk raw materials from China are subject to fluctuations that could affect the Company's sales to its customers. In addition, the volatility of transportation costs has also affected the delivered cost of raw materials imported from China to North America and Europe. The Company has developed alternate sources of magnesia over the past few years that have reduced our reliance on China-sourced magnesia. The amount sourced from China and other locations can vary from year to year depending upon price and availability from each source. The alumina we utilize in our business is readily available from numerous sources. The Company also purchases calcium metal, calcium silicide, graphite, calcium carbide and various alloys for use in the production of metallurgical wire products and uses lime and aluminum in the production of calcium metal.

In addition to bentonite, leonardite and chromite provided through our mining operations, our Performance Materials segment's principal raw materials are coal, soda ash and woven and unwoven polyester material, all of which are readily available from numerous sources.

#### *Mineral Reserves and Mining Process*

The Company relies on access to bentonite reserves to support its Performance Materials segment. The Company has reserves of sodium and calcium bentonite at various locations in the U.S., including Wyoming, South Dakota, Montana and Alabama, as well as in Australia, China, and Turkey. Through the Company's affiliations and joint ventures, the Company also has access to bentonite deposits in Egypt, India, and Mexico. Assuming the continuation of 2017 annualized usage rates, the Company has reserves of commercially usable sodium bentonite for the next 56 years. Under the same assumptions, the Company has reserves of commercially usable calcium bentonite for the next 49 years. The Company owns or controls the properties on which the bentonite reserves are located through long-term leases, royalty agreements (including easement and right of way agreements) and patented and unpatented mining claims. No single or group of mining claims or leases is significant or material to the financial condition or operations of our Company or our segments. The majority of our current bentonite mining in the U.S. occurs on reserves where our rights to such reserves accrue to us through over 80 mining leases and royalty agreements and 2,000 mining claims. A majority of these are with private parties and located in Montana, South Dakota and Wyoming. The bentonite deposits underlying these claims and leases generally lie in parcels of land varying between 20 and 40 acres.

In general, our bentonite reserves are immediately adjacent to, or within sixty miles of, one of the related processing plants. All of the properties on which our reserves are located are either physically accessible for the purposes of mining and hauling or the cost of obtaining physical access would not be material. Access to processing facilities from the mining areas is generally by private road, public highways, or railroads. For most of our leased properties and mining claims, there are multiple means of access.

Bentonite is surface mined, generally with large earthmoving scrapers, and then loaded into trucks and off-highway-haul wagons for movement to processing plants. The mining and hauling of our bentonite is done by us and by independent contractors. At the processing plants, bentonite is dried, crushed and sent through grinding mills, where it is sized to customer requirements, then chemically modified, where needed, and transferred to silos for automatic bagging or bulk shipment. Most of the production is shipped as processed rather than stored for inventory.

For our Performance Materials segment, we also mine leonardite, a form of oxidized lignite, in North Dakota, and chromite, an iron chromium oxide, in South Africa, and transport them to nearby processing facilities. Assuming the continuation of 2017 annualized usage rates, the Company has reserves of commercially usable leonardite for the next 97 years, and commercially usable chromite for the next 22 years.

The Processed Minerals product line of our Specialty Minerals segment is supported by the Company's limestone reserves located in the western and eastern parts of the United States, and talc reserves located in Montana. The Company generally owns and surface mines these reserves and processes its products at nearby processing plants. The Company estimates these reserves, at current usage levels, to be in excess of 40 years at its limestone production facilities and in excess of 14 years at its talc production facility.

The Company has ongoing exploration and development activities for all of its mineral interests with the intent to increase its proven and probable reserves.

See Item 2, "Properties," for more information with respect to those facilities.



The Company relies on shipping bulk cargos of bentonite from the United States, Turkey and China to customers, as well as our own subsidiaries, and we are sensitive to our ability to recover these shipping costs. In the last few years, bulk cargo shipping rates have been very volatile, and, to a lesser extent, the availability of bulk cargo containers has been sporadic.

## **Competition**

The Company is continually engaged in efforts to develop new products and technologies and refine existing products and technologies in order to remain competitive and to position itself as a market leader.

With respect to its PCC products, the Company competes for sales to the paper industry with other minerals, such as GCC and kaolin, based in large part upon technological know-how, patents and processes that allow the Company to deliver PCC that it believes imparts gloss, brightness, opacity and other properties to paper on an economical basis. The Company is the leading manufacturer and supplier of PCC to the paper industry.

The Company competes in sales of its limestone and talc based primarily upon quality, price, and geographic location.

For the Performance Materials segment, the Company competes on the basis of product quality, price, logistics, service, product availability and technical support. There are numerous major producers of competing products and various regional suppliers in the areas the Company serves. Some of the competitors, especially in the chromite market, are companies primarily in other lines of business with substantially greater financial resources than ours. With respect to the environmental products product line, the Company competes with geosynthetic clay liner manufacturers worldwide, several suppliers of alternative lining technologies, and providers of soil and environmental remediation solutions and products. The building materials product line competes in a highly fragmented market comprised of a wide variety of alternative technologies. A number of integrated bentonite companies compete with our drilling products.

With respect to the Company's refractory products, competitive conditions vary by geographic region. Competition is based upon the performance characteristics of the product (including strength, consistency and ease of application), price, and the availability of technical support.

The Energy Services segment competes with other oil and gas services companies. However, the Company believes that the Company offers several competitive advantages, especially in the area of water treatment services, due to superior and innovative technologies that the Company has developed internally and the combination of services that the Company can provide.

## **Seasonality**

Some of our products in the Performance Materials segment within the environmental and building materials product lines are impacted by weather and soil conditions. Many of the products cannot be applied in wet or winter weather conditions and, as such, sales and profits tend to be greater during the period from April through October. As a result, we consider the business of this segment to be seasonal. Our Processed Minerals product line of our Specialty Minerals segment is subject to similar seasonal patterns.

Much of the business in the Energy Services segment can be impacted by weather conditions. Our business is concentrated in the Gulf of Mexico where our customers' oil and gas production facilities are subject to natural disasters, such as hurricanes. Given this, our Energy Services sales could be lower in the June to November months. However, we can also experience periods of growth after a hurricane as customers require our services to start their operations back up.

## **Research and Development**

Many of the Company's product lines are technologically advanced. The Company's internal research team has dedicated years of experience into analyzing properties of minerals and synthetic materials while developing processes and applications to enhance their performance. Our expertise in inorganic chemistry, crystallography and structural analysis, fine particle technology and other aspects of materials science apply to and support all of our product lines. The Company's business strategy for growth in sales and profitability depends, to a large extent, on the continued success of its research and development activities.

In the Specialty Minerals segment, the significant achievements of the Company's research and development efforts include: the satellite PCC plant concept; PCC crystal morphologies for paper filling and coating; FulFill® high filler technology systems; NewYield® Waste Stream Process Technology; Thixocarb® PCC, Vicality® USP PCC, EMforce®, and Optibloc® for the Processed Minerals and Specialty PCC product lines.

The FulFill® brand High Filler Technology is a portfolio of high-filler technologies that offers papermakers a variety of efficient, flexible solutions that decreases dependency on natural fiber and reduces costs. The FulFill® E and V series allows papermakers to increase filler loading levels of precipitated calcium carbonate (PCC), which replaces higher cost pulp, and increases PCC usage. Depending on paper grades, this PCC volume increase may range from 15 to 30 percent. The Company has signed agreements with over 25 paper mills and is actively engaged with additional paper mill sites for further FulFill® deployment. NewYield™ Waste Stream Process Technology cost-effectively converts a problematic pulp mill waste stream into a functional pigment for filling paper,

eliminating the cost of environmental disposal and remediation of certain waste streams to papermakers. Product and Technology has been validated at commercial scale in a pulping operation and papermaking system in China, with several current projects underway.

The Company's Performance Materials segment also offers a strong portfolio of custom blended compounds, formulations and technology, which have been primarily developed internally by the Company's research and development efforts. The Additrol® formulation, a custom blend, meets the need of both ferrous and non-ferrous applications. The Volclay® application is used in green sand molding applications ranging from the production of iron and steel castings to the production of non-ferrous castings. The Hevi-Sand® specialty chromite blend prevents metal penetration and can be used with most foundry binders in molds and cores. In addition, the Company's RESISTEX™ and CONTINUUM® formulation enables withstanding aggressive leachates. The ORGANOCLAY® technology offers highly effective solutions in effective in removing oils, greases and other high molecular weight, low solubility organic compounds from aqueous streams. The Company will also continue to seek out promising compounds and innovative technologies, developed mainly by our internal research team, to incorporate into our product lines.

In the Refractories segment, the Company's achievements include the development of FASTFIRE® and OPTIFORM® shotcrete refractory products; LACAM® laser-based refractory measurement systems; and the MINSCAN® and HOTCRETE® application systems. The Company will continue to reformulate its refractory materials to be more competitive.

For the years ended December 31, 2017, 2016 and 2015, the Company spent approximately \$23.7 million, \$23.8 million and \$23.6 million, respectively, on research and development. The Company's research and development spending for 2017, 2016 and 2015 was approximately 1.4%, 1.5% and 1.3% of net sales, respectively.

The Company maintains its primary research facilities in Bethlehem and Easton, Pennsylvania; Broussard, Louisiana; and Hoffman Estates, Illinois. It also has research and development facilities in China, England, Germany, Ireland, Japan and Turkey. Approximately 204 employees worldwide are engaged in research and development. In addition, the Company has access to some of the world's most advanced papermaking and paper coating pilot facilities.

## **Patents and Trademarks**

The Company owns or has the right to use approximately 447 patents and approximately 1,656 trademarks related to its business. Our patents expire between 2018 and 2036. Our trademarks continue indefinitely. The Company believes that its rights under its existing patents, patent applications and trademarks are of value to its operations, but no one patent, application or trademark is material to the conduct of the Company's business as a whole.

## **Insurance**

The Company maintains liability and property insurance and insurance for business interruption in the event of damage to its production facilities and certain other insurance covering risks associated with its business. The Company believes such insurance is adequate for the operation of its business. There is no assurance that in the future the Company will be able to maintain the coverage currently in place or that the premiums will not increase substantially.

## **Employees**

At December 31, 2017, the Company employed 3,657 persons, of whom 1,923 were employed outside of the United States.

## **Environmental, Health and Safety Matters**

The Company's operations are subject to federal, state, local and foreign laws and regulations relating to the environment and health and safety. In particular, we are subject to certain requirements under the Clean Air Act. In addition, certain of the Company's operations involve and have involved the use and release of substances that have been and are classified as toxic or hazardous within the meaning of these laws and regulations. Environmental operating permits are, or may be, required for certain of the Company's operations and such permits are subject to modification, renewal and revocation. We are also subject to land reclamation requirements. The Company regularly monitors and reviews its operations, procedures and policies for compliance with these laws and regulations. The Company believes its operations are in substantial compliance with these laws and regulations and that there are no violations that would have a material effect on the Company. Despite these compliance efforts, some risk of environmental and other damage is inherent in the Company's operations, as it is with other companies engaged in similar businesses, and there can be no assurance that material violations will not occur in the future. The cost of compliance with these laws and regulations is not expected to have a material adverse effect on the Company.

Laws and regulations are subject to change. See Item 1A, Risk Factors, for information regarding the possible effects that compliance with new environmental laws and regulations, including those relating to climate change, may have on our businesses and operating results.

Under the terms of certain agreements entered into in connection with the Company's initial public offering in 1992, Pfizer Inc. ("Pfizer") agreed to indemnify the Company against certain liabilities being retained by Pfizer and its subsidiaries including, but not

limited to, pending lawsuits and claims, and any lawsuits or claims brought at any time in the future alleging damages or injury from the use, handling of or exposure to any product sold by Pfizer's specialty minerals business prior to the closing of the initial public offering.

## Available Information

The Company maintains an internet website located at <http://www.mineralstech.com>. Its reports on Forms 10-K, 10-Q and 8-K, and amendments to those reports, as well as its Proxy Statement and filings under Section 16 of the Securities Exchange Act of 1934 are available free of charge through the Investor Relations page of its website, as soon as reasonably practicable after they are filed with the Securities and Exchange Commission ("SEC"). Investors may access these reports through the Company's website by navigating to "Investor Relations" and then to "SEC Filings."

Financial information concerning our business segments and the geographical areas in which we operate appears in the Notes to the Consolidated Financial Statements. Information related to our executive officers is included in Item 10, "Directors, Executive Officers and Corporate Governance."

## Item 1A. Risk Factors

Our business faces significant risks. Set forth below are all risks that we believe are material at this time. Our business, financial condition and results of operations could be materially adversely affected by any of these risks. These risks should be read in conjunction with the other information in this Annual Report on Form 10-K.

- ***Worldwide general economic, business, and industry conditions have had, and may continue to have, an adverse effect on the Company's results.***

The global economic instability experienced in recent years had caused, among other things, declining consumer and business confidence, volatile raw material prices, instability in credit markets, high unemployment, fluctuating interest and exchange rates, and other challenges in the countries in which we operate. The Company's business and operating results had been and could once again be adversely affected by these global economic conditions. The Company's customers and potential customers may experience deterioration of their businesses, cash flow shortages, and difficulty obtaining financing. As discussed below, the industries we serve have in the past been adversely affected by the uncertain global economic climate due to the cyclical nature of their businesses. As a result, existing or potential customers may reduce or delay their growth and investments and their plans to purchase products, and may not be able to fulfill their obligations in a timely fashion. Further, suppliers could experience similar conditions, which could affect their ability to fulfill their obligations to the Company. Adversity within capital markets may also impact the Company's results of operations by negatively affecting the amount of expense the Company records for its pension and other postretirement benefit plans. Actuarial valuations used to calculate income or expense for the plans reflect assumptions about financial market and other economic conditions – the most significant of which are the discount rate and the expected long-term rate of return on plan assets. Such actuarial valuations may change based on changes in key economic indicators. Global economic markets remain uncertain, and there can be no assurance that market conditions will improve in the near future. Future weakness in the global economy could materially and adversely affect our business and operating results.

- ***Our customers' businesses are cyclical or have changing regional demands. Our operations are subject to these trends and we may not be able to mitigate these risks.***
  - Our Performance Materials segment's sales are predominantly derived from the metalcasting market. The metalcasting market is dependent upon the demand for castings for automobile components, farm and construction equipment, oil and gas production equipment, power generation turbine castings, and rail car components. Many of these types of equipment are sensitive to fluctuations in demand during periods of recession or difficult economic conditions, which ultimately may affect the demand for our Performance Materials segment's products and services.
  - In the paper industry, which is served by our Paper PCC product line, production levels for uncoated freesheet within North America and Europe, our two largest markets are projected to continue to decrease. The reduced demand for premium writing paper products has also caused recent paper mill closures.
  - Our Refractories segment primarily serves the steel industry. North American and European steel production continues to be affected by global volatility and overcapacity in the market.
  - Demand for our Energy Services segment's products and services is affected by the level of exploration, development, and production activity of, and the corresponding capital spending by, oil and natural gas companies, which are heavily influenced by the benchmark price of these commodities. Oil and natural gas prices decreased significantly in 2014 and 2015, with West Texas Intermediate (WTI) oil spot prices declining from a high of \$108 per barrel in June 2014 to a low of \$26 per barrel in February 2016. This has caused oil and natural gas companies to reduce their capital expenditures and production and exploration activities. This has the effect



of decreasing the demand and increasing competition for the services we provide. In addition, the performance of our Energy Services segment is affected by changes in technologies, locations of customers' targeted reserves, and competition in various geographic markets.

- Our Environmental Products and Building Materials products sales are predominantly derived from the commercial construction and infrastructure markets. In addition, our Processed Minerals and Specialty PCC product lines are affected by the domestic building and construction markets, as well as the automotive market.

Demand for our products is subject to trends in these markets. During periods of economic slowdown, our customers often reduce their capital expenditures and defer or cancel pending projects. Such developments occur even amongst customers that are not experiencing financial difficulties. In addition, these trends could cause our customers to face liquidity issues or bankruptcy, which could deteriorate the aging of our accounts receivable, increase our bad debt exposure and possibly trigger impairment of assets or realignment of our businesses. The Company has taken steps to reduce its exposure to variations in its customers' businesses, including by diversifying its portfolio of products and services; through geographic expansion, and by structuring most of its long-term satellite PCC contracts to provide a degree of protection against declines in the quantity of product purchased, since the price per ton of PCC generally rises as the number of tons purchased declines. In addition, many of the Company's product lines lower its customers' costs of production or increase their productivity, which should encourage them to use its products. However, there can be no assurance that these efforts will mitigate the risks of our dependence on these industries. Continued weakness in the industries we serve has had, and may in the future have, an adverse effect on sales of our products and our results of operations. A continued or renewed economic downturn in one or more of the industries or geographic regions that the Company serves, or in the worldwide economy, could cause actual results of operations to differ materially from historical and expected results.

- ***The Company's results could be adversely affected if it is unable to effectively achieve and implement its growth initiatives.***

Sales and income growth of the Company depends upon a number of uncertain events, including the outcome of the Company's strategies of increasing its penetration into geographic markets such as Brazil, Russia, India and China as well as other Asian and Eastern European countries; increasing its penetration into product markets such as the market for papercoating pigments and the market for groundwood paper pigments; increasing sales to existing PCC customers by increasing the amount of PCC used per ton of paper produced; developing, introducing and selling new products such as the FulFill® family of products for the paper industry. Difficulties, delays or failure of any of these strategies could affect the future growth rate of the Company. Our strategy also anticipates growth through future acquisitions. However, our ability to identify and consummate any future acquisitions on terms that are favorable to us may be limited by the number of attractive acquisition targets, internal demands on our resources and our ability to obtain financing. Our success in integrating newly acquired businesses will depend upon our ability to retain key personnel, avoid diversion of management's attention from operational matters, and integrate general and administrative services. In addition, future acquisitions could result in the incurrence of additional debt, costs and contingent liabilities. Integration of acquired operations may take longer, or be more costly or disruptive to our business, than originally anticipated, and it is also possible that expected synergies from future acquisitions may not materialize. We also may incur costs and divert management attention with regard to potential acquisitions that are never consummated.

- ***Servicing the Company's debt will require a significant amount of cash. This could reduce the Company's flexibility to respond to changing business and economic conditions or fund capital expenditures or working capital needs. Our ability to generate cash depends on many factors beyond our control.***

At December 31, 2017, the Company had outstanding borrowings of \$1.0 billion pursuant to our senior secured credit facility. This financing will require a significant amount of cash to make interest payments. Further, the interest rate on a significant portion of our borrowings under our senior secured credit facility is based on LIBOR interest rates, which could result in higher interest expense in the event of an increase in interest rates. Our ability to pay interest on our debt and to satisfy our other debt obligations will depend in part upon our future financial and operating performance and upon our ability to renew or refinance borrowings. Prevailing economic conditions and financial, business, competitive, regulatory and other factors, many of which are beyond our control, will affect our ability to make these payments. We cannot guarantee that our business will generate sufficient cash flow from operations or that future borrowings will be available to us in an amount sufficient to enable us to fund our liquidity needs. If we are unable to generate sufficient cash flow to meet our debt service obligations, we will have to pursue one or more alternatives, such as reducing or delaying capital or other expenditures, refinancing debt, selling assets, or raising equity capital. Further, the requirement to make significant interest payments may reduce the Company's flexibility to respond to changing business and economic conditions or fund capital expenditure or working capital needs and may increase the Company's vulnerability to adverse economic conditions.

- ***Our senior secured credit facility contains various covenants that limit our ability to take certain actions and our revolving credit facility, if used, also requires us to meet financial maintenance tests, failure to comply with which could have a material adverse effect on us.***

The agreement governing our senior secured credit facility contains a number of significant covenants that, among other things, limit our ability to: incur additional debt or liens, consolidate or merge with any other person, alter the business we conduct, make investments, use the proceeds of asset sales or sale/leaseback transactions, enter into hedging arrangements, pay dividends or make certain other restricted payments, create dividend or other payment restrictions with respect to subsidiaries, and enter into transactions with affiliates. In addition, our revolving credit facility, if used, requires us to comply with specific financial ratios, including a maximum net leverage ratio, under which we are required to achieve specific financial results. Our ability to comply with these provisions may be affected by events beyond our control. A breach of any of these covenants would result in a default under the agreements. In the event of any default, our lenders could elect to declare all amounts borrowed under the agreements, together with accrued interest thereon, to be due and payable. In such an event, we cannot assure you that we would have sufficient assets to pay debt then outstanding under the agreements governing our debt. Any future refinancing of the senior secured credit facility is likely to contain similar restrictive covenants.

- ***The Company's sales of PCC could be adversely affected by our failure to renew or extend long term sales contracts for our satellite operations.***

The Company's sales of PCC to paper customers are typically pursuant to long-term evergreen agreements, initially ten years in length, with paper mills where the Company operates satellite PCC plants. Sales pursuant to these contracts represent a significant portion of our worldwide Paper PCC sales, which were \$377.7 million in 2017, or approximately 23% of the Company's net sales. The terms of many of these agreements have been extended or renewed in the past, often in connection with an expansion of the satellite plant. However, failure of a number of the Company's customers to renew or extend existing agreements on terms as favorable to the Company as those currently in effect, or at all, could have a substantial adverse effect on the Company's results of operations, and could also result in impairment of the assets associated with the PCC plant.

- ***The Company's sales could be adversely affected by consolidation in customer industries, principally paper, foundry and steel.***

Several consolidations in the paper industry have taken place in recent years and such consolidation could continue in the future. These consolidations could result in partial or total closure of some paper mills where the Company operates PCC satellites. Such closures would reduce the Company's sales of PCC, except to the extent that they resulted in shifting paper production and associated purchases of PCC to another location served by the Company. Similarly, consolidations have occurred in the foundry and steel industries. Such consolidations in the major industries we serve concentrate purchasing power in the hands of a smaller number of manufacturers, enabling them to increase pressure on suppliers, such as the Company. This increased pressure could have an adverse effect on the Company's results of operations in the future.

- ***The Company is subject to stringent regulation in the areas of environmental, health and safety, and tax, and may incur unanticipated costs or liabilities arising out of claims for various legal, environmental and tax matters or product stewardship issues.***

The Company's operations are subject to international, federal, state and local governmental environmental, health and safety, tax and other laws and regulations. We have expended, and may be required to expend in the future, substantial funds for compliance with such laws and regulations. In addition, future events, such as changes to or modifications of interpretations of existing laws and regulations, or enforcement policies, or further investigation or evaluation of the potential environmental impacts of operations or health hazards of certain products, may affect our mining rights or give rise to additional compliance and other costs that could have a material adverse effect on the Company. Further, certain of our customers are subject to various federal and international laws and regulations relating to environmental and health and safety matters, especially our Energy Services customers who are subject to drilling permits, waste water disposal and other regulations. To the extent that these laws and regulations affecting our customers change, demand for our products and services could also change and thereby affect our financial results. State, national, and international governments and agencies have been evaluating climate-related legislation and regulation that would restrict emissions of greenhouse gases in areas in which we conduct business, and some such legislation and regulation have already been enacted or adopted. Enactment of climate-related legislation or adoption of regulation that restrict emissions of greenhouse gases in areas in which we conduct business could have an adverse effect on our operations or demand for our products. Our manufacturing processes, particularly the manufacturing process for PCC, use a significant amount of energy and, should energy prices increase as a result of such legislation or regulation, we may not be able to pass these increased costs on to purchasers of our products. We cannot predict if or when currently proposed or additional laws and regulations regarding climate change or other environmental or health and safety concerns will be enacted or adopted.

The Company is also subject to income tax laws and regulations in the United States and various foreign jurisdictions. Significant judgment is required in evaluating and estimating our provision and accruals for these taxes. Our income tax liabilities are dependent upon the location of earnings among these different jurisdictions. Our income tax provision and income tax liabilities could be adversely affected by the jurisdictional mix of earnings, changes in valuation of deferred tax assets and liabilities and changes in tax treaties, laws and regulations, including the U.S. Tax Cuts and Jobs Act of 2017,

which effected significant changes to the U.S. corporate income tax system. Our preliminary estimate of the effects of this law, including a mandatory deemed repatriation tax on our foreign subsidiaries' previously untaxed foreign earnings and the remeasurement of our deferred tax assets and liabilities, is subject to finalization of management's analysis related to certain matters, such as developing interpretations of the provisions of the law, changes to certain estimates and amounts related to the earnings and profits of certain subsidiaries and the filing of our tax returns. Changes to our preliminary estimate of the effects of this law, which will be recorded in the period completed, could have a material adverse effect on the Company's financial condition or results of operations, as well as our effective tax rate in the period in which the adjustments are made.

The Company is currently a party in various litigation matters and tax and environmental proceedings and faces risks arising from various unasserted litigation matters, including, but not limited to, product liability, patent infringement, antitrust claims, and claims for third party property damage or personal injury stemming from alleged environmental torts. Failure to appropriately manage safety, human health, product liability and environmental risks associated with the Company's products and production processes could adversely impact the Company's employees and other stakeholders, the Company's reputation and its results of operations. Public perception of the risks associated with the Company's products and production processes could impact product acceptance and influence the regulatory environment in which the Company operates. While the Company has procedures and controls to manage these risks, carries liability insurance, which it believes to be appropriate to its businesses, and has provided reserves for current matters, which it believes to be adequate, an unanticipated liability, arising out of a current matter or proceeding or from the other risks described above, could have a material adverse effect on the Company's financial condition or results of operations.

- ***Delays or failures in new product development could adversely affect the Company's operations.***

The Company's future business success will depend in part upon its ability to maintain and enhance its technological capabilities, to respond to changing customer needs, and to successfully anticipate or respond to technological changes on a cost-effective and timely basis. The Company is engaged in a continuous effort to develop new products and processes in all of its product lines. Difficulties, delays or failures in the development, testing, production, marketing or sale of such new products could cause actual results of operations to differ materially from our expected results.

- ***The Company's ability to compete is dependent upon its ability to defend its intellectual property against inappropriate disclosure and infringement.***

The Company's ability to compete is based in part upon proprietary knowledge, both patented and unpatented. The Company's ability to achieve anticipated results depends in part on its ability to defend its intellectual property against inappropriate disclosure as well as against infringement. In addition, development by the Company's competitors of new products or technologies that are more effective or less expensive than those the Company offers could have a material adverse effect on the Company's financial condition or results of operations.

- ***The Company's operations could be impacted by the increased risks of doing business abroad.***

The Company does business in many areas internationally. Approximately 44% of our sales in 2017 were derived from outside the United States and we have significant production facilities which are located outside of the United States. We have in recent years expanded our operations in emerging markets, and we plan to continue to do so in the future, particularly in China, India, Brazil, the Middle East, and Eastern Europe. Some of our operations are located in areas that have experienced political or economic instability, including Indonesia, Malaysia, Nigeria, Egypt, Russia, Saudi Arabia, Turkey, Brazil, Thailand, China and South Africa. The UK's decision to exit the European Union (referred to as Brexit) has caused additional volatility in the markets and currency exchange rates. Market conditions and exchange rates could continue to be volatile in the near term as this decision is implemented. As the Company expands its operations overseas, it faces increased risks of doing business abroad, including inflation, fluctuation in interest rates, changes in applicable laws and regulatory requirements, export and import restrictions, tariffs, nationalization, expropriation, limits on repatriation of funds, civil unrest, terrorism, unstable governments and legal systems, and other factors. Many of these risks are beyond our control and can lead to sudden, and potentially prolonged, changes in demand for our products, difficulty in enforcing agreements, and losses in the realizability of our assets. Adverse developments in any of the areas in which we do business could cause actual results to differ materially from historical and expected results. In addition, a significant portion of our raw material purchases and sales outside the United States are denominated in foreign currencies, and liabilities for non-U.S. operating expenses and income taxes are denominated in local currencies. Accordingly, reported sales, net earnings, cash flows and fair values have been and, in the future, will be affected by changes in foreign currency exchange rates. Our overall success as a global business depends, in part, upon our ability to succeed in differing legal, regulatory, economic, social and political conditions. We cannot assure you that we will implement policies and strategies that will be effective in each location where we do business.



- ***The Company's operations are dependent on the availability of raw materials and access to ore reserves at its mining operations. Increases in costs of raw materials, energy, or shipping could adversely affect our financial results.***

The Company depends in part on having an adequate supply of raw materials for its manufacturing operations, particularly lime and carbon dioxide for the PCC product line, and magnesia and alumina for its Refractory operations. Purchase prices and availability of these critical raw materials are subject to volatility. At any given time, we may be unable to obtain an adequate supply of these critical raw materials on a timely basis, on price and other terms, or at all. While most such raw materials are readily available, the Company has purchased approximately 57% of its magnesia requirements from sources in China over the past five years. The price and availability of magnesia have fluctuated in the past and they may fluctuate in the future. Price increases for certain other of our raw materials, including petrochemical products, as well as increases in energy prices, have also affected our business. Our production processes consume a significant amount of energy, primarily electricity, diesel fuel, natural gas and coal. We use diesel fuel to operate our mining and processing equipment and our freight costs are heavily dependent upon fuel prices and surcharges. Energy costs also affect the cost of raw materials. On a combined basis, these factors represent a large exposure to petrochemical and energy products which may be subject to significant price fluctuations. The contracts pursuant to which we construct and operate our satellite PCC plants generally adjust pricing to reflect the pass-through of increases in costs resulting from inflation, including energy. However, there is a time lag before such price adjustments can be implemented. The Company and its customers will typically negotiate reasonable price adjustments in order to recover these escalating costs, but there can be no assurance that we will be able to recover increasing costs through such negotiations.

The Company also depends on having adequate access to ore reserves of appropriate quality at its mining operations. There are numerous uncertainties inherent in estimating ore reserves including subjective judgments and determinations that are based on available geological, technical, contract and economic information.

The Company relies on shipping bulk cargos of bentonite from the United States, Turkey and China to customers, as well as our own subsidiaries, and we are sensitive to our ability to recover these shipping costs. In the last few years, bulk cargo shipping rates have been very volatile, and, to a lesser extent, the availability of bulk cargo containers has been suspect. If we cannot secure our container requirements or offset additional shipping costs with price increases to customers, our profitability could be impacted. We are also subject to other shipping risks. In particular, rail service interruptions have affected our ability to ship, and the availability of rail service, and our ability to recover increased rail costs, may be beyond our control.

- ***The Company operates in very competitive industries, which could adversely affect our profitability.***

The Company has many competitors. Some of our principal competitors have greater financial and other resources than we have. Accordingly, these competitors may be better able to withstand economic downturns and changes in conditions within the industries in which we operate and may have significantly greater operating and financial flexibility than we do. We also face competition for some of our products from alternative products, and some of the competition we face comes from competitors in lower-cost production countries like China and India. As a result of the competitive environment in the markets in which we operate, we currently face and will continue to face pressure on the sales prices of our products from competitors, which could reduce profit margins.

- ***Production facilities are subject to operating risks and capacity limitations that may adversely affect the Company's financial condition or results of operations.***

The Company is dependent on the continued operation of its production facilities. Production facilities are subject to hazards associated with the manufacturing, handling, storage, and transportation of chemical materials and products, including pipeline leaks and ruptures, explosions, fires, inclement weather and natural disasters, mechanical failure, unscheduled downtime, labor difficulties, transportation interruptions, and environmental risks. We maintain property, business interruption and casualty insurance but such insurance may not cover all risks associated with the hazards of our business and is subject to limitations, including deductibles and maximum liabilities covered. We may incur losses beyond the limits, or outside the coverage, of our insurance policies. Further, from time to time, we may experience capacity limitations in our manufacturing operations. In addition, if we are unable to effectively forecast our customers' demand, it could affect our ability to successfully manage operating capacity limitations. These hazards, limitations, disruptions in supply and capacity constraints could adversely affect financial results.

- ***Operating results for some of our segments are seasonal.***

Our Energy Services Segment and certain product lines within our Performance Materials segment are affected by seasonal weather patterns. A majority of our Energy Services revenues are derived from the Gulf of Mexico and surrounding states, which are susceptible to hurricanes that typically occur June 1<sup>st</sup> through November 30<sup>th</sup>. In addition, it is affected by customers' demands for natural gas. Natural gas is affected by weather patterns as colder winters increase the demand for natural gas to heat homes and warmer summers increase the demand for natural gas to fuel generators providing electricity to run air conditioners. Actual or threatened hurricanes or changes in the demand for natural gas can

result in volatile demand for services provided by our Energy Services segment. Our Environmental Products and Building Materials product lines within our Performance Materials segment are affected by weather patterns which determine the feasibility of construction activities. Typically, less construction activity occurs in winter months and thus this segment's revenues tend to be greatest in the second and third quarters when weather patterns in our geographic markets are more conducive to construction activities. Our Processed Minerals product line is subject to similar seasonal patterns.

- ***Our operations are subject to cyber-attacks that could have a material adverse impact on our business, consolidated results of operations, and consolidated financial condition.***

Our operations are becoming increasingly dependent on digital technologies and services. We use these technologies for internal purposes, including data storage, processing, and transmissions, as well as in our interactions with customers and suppliers. Digital technologies are subject to the risk of cyber-attacks. If our systems for protecting against cybersecurity risks prove not to be sufficient, we could be adversely affected by, among other things: loss of or damage to intellectual property, proprietary or confidential information, or customer, supplier, or employee data; interruption of our business operations; and increased costs required to prevent, respond to, or mitigate cybersecurity attacks. These risks could harm our reputation and our relationships with customers, suppliers, employees, and other third parties, and may result in claims against us. In addition, these risks could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition.

#### **Item 1B. Unresolved Staff Comments**

None.

## Item 2. Properties

The Company's corporate headquarters, sales offices, research laboratories, plants, mines and other facilities are owned by the Company except as otherwise noted. Set forth below is certain information relating to the Company's principal plants and office and research facilities.

Location	Facility	Product Line	Segment
<b>United States</b>			
Alabama, Sandy Ridge	Plant; Mine	Metalcasting, basic minerals and specialty products	Performance Materials
Arizona, Pima County	Plant; Mine <sup>1</sup>	Limestone	Specialty Minerals
California, Lucerne Valley	Plant; Mine	Limestone	Specialty Minerals
Connecticut, Canaan	Plant; Mine	Limestone, Metallurgical Wire/Calcium	Specialty Minerals; Refractories
Georgia, Cartersville	Plant	Environmental products and other building materials products	Performance Materials
Illinois, Belvidere	Plant	Metalcasting products	Performance Materials
Illinois, Hoffman Estates	Research laboratories; Administrative office <sup>2</sup>	All Company Products	All Segments
Indiana, Portage	Plant	Refractories/Shapes	Refractories
Indiana, Troy	Plant	Metalcasting products	Performance Materials
Iowa, Shell Rock	Plant	Metalcasting products	Performance Materials
Louisiana, Baton Rouge	Plant	Monolithic Refractories	Refractories
Louisiana, Broussard	Research laboratories <sup>2</sup>	Filtration and well testing services	Energy Services
Louisiana, Lafayette	Plant	Personal care products	Performance Materials
Houston, TX	Headquarter, Administrative Office <sup>2</sup>		Energy Services
Louisiana, New Iberia	Operations base <sup>2</sup>	Filtration and Well testing services	Energy Services
Massachusetts, Adams	Plant; Mine	Limestone, Lime, PCC	Specialty Minerals
Michigan, Albion	Plant	Metalcasting products	Performance Materials
Mississippi, Aberdeen	Plant	Performance additive products	Performance Materials
Montana, Dillon	Plant; Mine	Talc	Specialty Minerals
Nebraska, Scottsbluff	Transportation terminal		Performance Materials
New York, New York	Headquarters <sup>2</sup>	All Company Products	Headquarters
North Dakota, Gascoyne	Plant; Mine	Metalcasting, basic minerals and specialty products	Performance Materials
Ohio, Archbold	Plant	Metalcasting products	Performance Materials
Ohio, Bryan	Plant	Monolithic Refractories	Refractories
Ohio, Dover	Plant	Monolithic Refractories/Shapes	Refractories
Pennsylvania, Bethlehem	Administrative Office; Research laboratories; Sales Offices	All Company Products	All Segments
Pennsylvania, Easton	Administrative Office; Research laboratories; Plant; Sales Offices	All Company Products	All Segments
Pennsylvania, Slippery Rock	Plant; Sales Offices	Monolithic Refractories/Shapes	Refractories
Pennsylvania, York	Plant	Metalcasting and pet care products	Performance Materials
Tennessee, Chattanooga	Plant	Metalcasting products	Performance Materials
Texas, Bay City	Plant	Talc	Specialty Minerals
Wisconsin, Neenah	Plant	Metalcasting products	Performance Materials
Wyoming, Colony	Plant; Mine	Metalcasting, pet litter, personal care, specialty and basic minerals products	Performance Materials
Wyoming, Lovell	Plant; Mine	Basic minerals, Specialty and pet care products; Environmental and building materials products	Performance Materials



Location	Facility	Product Line	Segment
<b>International</b>			
Australia, Brisbane	Sales Office/Administrative Office	Metalcasting, specialty and pet care products	Performance Materials
Australia, Carlingford	Sales Office <sup>2</sup>	Monolithic Refractories	Refractories
Australia, Gurulmundi	Plant; Mine	Metalcasting, specialty and pet care products	Performance Materials
Australia, Perth	Operations base <sup>2</sup>	Filtration services	Energy Services
Belgium, Brussels	Administrative Office	Monolithic Refractories/PCC	Refractories
Brazil, Macae	Operations base <sup>2</sup>	Filtration services	Energy Services
Brazil, Sao Jose dos Campos	Sales Office <sup>2</sup> /Administrative Office	PCC	Specialty Minerals
Canada, Pt. Claire	Administrative Office	PCC/Monolithic Refractories	Specialty Minerals; Refractories
China, Beijing	Sales Office/Administrative Office	Metalcasting, specialty, fabric care and pet care products	Performance Materials
China, Chao Yang, Liaoning	Plant; Mine	Metalcasting and fabric care products	Performance Materials
China, Shanghai	Administrative Office/Sales Office	PCC/Monolithic Refractories	Specialty Minerals; Refractories
China, Suzhou	Plant	Environmental and building materials products	Performance Materials
China, Suzhou	Plant/Sales Office/Research laboratories	PCC/Monolithic Refractories	Specialty Minerals; Refractories
China, Tianjin	Plant; Mine; Research laboratories	Metalcasting and fabric care products	Performance Materials
Germany, Duisburg	Plant/Sales Office/Research laboratories	Laser Scanning Instrumentation/ Probes/Monolithic Refractories	Refractories
Holland, Hengelo	Plant/Sales Office	Metallurgical Wire	Refractories
India, Bhuj	Plant	Environmental and building materials products	Performance Materials
India, Chennai	Plant	Metalcasting products	Performance Materials
India, Mumbai	Sales Office <sup>2</sup> /Administrative Office	PCC/Monolithic Refractories/ Metallurgical Wire	Specialty Minerals; Refractories
Indonesia, Jakarta	Operations base <sup>2</sup>	Filtration services	Energy Services
Ireland, Cork	Plant; Administrative Office <sup>2</sup> / Research laboratories	Monolithic Refractories	Refractories
Italy, Brescia	Sales Office	Monolithic Refractories/Shapes	Refractories
Italy, Nave	Plant	Monolithic Refractories/Shapes	Refractories
Japan, Gamagori	Plant/Research laboratories	Monolithic Refractories/Shapes, Calcium	Refractories
Japan, Tokyo	Sales Office	Monolithic Refractories	Refractories
Korea, Pyeongtaek	Plant	Environmental, building materials and other products	Performance Materials
Malaysia, Kemaman	Operations base <sup>2</sup>	Filtration and well testing services	Energy Services
Mexico, Villahermosa	Operations base <sup>2</sup>	Filtration services	Energy Services
Nigeria, Port Harcourt	Operations base <sup>2</sup>	Well Testing services	Energy Services
Poland, Szczytno	Plant	Environmental products	Performance Materials
Scotland, Aberdeen	Operations base <sup>2</sup>	Filtration services	Energy Services
Singapore	Sales Office <sup>2</sup> /Administrative Office	PCC	Specialty Minerals
South Africa, Johannesburg	Sales Office/Administrative Office <sup>2</sup>	Monolithic Refractories	Refractories
South Africa, Pietermaritzburg	Plant	Monolithic Refractories	Refractories
South Africa, Ruighoek Farm, Northwest Province	Plant; Mine	Metalcasting and basic minerals products	Performance Materials
South Korea, Yangbuk-Myeun, Kyeong-buk	Plant; Mine	Metalcasting products	Performance Materials
Spain, Cheste	Plant	Environmental products	Performance Materials
Spain, Santander	Sales Office <sup>2</sup> /Administrative Office	Monolithic Refractories	Refractories
Thailand, Laemchabang	Plant	Metalcasting and fabric care products	Performance Materials
Turkey, Enez	Plant; Mine	Metalcasting, specialty and basic minerals products	Performance Materials
Turkey, Gebze	Plant/Research Laboratories	Monolithic Refractories/Shapes/ Application Equipment	Refractories
Turkey, Istanbul	Sales Office/Administrative Office	Monolithic Refractories	Refractories
Turkey, Kutahya	Plant	Monolithic Refractories/Shapes	Refractories
Turkey, Usak	Plant; Mine	Specialty material products	Performance Materials
United Kingdom, Birkenhead	Research laboratories <sup>2</sup>	Environmental products	Performance Materials
United Kingdom, Lifford	Plant	PCC, Lime	Specialty Minerals
United Kingdom, Rotherham	Plant/Sales Office	Monolithic Refractories/Shapes	Refractories
United Kingdom, Winsford	Plant, Research laboratories	Fabric care and other products	Performance Materials

<sup>1</sup> This plant and quarry is leased to another company.

<sup>2</sup> Leased by the Company. The facilities in Cork, Ireland, are operated pursuant to a 99-year lease, the term of which commenced in 1963. The Company's headquarters in New York, New York, are held under a lease which expires in 2021.

Set forth below is the location of, and the main customer served by, each of the Company's satellite PCC plants in operation or under construction, within the Specialty Minerals segment, as of December 31, 2017. Generally, the land on which each satellite PCC plant is located is leased at a nominal amount by the Company from the host paper mill pursuant to a lease, the term of which generally runs concurrently with the term of the PCC production and sale agreement between the Company and the host paper mill.

<b>Location</b>	<b>Principal Customer</b>
<b>United States</b>	
Alabama, Jackson	Boise Inc.
Alabama, Selma	International Paper Company
Arkansas, Ashdown	Domtar Inc.
Louisiana, Port Hudson	Georgia-Pacific Corporation (Koch Industries)
Maine, Jay	Verso Paper Holdings LLC
Michigan, Quinnesec	Verso Paper Holdings LLC
Minnesota, Cloquet	Sappi Ltd.
Minnesota, International Falls	Boise Inc.
New York, Ticonderoga	International Paper Company
Ohio, Chillicothe	P.H. Glatfelter Co.
South Carolina, Eastover	International Paper Company
Washington, Camas	Georgia-Pacific Corporation (Koch Industries)
Washington, Longview	North Pacific Paper Corporation
Washington, Wallula	Boise Inc.
Wisconsin, Kimberly	Appleton Coated
Wisconsin, Park Falls	Flambeau River Papers LLC
Wisconsin, Superior	New Page Corporation
Wisconsin, Wisconsin Rapids	New Page Corporation

Location	Principal Customer
<b>International</b>	
Brazil, Guaiba	CMPC - Celulose Rio Grandense
Brazil, Jacarei	Munksjo Brasil Ind e Com de Papeis Especiais Ltda.
Brazil, Luiz Antonio	International Paper do Brasil Ltda.
Brazil, Mucuri	Suzano Papel e Celulose S. A.
Brazil, Suzano	Suzano Papel e Celulose S. A.
Canada, St. Jerome, Quebec	Les Entreprises Rolland Inc
Canada, Windsor, Quebec	Domtar Inc.
China, Changshu	UPM Changshu
China, Dagang <sup>1</sup>	Gold East Paper (Jiangsu) Company Ltd.
China, Zhenjiang <sup>1</sup>	Gold East Paper (Jiangsu) Company Ltd.
China, Suzhou <sup>1</sup>	Gold HuaSheng Paper Company Ltd.
China, Henan	Henan Jianghe Paper Co., Ltd.
China, Shandong	Shandong Sun Paper Industry Joint Stock Company Ltd
Finland, Äänekoski	M-real Corporation
Finland, Tervakoski	Trierenberg Holding
France, Alizay	Double A Paper Company Ltd.
France, Quimperle	PDM Industries
France, Saillat Sur Vienne	International Paper Company
Germany, Schongau	UPM Corporation
India, Ballarshah <sup>1</sup>	Ballarpur Industries Ltd.
India, Dandeli	West Coast Paper Mill Ltd.
India, Gaganapur <sup>1</sup>	Ballarpur Industries Ltd.
India, Saila Khurd	Kuantum Papers Ltd.
India, Rayagada <sup>1</sup>	JK Paper
Indonesia, Perawang <sup>1</sup>	PT Indah Kiat Pulp and Paper Corporation
Japan, Shiraoi <sup>1</sup>	Nippon Paper Group Inc.
Malaysia, Sipitang	Ballarpur Industries Ltd.
Poland, Kwidzyn	International Paper – Kwidzyn, S.A
Portugal, Figueira da Foz <sup>1</sup>	Navigator Paper Figueira, S.A.
Slovakia, Ruzomberok	Mondi Business Paper SCP
South Africa, Merebank <sup>1</sup>	Mondi Paper Company Ltd.
Thailand, Namphong	Phoenix Pulp & Paper Public Co. Ltd.
Thailand, Tha Toom <sup>1</sup>	Double A Paper Company Ltd.
Thailand, Tha Toom 2 <sup>1</sup>	Double A Paper Company Ltd.

<sup>1</sup> These plants are owned through joint ventures.



The following table sets forth, for each of the quarries or mines we own or operate, our current estimate as to the amount of proven and probable reserves such quarry or mine holds, based on the most recent mine plan, its usage rate in 2017, and a conversion factor for the conversion of in-situ materials to saleable products, by major mineral category.

	2017 Tons Usage (000s)	Total Tons of Reserves (000s)	Assigned Reserves (000s)	Unassigned Reserves** (000s)	Conversion Factor	Mining Claims		
						Ow ned	Unpatented *	Leased
<b>Limestone</b>								
Adams, MA	646	23,742	23,742	-	80%	23,742	-	-
Canaan, CT	597	18,312	18,312	-	90%	18,312	-	-
Lucerne Valley, CA	970	41,759	41,759	-	95%	41,759	-	-
Pima County, AZ	171	7,939	7,939	-	90%	7,939	-	-
<b>Total Limestone</b>	2,384	91,752	91,752	-		91,752	-	-
			100%	0%		100%	0%	0%
<b>Talc</b>								
Dillon, MT	205	3,003	3,003	-	85%	3,003	-	-
			100%	0%		100%	0%	0%
<b>Sodium Bentonite</b>								
Australia	52	1,207	1,207	-	80%			1,207
Belle/Colony, WY/SD	1,617	66,522	66,522	-	77%	3,928	11,679	50,915
Lovell, WY	800	37,175	37,175	-	86%	16,992	15,534	4,649
Other SD, WY, MT		72,831	-	72,831	79%	54,815	15,048	2,968
<b>Total Sodium Bentonite</b>	2,469	177,735	104,904	72,831		75,735	42,261	59,739
			59%	41%		43%	24%	34%
<b>Calcium Bentonite</b>								
Chao Yang, Liaoning, China	-	1,772	1,772	-	78%			1,772
Nevada	1	1,560	1,560	-	76%	1,016	44	500
Sandy Ridge, AL	112	6,581	6,581	-	75%	1,978		4,603
Turkey	192	4,924	4,924	-	77%			4,924
<b>Total Calcium Bentonite</b>	305	14,837	14,837	-		2,994	44	11,799
			100%	0%		20%	0%	80%
<b>Leonardite</b>								
Gascoyne, ND	49	2,741	2,741	-	72%	-	2,019	722
			100%	0%			74%	26%
<b>Chromite</b>								
South Africa	160	3,494	3,494	-	75%	-	-	3,494
			100%	0%		0%	0%	100%
<b>Other</b>								
Nevada**	-	2,997	-	2,997	80%		2,997	-
			0%	100%		0%	100%	0%
<b>GRAND TOTALS</b>								
	5,572	296,559	220,731	75,828		173,484	47,321	75,754
			74%	26%		58%	16%	26%

\* Quantity of reserves that would be owned if patent was granted.

\*\* Unassigned reserves are reserves which we expect will require additional expenditures for processing facilities.

Our estimates of total reserves in the table above require us to make certain key assumptions. These assumptions relate to consistency of deposits in relation to drilling samples obtained with respect to both quantity and quality of reserves contained therein; the ratio of overburden to mineral deposits; any environmental or social impact of mining the minerals; and profitability of extracting those minerals, including haul distance to processing plants, applicability of minerals to various end markets and selling prices within those markets, and our past experiences in the deposits, several of which we have been operating in for many decades.

The Company believes that its facilities, which are of varying ages and are of different construction types, have been satisfactorily maintained, are in good condition, are suitable for the Company's operations and generally provide sufficient capacity to meet the Company's production requirements. Based on past loss experience, the Company believes it is adequately insured with respect to these assets and for liabilities likely to arise from its operations.

### Item 3. Legal Proceedings

The Company and its subsidiaries are the subject of various pending legal actions in the ordinary course of their businesses. Except as described below, none of such legal proceedings are material.

#### *Armada Litigation*

On May 8, 2013, Armada (Singapore) PTE Limited, an ocean shipping company now in bankruptcy ("Armada") filed a case in federal court in the Northern District of Illinois against AMCOL International Corporation ("AMCOL") and certain of its subsidiaries (*Armada (Singapore) PTE Limited v. AMCOL International Corp., et al., United States District Court for the Northern District of Illinois*, Case No. 13 CV 3455). We acquired AMCOL and its subsidiaries on May 9, 2014. A co-defendant is Ashapura Minechem Limited, a company located in Mumbai, India ("AML"). During the relevant time period, 2008-2010, AMCOL owned slightly over 20% of the outstanding AML stock through December 2009, after which it owned approximately 19%. In 2008, AML entered into two contracts of affreightment ("COA") with Armada for over 60 ship loads of bauxite from India to China. After one shipment, AML made no further shipments, which led Armada to file arbitrations in London against AML, one for each COA. AML did not appear in the London arbitrations and default awards of approximately \$70 million were entered. The litigation filed by Armada against AMCOL and AML relates to these awards, which AML has not paid. The substance of the allegations by Armada is that AML and AMCOL engaged in illegal conduct to thwart Armada's efforts to collect the arbitration award. AMCOL won a motion for judgement on the pleadings that resulted in the successful dismissal of all but one count in the complaint, including a dismissal of all counts alleging violations of Illinois' Fraudulent Transfer laws and federal RICO violations. Armada has filed an appeal of the dismissal and the district court proceedings are stayed pending the appeal. We have accrued an estimate of potential damages for the Armada lawsuit, the amount of which was not material to our financial position, results of operations or cash flows.

#### *Silica and Asbestos Litigation*

Certain of the Company's subsidiaries are among numerous defendants in a number of cases seeking damages for exposure to silica or to asbestos containing materials. The Company currently has three pending silica cases and 20 pending asbestos cases. To date, 1,493 silica cases and 53 asbestos cases have been dismissed, not including any lawsuits against AMCOL or American Colloid Company dismissed prior to our acquisition of AMCOL. Seven new asbestos cases were filed in 2017, including one that was previously reported on the Company's 2016 Annual Report on Form 10-K. Four asbestos cases were dismissed during the period. No silica cases were dismissed during the period. Most of these claims do not provide adequate information to assess their merits, the likelihood that the Company will be found liable, or the magnitude of such liability, if any. Additional claims of this nature may be made against the Company or its subsidiaries. At this time management anticipates that the amount of the Company's liability, if any, and the cost of defending such claims, will not have a material effect on its financial position or results of operations.

The Company has settled only one silica lawsuit, for a nominal amount, and no asbestos lawsuits to date (not including any that may have been settled by AMCOL prior to completion of the acquisition). We are unable to state an amount or range of amounts claimed in any of the lawsuits because state court pleading practices do not require identifying the amount of the claimed damage. The aggregate cost to the Company for the legal defense of these cases since inception continues to be insignificant. The majority of the costs of defense for these cases, excluding cases against AMCOL or American Colloid, are reimbursed by Pfizer Inc. pursuant to the terms of certain agreements entered into in connection with the Company's initial public offering in 1992. The Company is entitled to indemnification, pursuant to agreement, for sales prior to the initial public offering. Of the 20 pending asbestos cases, 13 of the non-AMCOL cases are subject to indemnification, in whole or in part, because the plaintiffs claim liability based on sales of products that occurred either entirely before the initial public offering, or both before and after the initial public offering. In the six remaining non-AMCOL cases, the plaintiffs have not alleged dates of exposure. The remaining case is an AMCOL case, which makes no allegation with respect to periods of exposure. Our experience has been that the Company is not liable to plaintiffs in any of these lawsuits and the Company does not expect to pay any settlements or jury verdicts in these lawsuits.

#### *Environmental Matters*

On April 9, 2003, the Connecticut Department of Environmental Protection issued an administrative consent order relating to our Canaan, Connecticut, plant where both our Refractories segment and Specialty Minerals segment have operations. We agreed to the order, which includes provisions requiring investigation and remediation of contamination associated with historic use of polychlorinated biphenyls ("PCBs") and mercury at a portion of the site. We have completed the required investigations and submitted several reports characterizing the contamination and assessing site-specific risks. We are awaiting regulators' approval of the risk assessment report, which will form the basis for a proposal by the Company concerning eventual remediation.

We believe that the most likely form of overall site remediation will be to leave the existing contamination in place (with some limited soil removal), encapsulate it, and monitor the effectiveness of the encapsulation. We anticipate that a substantial portion of the remediation cost will be borne by the United States based on its involvement at the site from 1942 – 1964, as historic documentation indicates that PCBs and mercury were first used at the facility at a time of U.S. government ownership for production of materials needed by the military. Pursuant to a Consent Decree entered on October 24, 2014, the United States paid the Company \$2.3 million in the 4<sup>th</sup> quarter of 2014 to resolve the Company's claim for response costs for investigation and initial remediation activities at this

facility through October 24, 2014. Contribution by the United States to any future costs of investigation or additional remediation has, by agreement, been left unresolved. Though the cost of the likely remediation remains uncertain pending completion of the phased remediation decision process, we have estimated that the Company's share of the cost of the encapsulation and limited soil removal described above would approximate \$0.4 million, which has been accrued as of December 31, 2017.

The Company is evaluating options for upgrading the wastewater treatment facilities at its Adams, Massachusetts plant. This work has been undertaken pursuant to an administrative Consent Order originally issued by the Massachusetts Department of Environmental Protection ("DEP") on June 18, 2002. This order was amended on June 1, 2009 and on June 2, 2010. The amended Order includes the investigation by January 1, 2022 of options for ensuring that the facility's wastewater treatment ponds will not result in unpermitted discharge to groundwater. Additional requirements of the amendment include the submittal by July 1, 2022 of a plan for closure of a historic lime solids disposal area. Preliminary engineering reviews completed in 2005 indicate that the estimated cost of wastewater treatment upgrades to operate this facility beyond 2024 may be between \$6 million and \$8 million. The Company estimates that the remaining remediation costs would approximate \$0.4 million, which has been accrued as of December 31, 2017.

#### Item 4. Mine Safety Disclosures

The information concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in Exhibit 95 to this Annual Report on Form 10-K.

## PART II

#### Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The Company's common stock is traded on the New York Stock Exchange under the symbol "MTX". Information on market prices and dividends is set forth below.

	First	Second	Third	Fourth
<b>2017 Quarters</b>				
Market price range per share of common stock				
High	\$ 83.70	\$ 80.20	\$ 75.60	\$ 73.55
Low	72.20	70.50	62.95	66.40
Close	76.60	73.20	70.65	68.85
Dividends paid per common share	\$ 0.05	\$ 0.05	\$ 0.05	\$ 0.05
<b>2016 Quarters</b>				
Market price range per share of common stock				
High	\$ 57.12	\$ 61.66	\$ 72.51	\$ 82.90
Low	37.03	52.53	56.00	66.10
Close	57.12	57.38	70.69	77.25
Dividends paid per common share	\$ 0.05	\$ 0.05	\$ 0.05	\$ 0.05

#### Equity Compensation Plan Information

The following table summarizes information about our equity compensation plans as of December 31, 2017. All outstanding awards relate to our common stock.

Plan Category	Number of securities to be issued upon exercise of outstanding options	Weighted average exercise price of outstanding options	Number of securities remaining available for future issuance
Equity compensation plans approved by security holders	996,839	\$ 48.21	1,036,505
Total	<u>996,839</u>	<u>\$ 48.21</u>	<u>1,036,505</u>

## **Issuer Purchases of Equity Securities**

On September 16, 2015, the Company's Board of Directors authorized the Company's management to repurchase, at its discretion, up to \$150 million of the Company's shares over a two-year period commencing October 2015. 64,650 shares were repurchased under this program for \$3.3 million, or, an average price of approximately \$51.79 per share. This program has expired.

On September 21, 2017, the Company's Board of Directors authorized the Company's management to repurchase, at its discretion, up to \$150 million of the Company's shares over a two-year period commencing October 1, 2017 when the previous program expired. As of December 31, 2017, no shares have been repurchased under this program.

On January 24, 2018, the Company's Board of Directors declared a regular quarterly dividend on its common stock of \$0.05 per share.

Future dividends are at the discretion of the Board of Directors and subject to the legal availability of funds for payment.

On February 7, 2018, the last reported sales price on the NYSE was \$69.05 per share and there were approximately 168 holders of record of the common stock.

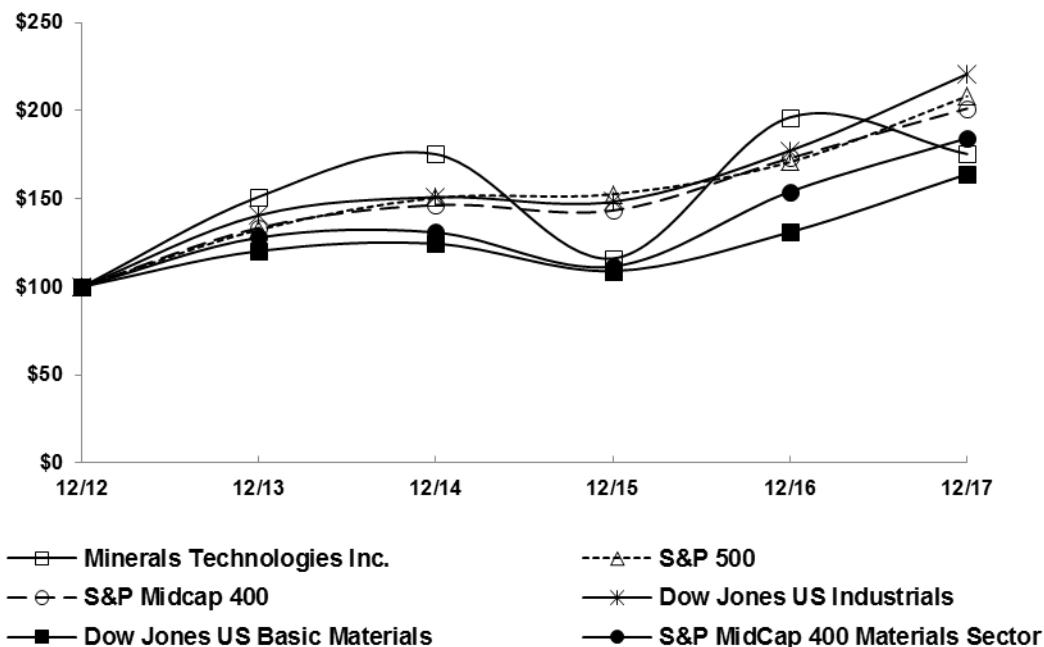


## Performance Graph

The graph below compares Minerals Technologies Inc.'s cumulative 5-year total shareholder return on common stock with the cumulative total returns of the S&P 500 index, the Dow Jones US Industrials index, the S&P Midcap 400 index, the Dow Jones US Basic Materials index, and the S&P MidCap 400 Materials Sector. The graph tracks the performance of a \$100 investment in our common stock and in each index (with the reinvestment of all dividends) from 12/31/2012 to 12/31/2017.

### COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN\*

Among Minerals Technologies Inc., the S&P 500 Index, the S&P Midcap 400 Index, the Dow Jones US Industrials Index, the Dow Jones US Basic Materials Index, and S&P MidCap 400 Materials Sector



\*\$100 invested on 12/31/12 in stock or index, including reinvestment of dividends.  
Fiscal year ending December 31.

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	12/12	12/13	12/14	12/15	12/16	12/17
Minerals Technologies Inc.	100.00	151.13	175.29	116.14	196.27	175.42
S&P 500	100.00	132.39	150.51	152.59	170.84	208.14
S&P Midcap 400	100.00	133.50	146.54	143.35	173.08	201.20
Dow Jones US Industrials	100.00	140.61	150.88	148.32	177.30	220.80
Dow Jones US Basic Materials	100.00	120.38	124.46	108.99	131.09	163.98
S&P MidCap 400 Materials Sector	100.00	127.95	130.87	111.60	154.01	184.35

**Item 6. Selected Financial Data**

	Year Ended December 31,				
	2017	2016	2015	2014	2013
	(in millions, except per share data)				
Net sales	\$ 1,675.7	\$ 1,638.0	\$ 1,797.6	\$ 1,725.0	\$ 1,018.2
Cost of sales	1,208.5	1,177.6	1,326.6	1,289.6	784.5
Production margin	467.2	460.4	471.0	435.4	233.7
Marketing and administrative expenses	182.4	179.4	190.1	182.2	89.2
Research and development expenses	23.7	23.8	23.6	24.4	20.1
Insurance / litigation settlement (gain)	-	-	-	(2.3)	(2.5)
Acquisition related transaction and integration costs	3.4	8.0	11.8	19.1	-
Restructuring and other items, net	15.0	28.3	45.2	43.2	-
Income from operations	242.7	220.9	200.3	168.8	126.9
Interest expense, net	(43.4)	(54.4)	(60.9)	(41.8)	(0.2)
Debt modification costs and fees	(3.9)	-	(4.5)	(5.8)	-
Other non-operating income (deductions), net	(4.5)	3.8	(2.3)	1.8	(3.0)
Total non-operating deductions, net	(51.8)	(50.6)	(67.7)	(45.8)	(3.2)
Income from continuing operations before provision for taxes and equity in earnings	190.9	170.3	132.6	123.0	123.7
Provision (benefit) for taxes on income*	(6.6)	35.3	22.8	30.8	34.5
Equity in earnings of affiliates, net of tax	1.5	2.1	1.8	1.2	-
Income from continuing operations, net of tax	199.0	137.1	111.6	93.4	89.2
Income (loss) from discontinued operations, net of tax	-	-	-	2.1	(5.8)
Consolidated net income	199.0	137.1	111.6	95.5	83.4
Less:					
Net income attributable to non-controlling interests	3.9	3.7	3.7	3.1	3.1
Net income attributable to Minerals Technologies Inc. (MTI)	\$ 195.1	\$ 133.4	\$ 107.9	\$ 92.4	\$ 80.3
<b>Earnings (Loss) per share attributable to MTI:</b>					
Basic:					
Income from continuing operations	\$ 5.54	\$ 3.82	\$ 3.11	\$ 2.62	\$ 2.48
Income (loss) from discontinued operations	-	-	-	0.06	(0.17)
Basic earnings per share	\$ 5.54	\$ 3.82	\$ 3.11	\$ 2.68	\$ 2.31
Diluted:					
Income from continuing operations	\$ 5.48	\$ 3.79	\$ 3.08	\$ 2.59	\$ 2.46
Income (loss) from discontinued operations	-	-	-	0.06	(0.16)
Diluted earnings per share	\$ 5.48	\$ 3.79	\$ 3.08	\$ 2.65	\$ 2.30
Cash dividends declared per common share	\$ 0.20	\$ 0.20	\$ 0.20	\$ 0.20	\$ 0.20
<b>Shares used in computation of earnings per share:</b>					
Basic	35.2	34.9	34.7	34.5	34.7
Diluted	35.6	35.2	35.0	34.8	35.0

\* During the fourth quarter of 2017, the Company recorded a provisional \$47 million income tax benefit from the U.S. Tax Cuts and Job Acts legislation. This benefit is comprised of an \$82 million benefit which related primarily to the re measurement of the Company's U.S. deferred tax liabilities at a lower U.S. tax rate of 21%, partially offset by tax expense of \$35 million for the deemed repatriation of unremitted earnings of foreign subsidiaries.

	Year Ended December 31,				
	2017	2016	2015	2014	2013
	(in millions)				
Working capital	\$ 542.2	\$ 455.6	\$ 485.0	\$ 552.0	\$ 634.2
Total assets	2,970.4	2,863.4	2,980.0	3,157.5	1,217.5
Long-term debt, net of unamortized discount and deferred financing costs	959.8	1,069.9	1,255.3	1,429.4	75.0
Total debt	969.9	1,082.8	1,264.9	1,435.3	88.7
Total shareholders' equity	1,279.1	1,030.9	937.7	888.9	874.4

## **Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations**

### **Cautionary Statement for “Safe Harbor” Purposes under the Private Securities Litigation Reform Act of 1995**

The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements made by or on behalf of the Company. This report contains statements that the Company believes may be “forward-looking statements” within the meaning of Section 21E of the Securities Exchange Act of 1934, particularly statements relating to the Company’s objectives, plans or goals, future actions, future performance or results of current and anticipated products, sales efforts, expenditures, and financial results. From time to time, the Company also provides forward-looking statements in other publicly-released materials, both written and oral. Forward-looking statements provide current expectations and forecasts of future events such as new products, revenues and financial performance, and are not limited to describing historical or current facts. They can be identified by the use of words such as “believes,” “expects,” “plans,” “intends,” “anticipates,” and other words and phrases of similar meaning.

Forward-looking statements are necessarily based on assumptions, estimates and limited information available at the time they are made. A broad variety of risks and uncertainties, both known and unknown, as well as the inaccuracy of assumptions and estimates, can affect the realization of the expectations or forecasts in these statements. Many of these risks and uncertainties are difficult to predict or are beyond the Company’s control. Consequently, no forward-looking statements can be guaranteed. Actual future results may vary materially. Significant factors affecting the expectations and forecasts are set forth under “Item 1A — Risk Factors” in this Annual Report on Form 10-K.

The Company undertakes no obligation to update any forward-looking statements to reflect events or circumstances that arise after the date hereof. Investors should refer to the Company's subsequent filings under the Securities Exchange Act of 1934 for further disclosures.

### **Executive Summary**

The Company reported diluted earnings of \$5.48 per share, an increase of 45% from prior year earnings of \$3.79 per share.

Worldwide sales were \$1.676 billion in 2017 as compared with \$1.638 billion in 2016, an increase of 2%. Consolidated income from operations increased 10% to \$242.7 million as compared with \$220.9 million in the prior year. Included in income from operations for 2017 were restructuring and other items of \$15.0 million and included in income from operations in the previous year were restructuring and other costs of \$28.3 million. Net income was \$195.1 million, as compared to \$133.4 million in the prior year. During the fourth quarter of 2017, the Company recorded a provisional \$47 million income tax benefit from the U.S. Tax Cuts and Job Acts legislation. This benefit is comprised of an \$82 million benefit which related primarily to the re-measurement of the Company’s U.S. deferred tax liabilities at a lower U.S. tax rate of 21%, partially offset by tax expense of \$35 million for the deemed repatriation of unremitted earnings of foreign subsidiaries.

In 2017, the Company continued to advance the execution of its growth strategies of geographic expansion and new product innovation and development with a focus on operational excellence and productivity improvements. Our sales in China and Asia continue to grow, driven by increased penetration in China from our Metalcasting business. The Company announced two new Paper PCC plants in Asia, in addition to an expansion of an existing facility, totaling 245,000 tons. We combined our Performance Materials and Construction Technologies businesses into one operating segment, leveraging talent across the business, reducing costs and increasing the speed of deployment of new products to market. We continued to strengthen our technology pipeline and focused on advancing technologies more rapidly through the stage gate process. We have commercialized over 81 new products in the last five years.

Long term debt as of December 31, 2017 was \$959.8 million. During 2017, we repaid \$119 million of our long-term debt. Since the acquisition of AMCOL in 2014, we repaid approximately \$590 million of our Term Loan debt. We continue to strengthen our balance sheet. Cash, cash equivalents and short-term investments were \$215 million as of December 31, 2017. Cash flow from operations for 2017 was \$207.6 million. Our intention is to maintain a balanced approach to capital deployment, by using excess cash flow for investments in growth, continued debt reduction and selective share repurchases.

## Outlook

Looking forward, we remain cautious about the state of the global economy and the impact it will have on our product lines.

The Company will continue to focus on innovation and new product development and other opportunities for sales growth in 2018 from its existing businesses, as follows:

- Develop multiple high-filler technologies under the FulFill® platform of products, to increase the fill rate in freesheet paper and continue to progress with commercial discussions and full-scale paper machine trials.
- Develop products and processes for waste management and recycling opportunities to reduce the environmental impact of the paper mill, reduce energy consumption and improve the sustainability of the papermaking process, including our NewYield® products.
- Further penetration into the packaging segment of the paper industry.
- Increase our sales of PCC for paper by further penetration of the markets for paper filling at both freesheet and groundwood mills, particularly in emerging markets.
- Expand the Company's PCC coating product line using the satellite model.
- Increase our presence and gain penetration of our bentonite based foundry customers for the Metalcasting industry in emerging markets, such as China and India.
- Increase our presence and market share in global pet care products, particularly in emerging markets.
- Deploy new products in pet care such as lightweight litter.
- Promote the Company's expertise in crystal engineering, especially in helping papermakers customize PCC morphologies for specific paper applications.
- Expand PCC produced for paper filling applications by working with industry partners to develop new methods to increase the ratio of PCC for fiber substitutions.
- Develop unique calcium carbonate and talc products used in the manufacture of novel biopolymers, a new market opportunity.
- Deploy new talc and GCC products in paint, coating and packaging applications.
- Deploy value-added formulations of refractory materials that not only reduce costs but improve performance.
- Expand our solid core wire product line into BRIC, Middle Eastern and other Asian countries.
- Deploy our laser measurement technologies into new applications.
- Expand our refractory maintenance model to other steel makers globally.
- Increase our presence and market share in Asia and in the global powdered detergent market.
- Continue the development of our proprietary Enersol® products for agricultural applications worldwide.
- Pursue opportunities for our products in environmental and building and construction markets in the Middle East, Asia Pacific and South America regions.
- Increase our presence and market share for geosynthetic clay liners within the Environmental Products product line.
- Increase our presence and market penetration in offshore produced water and offshore filtration and well testing within the Energy Services segment.
- Deploy operational excellence principles into all aspects of the organization, including system infrastructure and lean principles.
- Continue to explore selective acquisitions to fit our core competencies in minerals and fine particle technology.

However, there can be no assurance that we will achieve success in implementing any one or more of these opportunities.

## Results of Operations

### Consolidated Income Statement Review

	Year Ended December 31,				
	2017	2016	2015	2017 vs. 2016	2016 vs. 2015
	(Dollars in millions)				
Net sales	\$ 1,675.7	\$ 1,638.0	\$ 1,797.6	2.3%	-8.9%
Cost of sales	1,208.5	1,177.6	1,326.6	2.6%	-11.2%
Production margin	467.2	460.4	471.0	1.5%	-2.3%
<i>Production margin %</i>	27.9%	28.1%	26.2%		
Marketing and administrative expenses	182.4	179.4	190.1	1.7%	-5.6%
Research and development expenses	23.7	23.8	23.6	-0.4%	0.8%
Acquisition related transaction and integration costs	3.4	8.0	11.8	-57.5%	-32.2%
Restructuring and other items, net	15.0	28.3	45.2	-47.0%	-37.4%
Income from operations	242.7	220.9	200.3	9.9%	10.3%
<i>Operating margin %</i>	14.5%	13.5%	11.1%		
Interest expense, net	(43.4)	(54.4)	(60.9)	-20.2%	-10.7%
Debt modification costs and fees	(3.9)	-	(4.5)	*	*
Other non-operating income (deductions), net	(4.5)	3.8	(2.3)	*	*
Total non-operating deductions, net	(51.8)	(50.6)	(67.7)	2.4%	-25.3%
Income from operations before provision for taxes and equity in earnings	190.9	170.3	132.6	12.1%	28.4%
Provision (benefit) for taxes on income	(6.6)	35.3	22.8	*	54.8%
<i>Effective tax rate</i>	-3.5%	20.7%	17.2%		
Equity in earnings of affiliates, net of tax	1.5	2.1	1.8	-28.6%	16.7%
Income from operations, net of tax	199.0	137.1	111.6	45.1%	22.8%
Net income attributable to non-controlling interests	3.9	3.7	3.7	5.4%	0.0%
Net income attributable to Minerals Technologies Inc. (MTI)	\$ 195.1	\$ 133.4	\$ 107.9	46.3%	23.6%

\* Not meaningful

### Net Sales

	Year Ended December 31,				
	2017	2016	2015	2017 vs. 2016	2016 vs. 2015
	(Dollars in millions)				
U.S.	\$ 939.3	\$ 936.2	\$ 1,049.6	0.3%	-10.8%
International	736.4	701.8	748.0	4.9%	-6.2%
Total sales	\$ 1,675.7	\$ 1,638.0	\$ 1,797.6	2.3%	-8.9%
Specialty Minerals Segment	\$ 584.8	\$ 591.5	\$ 624.6	-1.1%	-5.3%
Performance Materials Segment	734.8	686.1	694.9	7.1%	-1.3%
Refractories Segment	279.4	274.5	295.9	1.8%	-7.2%
Energy Services Segment	76.7	85.9	182.2	-10.7%	-52.9%
Total sales	\$ 1,675.7	\$ 1,638.0	\$ 1,797.6	2.3%	-8.9%



Worldwide net sales in 2017 increased 2% from the previous year to \$1,675.7 million. Net sales in the United States increased slightly to \$939.3 million in 2017 and represented 56% of consolidated net sales. International sales increased to \$736.4 million from \$701.8 million and represented 44% of consolidated net sales.

Worldwide net sales in 2016 decreased 9% from the previous year to \$1,638.0 million. Foreign exchange had an unfavorable impact on sales of \$34.0 million or 2 percent. Net sales in the United States decreased to \$936.2 million in 2016 and represented 57% of consolidated net sales. International sales decreased slightly to \$701.8 million from \$748.0 million and represented 43% of consolidated net sales.

### **Operating Costs and Expenses**

Consolidated cost of sales was \$1,208.5 million, \$1,177.6 million and \$1,326.6 million in 2017, 2016 and 2015, respectively. Production margin as a percentage of net sales was 27.9% in 2017, 28.1% in 2016 and 26.2% in 2015.

Marketing and administrative costs were \$182.4 million, \$179.4 million and \$190.1 million in 2017, 2016 and 2015, respectively. Marketing and administrative costs as a percentage of net sales were 10.9% in 2017, 10.9% in 2016 and 10.6% in 2015.

Research and development expenses were \$23.7 million, \$23.8 million and \$23.6 million in 2017, 2016 and 2015, respectively. Research and development expenses as a percentage of net sales were 1.4% in 2017, 1.4% in 2016 and 1.3% in 2015.

The Company incurred \$3.4 million, \$8.0 million and \$11.8 million in 2017, 2016 and 2015, respectively for the acquisition related transaction and integration costs.

In 2017, the Company recorded a \$15.0 million restructuring and non-cash impairment charges from the closure of paper mills in North America, as well as the alignment of corporate and Paper PCC staffing levels into higher growth regions. This restructuring is expected to result in approximately \$6 million in savings on an annualized basis, of which \$3 million is expected to be realized in 2018.

In 2016, the Company recorded a \$28.3 million charge for impairment of assets and other restructuring costs, including lease termination costs relating to its exit of U.S. on-shore service lines, including the Nitrogen and Pipeline product lines in our Energy Services segment.

In 2015, the Company recorded a \$45.2 million charge for asset impairments, severance and other employee costs resulting from a restructuring program that was initiated in 2014 to realign business operations and improve efficiencies.

### **Income from Operations**

During 2017, the Company recorded income from operations of \$242.7 million as compared with \$220.9 million in the prior year. Income from operations represented 14.5% of sales compared with 13.5% of sales in the prior year. Income from operations in 2017 included acquisition related integration costs of \$3.4 million and restructuring and other items of \$15.0 million.

During 2016, the Company recorded income from operations of \$220.9 million as compared with \$200.3 million in the prior year. Income from operations represented 13.5% of sales compared with 11.1% of sales in the prior year. Income from operations in 2016 included acquisition related integration costs of \$8.0 million and restructuring and other items of \$28.3 million.

### **Non-Operating Income (Deductions)**

The Company recorded non-operating deductions of \$51.8 million in 2017 as compared with \$50.6 million in the previous year.

Net interest expense was \$43.4 million in 2017 as compared to \$54.4 million in the prior year, as a result of lower debt balances due to principal repayments and lower interest costs relating to lower interest rates resulting from debt repricing. The Company recorded \$3.9 million in debt modification costs and fees relating to its repricing of the variable tranche of the Term Loan debt in February 2017.

During 2015, the Company repriced the outstanding balance of its senior secured loan facility and recorded \$4.5 million in non-cash debt modification costs and other debt modification fees. In addition, the Company recorded a \$7.6 million charge relating to the write-down of an investment in a development stage enterprise.

### **Provision (Benefit) for Taxes on Income**

Provision (benefit) for taxes was \$(6.6) million, \$35.3 million and \$22.8 million in 2017, 2016 and 2015, respectively. The effective tax rates were (3.5) %, 20.7% and 17.2% during 2017, 2016 and 2015, respectively. Included in the benefit from taxes in the current year is a provisional \$47.3 million income tax benefit from the U.S. Tax Cuts and Jobs Act ("U.S. Tax Reform") legislation, enacted in December 2017. This benefit is comprised of an \$82.4 million gain related primarily to the re-measurement of the

Company's U.S. deferred tax liabilities at a lower U.S. tax rate of 21%, partially offset by tax expense of \$35.1 million for the deemed repatriation of unremitted earnings of foreign subsidiaries.

The lower effective tax rate in 2017 was primarily due to the benefit of the re-measurement of the Company's US deferred tax liabilities to 21%. Our future effective tax rate will be affected by the U.S. Tax Reform. Effective in 2018, U.S. Tax Reform reduces the U.S. statutory tax rate from 35% to 21% and creates new taxes on certain foreign-sourced earnings and certain related-party payments.

The other factors having the most significant impact on our effective tax rates in recent periods are the rate differentials related to foreign earnings indefinitely invested, percentage depletion, and the tax benefits on restructuring and impairment charges at a higher rate. The higher effective tax rate in 2016 was primarily due to a lower benefit from depletion as a percentage of earnings and to the mix of earnings.

Percentage depletion allowances (tax deductions for depletion that may exceed our tax basis in our mineral reserves) are available to us under the income tax laws of the United States for operations conducted in the United States. The tax benefits from percentage depletion were \$12.9 million in 2017, \$11.3 million in 2016 and \$11.2 million in 2015.

We operate in various countries around the world that have tax laws, tax incentives and tax rates that are significantly different than those of the United States. These differences combine to move our overall effective tax rate higher or lower than the United States statutory rate depending on the mix of income relative to income earned in the United States. The effects of foreign earnings and the related foreign rate differentials resulted in a decrease of income tax expense of \$10.7 million, \$14.7 million and \$11.0 million in 2017, 2016 and 2015, respectively.

### Consolidated Net Income

Consolidated net income was \$199.0 million in 2017 and included a \$15.5 million charge, net of tax. This charge consisted of acquisition related transaction and integration costs and restructuring and other items, net. Additionally it includes a \$47.3 million tax benefit from the U.S. Tax Cuts and Jobs Act.

Consolidated net income was \$137.1 million in 2016 and included a \$24.0 million charge, net of tax. Such charge consisted of restructuring and other net items, acquisition transaction and integration costs and lease termination costs, inventory write-offs and impairment of assets relating to the Company's exit from the Nitrogen and Pipeline product lines and the restructuring of other onshore services within the Energy Services segment.

### Segment Review

The following discussions highlight the operating results for each of our four segments.

#### Specialty Minerals Segment

Specialty Minerals Segment	Year Ended December 31,			2017 vs. 2016	2016 vs. 2015
	2017	2016	2015		
	(millions of dollars)				
<b>Net Sales</b>					
Paper PCC	\$ 377.7	\$ 387.9	\$ 423.3	\$ (10.2)	\$ (35.4)
Specialty PCC	66.0	64.3	64.8	1.7	(0.5)
PCC Products	\$ 443.7	\$ 452.2	\$ 488.1	\$ (8.5)	\$ (35.9)
Talc	\$ 53.8	\$ 55.7	\$ 55.9	\$ (1.9)	\$ (0.2)
Ground Calcium Carbonate	87.3	83.6	80.6	3.7	3.0
Processed Minerals Products	\$ 141.1	\$ 139.3	\$ 136.5	\$ 1.8	\$ 2.8
Total net sales	\$ 584.8	\$ 591.5	\$ 624.6	\$ (6.7)	\$ (33.1)
<b>Income from operations</b>	\$ 88.9	\$ 102.7	\$ 100.8	\$ (13.8)	\$ 1.9
% of net sales	15.2%	17.4%	16.1%		

#### 2017 v 2016

Net sales in the Specialty Minerals segment decreased 1 percent to \$584.8 million from \$591.5 million. Higher sales in our Processed Minerals product line, stemming from increased ground calcium carbonate volumes were offset by declines in Paper PCC. Worldwide net sales of PCC products, which are primarily used in the manufacturing process of the paper industry, decreased \$8.5

million, or 2 percent. The decrease in Paper PCC sales was primarily due to the closure of several paper mills in North America, which offset growth in Asia, Europe and Latin America.

Income from operations decreased \$13.8 million to \$88.9 million and represented 15.2% of net sales compared to \$102.7 million and 17.4% of sales in prior year. Included in income from operations were restructuring and impairment charges of \$10.3 million and provision for bad debt related to a customer bankruptcy in Malaysia for \$2.1 million.

#### 2016 v 2015

Net sales in the Specialty Minerals segment decreased 5 percent to \$591.5 million from \$624.6 million. Higher sales in our Processed Minerals product line, stemming from increased ground calcium carbonate volumes were offset by declines in Paper PCC. Worldwide net sales of PCC products, which are primarily used in the manufacturing process of the paper industry, decreased \$35.9 million, or 7 percent. Foreign exchange had an unfavorable impact on PCC products sales \$9.7 million, or 2 percentage points. The decrease in Paper PCC sales was primarily due to several previously announced paper mill closures in the U.S and weaker printing and writing paper demand in the U.S. and Europe. This was partially offset by an increase in PCC sales in China of 12 percent over last year due to the ramp-up of two new facilities and the successful startup of a 100,000 ton satellite in the third quarter of 2016.

Income from operations increased \$1.9 million to \$102.7 million and represented 17.4% of net sales compared to \$100.8 million and 16.1% of sales in 2016.

### Performance Materials Segment

Performance Materials Segment	Year Ended December 31,			2017 vs. 2016	2016 vs. 2015
	2017	2016	2015		
	(millions of dollars)				
<b>Net Sales</b>					
Metalcasting	\$ 294.3	\$ 258.0	\$ 266.4	\$ 36.3	\$ (8.4)
Household, Personal Care & Specialty Products	169.6	171.2	172.7	(1.6)	(1.5)
Environmental Products	67.7	78.9	69.8	(11.2)	9.1
Building Materials	78.2	74.1	80.0	4.1	(5.9)
Basic Minerals	125.0	103.9	106.0	21.1	(2.1)
Total net sales	<u>\$ 734.8</u>	<u>\$ 686.1</u>	<u>\$ 694.9</u>	<u>\$ 48.7</u>	<u>\$ (8.8)</u>
<b>Income from operations</b>	\$ 119.7	\$ 121.1	\$ 118.4	\$ (1.4)	\$ 2.7
% of net sales	16.3%	17.7%	17.0%		

#### 2017 v 2016

Net sales in the Performance Materials segment of \$734.8 million increased \$48.7 million in 2017. Metalcasting's sales increased \$36.3 million or 14 percent primarily due to higher volumes in Asia and North America. Basic Minerals sales increased \$21.1 million or 20 percent primarily due to higher sales of chromite and drilling products. These sales increases were partially offset by lower Environmental Products sales and lower Fabric Care sales which impacted Household, Personal Care and & Specialty Products.

Income from operations decreased \$1.4 million to \$119.7 million and represented 16.3% of net sales compared to \$121.1 million and 17.7% of sales in 2016.

#### 2016 v 2015

Net sales in the Performance Materials segment of \$686.1 million decreased \$8.8 million in 2016. Foreign exchange had an unfavorable impact on Performance Materials segment sales of approximately \$19.0 million, or 3 percent. Excluding the effects of foreign exchange, higher China Metalcasting sales, increased sales of bulk chromite in our Basic Minerals product line and increased sales in Environmental Products were partially offset by lower fabric care sales in our Household, Personal Care & Specialty Minerals product line and lower sales in Building Materials resulting from smaller scale water proofing projects completed in the western United States and Europe in 2016 as compared to the prior year.

Income from operations increased \$2.7 million and represented 17.7% of net sales compared to 17.0% in 2015 as a result of significant productivity gains and a favorable product mix.

## Refractories Segment

Refractories Segment	Year Ended December 31,			2017 vs. 2016	2016 vs. 2015
	2017	2016	2015		
	(millions of dollars)				
<b>Net Sales</b>					
Refractory Products	\$ 226.9	\$ 219.0	\$ 230.7	\$ 7.9	\$ (11.7)
Metallurgical Products	52.5	55.5	65.2	(3.0)	(9.7)
Total net sales	<u>\$ 279.4</u>	<u>\$ 274.5</u>	<u>\$ 295.9</u>	<u>\$ 4.9</u>	<u>\$ (21.4)</u>
<b>Income from operations</b>	\$ 39.8	\$ 37.0	\$ 27.8	\$ 2.8	\$ 9.2
% of net sales	14.2%	13.5%	9.4%		

### 2017 v 2016

Net sales in the Refractories segment of \$279.4 million increased \$4.9 million in 2017 or 2 percent. Higher equipment sales were partially offset by lower volumes in metallurgical products.

Income from operations increased \$2.8 million to \$39.8 million and represented 14.2% of net sales compared to \$37.0 million or 13.5% of sales in 2016. The increase in income from operations relates primarily to higher equipment sales and improved refractory operating costs.

### 2016 v 2015

Net sales in the Refractories segment declined \$21.4 million in 2016. Foreign exchange had an unfavorable impact on Refractories segment sales of approximately \$2.3 million, or 1 percent. The remaining sales decrease was primarily due to lower volumes stemming from continued weak global steel demand.

Income from operations increased \$9.2 million to \$37.0 million and represented 13.5% of net sales compared to \$27.8 million or 9.4% of sales in 2015. The increase in income from operations relates primarily to improved productivity combined with supply chain savings and lower overhead costs. Additionally, included in income from operations is a \$2.1 million gain on the sale of previously impaired assets in 2016 and restructuring charges of \$2.0 million in 2015.

## Energy Services Segment

Energy Services Segment	Year Ended December 31,			2017 vs. 2016	2016 vs. 2015
	2017	2016	2015		
	(millions of dollars)				
Net Sales	\$ 76.7	\$ 85.9	\$ 182.2	\$ (9.2)	\$ (96.3)
<b>Income (Loss) from operations</b>	\$ 6.1	\$ (25.9)	\$ (27.9)	\$ 32.0	\$ 2.0
% of net sales	8.0%	*	*		

\* Not meaningful

### 2017 v 2016

Net sales in the Energy Services segment declined \$9.2 million in 2017. The sales decrease was due to continued weak market conditions in the oil and gas sector and the shutdown of U.S. on-shore service lines, including nitrogen and pipeline in the second quarter of 2016.

The segment recorded income from operations of \$6.1 million in 2017. Included in income from operations was \$1.7 million of additional restructuring charges relating to the exit of certain businesses in 2016, which was offset by a \$1.1 million gain on sale of previously impaired assets.

### 2016 v 2015

Net sales in the Energy Services segment declined \$96.3 million in 2016. The sales decrease was due to weak market conditions in the oil and gas sector and the shutdown of U.S. on-shore service lines, including Nitrogen and Pipeline in the second quarter of 2016 and the shutdown of the Coiled Tubing service line in August 2015.

The segment recorded a loss from operations of \$25.9 million in 2016. Included in the loss from operations was \$30.3 million of impairment and restructuring charges relating to the Company's exit from the Nitrogen and Pipeline product lines and restructuring of other onshore services within the Energy Services segment. Going forward, Energy Services' primary service offerings will be offshore filtration and well testing to the worldwide oil and gas industry.

## Liquidity and Capital Resources

Cash provided from continuing operations in 2017 was \$207.6 million, compared with \$225.1 million in prior year. Cash flows provided from operations in 2017 were principally used for repayment of debt, to fund capital expenditures and pay the Company's dividend to common shareholders. The Company's intention is to use excess cash flow for investments in growth, continued debt reduction and selective share repurchases. In 2017, the Company repaid approximately \$119 million in principal amount of its long-term debt.

On May 9, 2014, in connection with the acquisition of AMCOL International Corporation ("AMCOL"), the Company entered into a credit agreement providing for the \$1.560 billion senior secured term loan facility (the "Term Facility") and a \$200 million senior secured revolving credit facility (the "Revolving Facility" and, together with the Term Facility, the "Facilities"). The net proceeds of the Term Facility, together with the Company's cash on hand, were used as cash consideration for the acquisition of AMCOL and to refinance certain existing indebtedness of the Company and AMCOL and to pay fees and expenses in connection with the foregoing. Loans under the Revolving Facility will be used for working capital and other general corporate purposes of the Company and its subsidiaries.

On June 23, 2015, the Company entered into an amendment (the "First Amendment") to the credit agreement to reprice the \$1.378 billion then outstanding on the Term Facility. As amended, the Term Facility had a \$1.078 billion floating rate tranche and a \$300 million fixed rate tranche. On February 14, 2017, the Company entered into an amendment (the "Second Amendment") to the credit agreement to reprice the \$788 million floating rate tranche then outstanding, which extended the maturity and lowered the interest costs by 75 basis points. Following the Second Amendment, the loans outstanding under the floating rate tranche of the Term Facility will mature on February 14, 2024, the loans outstanding under the fixed rate tranche of the Term Facility will mature on May 9, 2021 and the loans outstanding (if any) and commitments under the Revolving Facility will mature and terminate, as the case may be, on May 9, 2019. After the Second Amendment, loans under the floating rate tranche of the Term Facility bear interest at a rate equal to an adjusted LIBOR rate (subject to a floor of 0.75%) plus an applicable margin equal to 2.25% per annum. Loans under the fixed rate tranche of the Term Facility bear interest at a rate of 4.75%. Loans under the Revolving Facility will bear interest at a rate equal to an adjusted LIBOR rate plus an applicable margin equal to 1.75% per annum. Such rates are subject to decrease by up to 25 basis points in the event that, and for so long as, the Company's net leverage ratio (as defined in the credit agreement) is less than certain thresholds. The floating rate tranche of the Term Facility was issued at par and the fixed rate tranche of the Term Facility was issued at a 0.25% discount in connection with the First Amendment. The variable rate tranche of the Term Facility was issued at a 0.25% discount in connection with the Second Amendment. The variable rate tranche has a 1% required amortization per year. The Company will pay certain fees under the credit agreement, including customary annual administration fees. The loans under the fixed rate tranche of the Term Facility are subject to prepayment premiums in the event of certain prepayments prior to the third anniversary of the effective date of the First Amendment. The obligations of the Company under the Facilities are unconditionally guaranteed jointly and severally by, subject to certain exceptions, all material domestic subsidiaries of the Company (the "Guarantors") and secured, subject to certain exceptions, by a security interest in substantially all of the assets of the Company and the Guarantors.

The credit agreement contains certain customary affirmative and negative covenants that limit or restrict the ability of the Company and its restricted subsidiaries to enter into certain transactions or take certain actions. In addition, the credit agreement contains a financial covenant that requires the Company, if on the last day of any fiscal quarter loans or letters of credit were outstanding under the Revolving Facility (excluding up to \$15 million of letters of credit), to maintain a maximum net leverage ratio (as defined in the credit agreement) of, initially, 5.25 to 1.00 for the four fiscal quarter period preceding such day. Such maximum net leverage ratio requirement is subject to decrease during the duration of the facility to a minimum level (when applicable) of 3.50 to 1.00. During 2017, the Company repaid \$110 million on its Term Facility. As of December 31, 2017, there were no loans and \$12.9 million in letters of credit outstanding under the Revolving Facility. The Company is in compliance with all the covenants associated with the Revolving Facility as of the end of the period covered by this report.

The Company has four committed loan facilities for the funding of new manufacturing facilities in China, comprised of facilities of 94.8 million RMB, (approximately \$14.5 million) and a \$1.8 million facility. In addition, the Company has one committed loan facility in Japan in the amount of 680 million Yen (approximately \$6.0 million). As of December 31, 2017, on a combined basis, \$8.8 million was outstanding under these facilities. Principal will be repaid in accordance with the payment schedules ending in 2021. The Company repaid \$6.9 million on these loans in 2017.

As of December 31, 2017, the Company had \$37.1 million in uncommitted short-term bank credit lines, of which approximately \$6.3 million was in use. The credit lines are primarily outside the U.S. and are generally one year in term at competitive market rates at large, well-established institutions. The Company typically uses its available credit lines to fund working capital requirements or local capital spending needs. We anticipate that capital expenditures for 2018 should be between \$70 million and \$80 million, principally related to the construction of PCC plants and other opportunities that meet our strategic growth objectives. We expect to meet our other long-term financing requirements from internally generated funds, committed and uncommitted bank credit lines and, where appropriate, project financing of certain satellite plants.



On April 5, 2016, the Company entered into a floating to fixed interest rate swap for an initial aggregate notional amount of \$300 million to limit exposure to interest rate increases related to a portion of the Company's floating rate indebtedness. This swap agreement hedges a portion of contractual floating rate interest through its expiration in May 2021. As a result of the agreement, the Company's effective fixed interest rate on the notional amount floating rate indebtedness will be 4.25%. The fair value of this instrument at December 31, 2017 was an asset of \$2.9 million.

On September 16, 2015, the Company's Board of Directors authorized the Company's management to repurchase, at its discretion, up to \$150 million of the Company's shares over a two-year period commencing October 2015. As of October 1, 2017, 64,650 shares were repurchased under this program for \$3.3 million, or, an average price of approximately \$51.79 per share. This program has expired.

On September 21, 2017, the Company's Board of Directors authorized the Company's management to repurchase, at its discretion, up to \$150 million of the Company's shares over a two-year period commencing October 1, 2017 after the previous program expired. There were no share repurchases under this program during 2017.

On January 24, 2018, the Company's Board of Directors declared a regular quarterly dividend on its common stock of \$0.05 per share. No dividend will be payable unless declared by the Board and unless funds are legally available for payment thereof.

### Contractual Obligations

The Company has committed cash outflow related to long-term debt, interest on long-term debt, pension and post-retirement benefit obligations, operating lease agreements, and other long-term contractual obligations. As of December 31, 2017, minimum payments for these obligations were as follows:

	Payments Due by Period				
	Total	2018	2019 - 2020	2021 - 2022	After 2022
	(millions of dollars)				
Debt	\$ 987.0	\$ 3.8	\$ 1.2	\$ 304.0	\$ 678.0
Interest related to long term debt	196.2	38.3	76.4	53.7	27.8
Estimated pension and post retirement plan funding	31.0	15.5	15.5	-	-
Operating lease obligations	82.3	18.1	25.2	14.1	24.9
Repatriation tax liability	35.1	2.8	5.6	5.6	21.1
Other long term liabilities	22.1	1.6	-	-	20.5
Total contractual obligations	<u>\$ 1,353.7</u>	<u>\$ 80.1</u>	<u>\$ 123.9</u>	<u>\$ 377.4</u>	<u>\$ 772.3</u>

Long-term debt amounts in the preceding table represent the principal amounts of all outstanding long-term debt, including current portion. As of December 31, 2017, maturities for long-term debt extended to 2024.

Interest related to long-term debt is based on interest rates in effect as of December 31, 2017 and is calculated on debt with maturities that, on December 31, 2017 extended to 2024. As the contractual interest rate for a portion of our debt is variable, actual cash payments may differ from the estimates provided in the preceding table.

Estimated minimum required pension funding and post-retirement benefits are based on actuarial estimates using current assumptions for discount rates, long-term rate of return on plan assets, rate of compensation increases, and health care cost trend rates. The Company has determined that it is not practicable to present expected pension funding and other postretirement benefit payments beyond 2019 and, accordingly, no amounts have been included in the table beyond such dates.

The Company has several non-cancelable operating leases, primarily for office space and equipment. Operating lease obligations includes future minimum rental commitments under non-cancelable leases.

On December 22, 2017, the Tax Cuts and Jobs Act was enacted and we recorded a tax liability for the one-time transition tax on accumulated foreign subsidiary earnings of \$35.1 million. We intend to pay the one-time transition tax in eight annual interest-free installments beginning in 2018.

Other long term liabilities include asset retirement obligations relating to the retirement of certain tangible long-lived assets and land restoration obligations at its PCC satellite facilities and mining operations. See Note 18 to the Consolidated Financial Statements.

The total amount of contingent obligations associated with gross unrecognized tax benefits for uncertain tax positions, including positions impacting only the timing of tax benefits was \$14.7 million at December 31, 2017. Payment of these obligations would result from settlements with taxing authorities. Due to the difficulty in determining the timing of settlements, these obligations are not

included in the table above. We do not expect to make a tax payment related to these obligations within the next year that would significantly impact liquidity.

## Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities.

On an ongoing basis, we evaluate our estimates and assumptions, including those related to revenue recognition, valuation of long-lived assets, goodwill and other intangible assets, income taxes, including valuation allowances and pension plan assumptions. We base our estimates on historical experience and on other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that cannot readily be determined from other sources. There can be no assurance that actual results will not differ from those estimates.

We believe the following critical accounting policies require us to make significant judgments and estimates in the preparation of our consolidated financial statements:

- Revenue recognition: Revenue from sale of products is recognized when the title passes to the customer, the customer assumes the risks and rewards of ownership, and collectability is reasonably assured. Generally this occurs when the goods are shipped to the customer. Revenues from sales of equipment are recorded upon completion of installation and receipt of customer acceptance. Revenues from services are recorded when the services are performed.

In most of our PCC contracts, the price per ton is based upon the total number of tons sold to the customer during the year. Under those contracts, the price billed to the customer for shipments during the year is based on periodic estimates of the total annual volume that will be sold to the customer. Revenues are adjusted at the end of each year to reflect the actual volume sold. There were no significant revenue adjustments in the fourth quarter of 2017 and 2016, respectively. We have consignment arrangements with certain customers in our Refractories segment. Revenues for these transactions are recorded when the consigned products are consumed by the customer.

Revenues within our Energy Services segment is service based. Certain contracts within this segment are long-term contracts, the revenue for which is recorded using percentage-of-completion method. Progress is generally based upon costs incurred to date as compared to the total estimated costs to complete the work under the contract or the amount of product installed in relation to the total amount expected to be installed. All known or anticipated losses on contracts are provided when they become evident. Cost adjustments that are in the process of being negotiated with customers for extra work or changes in scope of the work are included in revenue when collection is reasonably assured.

- Valuation of long-lived assets, goodwill and other intangible assets: We assess the possible impairment of long-lived assets and identifiable amortizable intangibles whenever events or changes in circumstances indicate that the carrying value may not be recoverable.

Goodwill is evaluated for impairment at least annually. Factors we consider important that could trigger an impairment review include the following:

- Significant under-performance relative to historical or projected future operating results;
- Significant changes in the manner of use of the acquired assets or the strategy for the overall business;
- Significant negative industry or economic trends;
- Market capitalization below invested capital.

Annually, the Company performs a qualitative assessment for each of its reporting units to determine if the two step process for impairment testing is required. If the Company determines that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, the Company then evaluates the recoverability of goodwill using a two-step impairment test approach at the reporting unit level. Step one involves a) developing the fair value of total invested capital of each reporting unit in which goodwill is assigned; and b) comparing the fair value of total invested capital for each reporting unit to its carrying amount, to determine if there is goodwill impairment. Should the carrying amount for a reporting unit exceed its fair value, then the step one test is failed, and the magnitude of any goodwill impairment is determined under step two. The amount of impairment loss is determined in step two by comparing the implied fair value of reporting unit goodwill with the carrying amount of goodwill.

The Company has five reporting units; PCC, Processed Minerals, Refractories, Performance Materials and Energy Services. We identify our reporting units by assessing whether the components of our operating segments constitute businesses for which discrete financial information is available and management regularly reviews the operating results of those components. In the fourth quarter of 2017, the Company performed a qualitative assessment of each of its reporting units and

determined it was not more likely than not that the fair value of any of its reporting units was less than their carrying values.

**Property, plant and equipment:** Property, plant and equipment are depreciated over their useful lives. Useful lives are based on management's estimates of the period that the assets can generate revenue, which does not necessarily coincide with the remaining term of a customer's contractual obligation to purchase products made using those assets. Our sales of PCC are predominately pursuant to long-term evergreen contracts, initially ten years in length, with paper mills at which we operate satellite PCC plants. The terms of many of these agreements have been extended, often in connection with an expansion of the satellite PCC plant. Failure of a PCC customer to renew an agreement or continue to purchase PCC from our facility could result in an impairment of assets or accelerated depreciation at such facility.

We evaluate the recoverability of our property, plant and equipment whenever events or change in circumstances indicate that the carrying value of the assets may not be recoverable. For testing the recoverability, we primarily use discounted cash flow models or cost approach to estimate the fair value of these assets. Critical assumptions used in conducting these tests included expectations of our business performance and financial results, useful lives of assets, discount rates and comparable market data.

- **Accounting for income taxes:** As part of the process of preparing our consolidated financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. This process involves estimating current tax expense together with assessing temporary differences resulting from differing treatments of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are included in the consolidated balance sheet. We must then assess the likelihood that our deferred tax assets will be recovered from future taxable income, and to the extent we believe that recovery is not likely, we must establish a valuation allowance. To the extent we establish a valuation allowance or change this allowance in a period, we must include an expense within the tax provision in the Consolidated Statements of Income.

Deferred tax liabilities represents amount of income taxes payable in future periods. Such liabilities arise because of temporary differences between the financial reporting and tax bases of assets and liabilities. Deferred income tax assets represent amounts available to reduce income taxes payable on taxable income in future years. Such assets arise because of temporary differences between the financial reporting and tax bases of assets and liabilities, as well as from net operating losses. We evaluate the recoverability of these future tax deductions by assessing the adequacy of future expected taxable income from all sources, including reversal of taxable temporary differences and forecasted operating earnings. These sources of income inherently rely heavily on estimates. We use our historical experience and business forecasts to provide insight. The amount recorded for the net deferred tax liability was \$133.8 million and \$211.7 million at December 31, 2017 and 2016, respectively.

U.S. Tax Reform was enacted on December 22, 2017 and introduces significant changes to U.S. income tax law. Effective in 2018, the legislation reduces the U.S. statutory tax rate from 35% to 21%, creates new taxes on certain foreign-sourced earnings and certain related-party payments. In addition, in 2017, the Company is subject to a one-time transition tax on accumulated foreign subsidiary earnings not previously subject to U.S. income tax. Accounting for the income tax effects of this legislation requires significant judgments and estimates in the interpretation and calculations of its provisions.

Due to the timing of the enactment and the complexity involved in applying the provisions of the U.S. Tax Reform, the Company has made reasonable estimates of the effects and recorded provisional amounts in our consolidated financial statements for the year ended December 31, 2017. As we collect and prepare necessary data, and interpret any additional guidance issued by the U.S. Treasury Department, the IRS or other standard-setting bodies, we may make adjustments to the provisional amounts. Those adjustments may materially impact the provision for income taxes and the effective tax rate in the period in which the adjustments are made. The accounting for the tax effects of the enactment of the U.S. Tax Reform will be completed in 2018.

The application of income tax law is inherently complex. Laws and regulations in this area are voluminous and are often ambiguous. As such, we are required to make many subjective assumptions and judgments regarding our income tax exposures. Interpretations of and guidance surrounding income tax laws and regulations change over time. As such, changes in our subjective assumptions and judgments can materially affect amounts recognized in the consolidated balance sheets and statements of operations. See Note 5 to the Consolidated Financial Statements for additional detail on our uncertain tax positions.

- **Pension Benefits:** We sponsor pension and other retirement plans in various forms covering the majority of employees who meet eligibility requirements. Several statistical and actuarial models which attempt to estimate future events are used in calculating the expense and liability related to the plans. These models include assumptions about the discount rate, expected return on plan assets and rate of future compensation increases as determined by us, within certain guidelines. Our assumptions reflect our historical experience and management's best judgment regarding future expectations. In addition, our actuarial consultants also use subjective factors such as withdrawal and mortality rates to estimate these assumptions. The actuarial assumptions used by us may differ materially from actual results due to changing market and economic conditions, higher or lower withdrawal rates or longer or shorter life spans of participants, among other things. Differences from these assumptions may result in a significant impact to the amount of pension expense/liability recorded by us follows:

A one percentage point change in our major assumptions would have the following effects:

**Effect on Expense**

(millions of dollars)	<u>Discount Rate</u>	<u>Salary Scale</u>	<u>Return on Asset</u>
1% increase .....	\$ (3.2 )	\$ 0.8	\$ (1.8 )
1% decrease.....	\$ 5.9	\$ (0.6 )	\$ 2.5

**Effect on Projected Benefit Obligation**

(millions of dollars)	<u>Discount Rate</u>	<u>Salary Scale</u>
1% increase.....	\$ (39.5 )	\$ 5.0
1% decrease .....	\$ 65.4	\$ (4.5 )

The investment strategy for pension plan assets is to maintain a broadly diversified portfolio designed to both preserve and grow plan assets to meet future plan obligations. The Company's average rate of return on assets from inception through December 31, 2017 was over 9%. The Company's assets are strategically allocated among equity, debt and other investments to achieve a diversification level that dampens fluctuations in investment returns. The Company's long-term investment strategy is an investment portfolio mix of approximately 55%-65% in equity securities, 30%-35% in fixed income securities and 0%-15% in other securities. As of December 31, 2017, the Company had approximately 56% of its pension assets in equity securities, 36% in fixed income securities and 8% in other securities.

We recognized pension expense of \$12.6 million in 2017 as compared to \$14.2 million in 2016. Accounting guidance on retirement benefits requires companies to discount future benefit obligations back to today's dollars using a discount rate that is based on high-quality fixed-income investments. A decrease in the discount rate increases the pension benefit obligation, while an increase in the discount rate decreases the pension benefit obligation. This increase or decrease in the pension benefit obligation is recognized in Accumulated other comprehensive income and subsequently amortized into earnings as an actuarial gain or loss. The guidance also requires companies to use an expected long-term rate of return on plan assets for computing current year pension expense. Differences between the actual and expected returns are also recognized in Accumulated other comprehensive income (loss) and subsequently amortized into earnings as actuarial gains and losses. At the end of 2017, total actuarial losses recognized in Accumulated other comprehensive income (loss) for pension plans were (\$91.3 million), as compared to (\$82.0 million) in 2016. The majority of the actuarial losses were due to decreases in the discount rate in 2012 and lower actual rates of return on assets than expected during the financial crisis of 2008.

In 2017, included in other comprehensive income, is a net loss of \$10.0 million (\$8.5 million after-tax) was recorded in other comprehensive income, primarily due to a change in discount rates. In 2016, a net loss of \$4.6 million (\$3.2 million after-tax) was recorded in other comprehensive income, primarily due to a change in discount rates. In 2015, a net gain of \$10 million (\$7 million after-tax) was recorded in other comprehensive income, primarily due to a change in discount rates and updated mortality tables.

Actuarial losses for pensions will be impacted in future periods by actual asset returns, discount rate changes, actual demographic experience and other factors that impact these expenses. These losses, reported in Accumulated other comprehensive income (loss), will generally be amortized as a component of net periodic benefit cost on a straight-line basis over the average remaining service period of active employees expected to receive benefits under the benefit plans. At the end of 2017, the average remaining service period of active employees or life expectancy for fully eligible employees was 10 years. We expect our 2018 amortization of net actuarial losses to be approximately \$11.5 million.

For a detailed discussion on the application of these and other accounting policies, see "Summary of Significant Accounting Policies" in Note 1 to the Consolidated Financial Statements. This discussion and analysis should be read in conjunction with the consolidated financial statements and related notes included elsewhere in this report.

**Inflation**

While inflation historically has not had a material impact on MTI, our financial performance could be adversely effected by increases in energy and commodity prices. Our production processes consume a significant amount of energy, primarily electricity, diesel fuel, natural gas and coal. We use diesel fuel to operate our mining and processing equipment and our freight costs are heavily dependent upon fuel prices and surcharges. Energy costs also affect the cost of raw materials. On a combined basis, these factors represent a large exposure to petrochemical and energy products which may be subject to significant price fluctuations. The contracts pursuant to which we construct and operate our satellite PCC plants generally adjust pricing to reflect the pass-through of increases in costs resulting from inflation, including lime and energy prices. However, there is a time lag before such price adjustments can be

implemented. The Company and its customers will typically negotiate reasonable price adjustments in order to recover a portion of these escalating costs, but there can be no assurance that we will be able to recover increasing costs through such negotiations.

### **Cyclical Nature of Customers' Businesses**

The bulk of our sales within Specialty Minerals, Performance Materials and Refractories segments are to customers in the paper manufacturing, metalcasting, steel manufacturing and construction industries, which have historically been cyclical. The pricing structure of some of our long-term PCC contracts makes our PCC business less sensitive to declines in the quantity of product purchased. In addition, our customers' demand for our Energy Services segment's products and services are affected by oil and natural gas production activities, which are heavily influenced by the benchmark price of these commodities. Oil and natural gas prices decreased significantly between 2014 through 2017, which had caused exploration companies to reduce their capital expenditures and production and exploration activities. This has had the effect of decreasing the demand and increasing competition for the services we provide. We cannot predict the economic outlook in the countries in which we do business, nor in the key industries we serve.

### **Recently Issued Accounting Standards**

Changes to accounting principles generally accepted in the United States of America (U.S. GAAP) are established by the Financial Accounting Standards Board (FASB) in the form of accounting standards updates (ASUs) to the FASB's Accounting Standards Codification. The Company considers the applicability and impact of all ASUs. ASUs not listed below were assessed and determined to be either not applicable or are expected to have minimal impact on our consolidated financial position and results of operations.

#### *Revenue from Contracts with Customers*

In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers" which will supersede nearly all existing revenue recognition guidance under U.S. GAAP. The underlying principle is that an entity will recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price, and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. The guidance is effective for the interim and annual periods beginning on or after December 15, 2017. The guidance permits the use of either a retrospective or cumulative effect transition method. The Company has completed its evaluation of the provisions of this standard and we have concluded that our adoption of ASU No. 2014-09 will not materially change the amount or timing of revenues recognized by us, nor will it materially affect our financial position. We have adopted this new standard effective January 1, 2018. The Company has elected to use the cumulative effect transition method and there will not be a change to our previously reported financial results.

#### *Leases*

In February 2016, the FASB issued ASU 2016-02, "Leases", which requires lessees to recognize most leases on-balance sheet, thereby increasing their reported assets and liabilities, in some cases very significantly. Lessor accounting remains substantially similar to current U.S. GAAP. ASU 2016-02 is effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2018. ASU 2016-02 mandates a modified retrospective transition method for all entities. The Company is currently evaluating the impact of this ASU on the Company's consolidated financial statements and related disclosures. Based on the current status of this assessment, the adoption of this guidance is not expected to have a material impact on the Company's financial statements.

#### *Intangibles – Goodwill and Other*

In January 2017, the FASB issued ASU 2017-04, "Intangibles-Goodwill and Other: Simplifying the Test for Goodwill Impairment", which no longer requires an entity to perform a hypothetical purchase price allocation to measure goodwill impairment. Instead, goodwill will be measured using the difference between the carrying amount and the fair value of the reporting unit. The guidance is effective for the interim and annual periods beginning on or after December 15, 2019, with early adoption permitted. The adoption of this guidance is not expected to have a material impact on the Company's financial statements.

#### *Compensation- Retirement Benefits*

In March 2017, the FASB issued ASU 2017-07, "Compensation – Retirement Benefits: Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost", which requires companies to present the service cost component of the net benefit cost in the same line items in which they report compensation cost. All other components of net periodic benefit cost will be presented outside operating income. The guidance is effective for the interim and annual periods beginning on or after December 15, 2017. We adopted this new standard effective January 1, 2018. The adoption of this guidance is not expected to have a material impact on the Company's financial statements.



## *Derivatives and Hedging*

In August 2017, the FASB issued accounting guidance to improve and simplify existing guidance to allow companies to better reflect their risk management activities in the financial statements. The guidance expands the ability to hedge nonfinancial and financial risk components, eliminates the requirement to separately measure and recognize hedge ineffectiveness and eases requirements of an entity's assessment of hedge effectiveness. This guidance is effective for periods beginning after December 15, 2018 and early adoption is permitted. The adoption of this guidance is not expected to have a material impact on the Company's financial statements.

### *Adoption of ASU 2016-09, Stock Compensation- Improvements to Employee Share-Based Payment Accounting*

On January 1, 2017, the Company adopted the provisions of ASU 2016-09, "Stock Compensation – Improvements to Employee Share-Based Payment Accounting", an amendment to account standards codification ("ASC") 718, which simplifies several aspects of accounting for share-based payments, including accounting for income taxes, forfeitures, statutory withhold rates as well as presentation on the statement of cash flows. The Company has elected to adopt the standard on a prospective basis. As a result of this adoption, the Company recognizes excess tax benefits in the current account period. The cash flow benefit of the excess tax benefit is included as an operating activity in the Consolidated Statement of Cash Flows for the period ended December 31, 2017. Additionally, taxes paid for shares withheld for tax-withholding purposes are reported as financing activities in the Condensed Consolidated Statements of Cash Flows. Previously, this activity was included in operating activities. Prior year Condensed Consolidated Statement of Cash Flows has not been restated. In accordance with the standard, the Company will continue to account for forfeitures using an estimated forfeiture rate.

## **Item 7A. Quantitative and Qualitative Disclosures about Market Risk**

We are exposed to market risk from fluctuations in foreign currency exchange rates, interest rates and credit risk. We use a variety of practices to manage these market risks, including derivative financial instruments when appropriate. Our treasury and risk management policies prohibit us from using derivative instruments for trading or speculative purposes. We also do not use leveraged derivative instruments or derivatives with complex features.

### *Exchange Rate Sensitivity*

As we operate in over 30 countries with many international subsidiaries, we are exposed to currency fluctuations related to manufacturing and selling our products and services. This foreign currency risk is diversified and involves assets, liabilities and cash flows denominated in currencies other than the U.S. Dollar (USD).

We manage our foreign currency exchange risk in part through operational means, including managing same currency revenues versus same currency costs, as well as, same currency assets versus same currency liabilities. We also have subsidiaries with the same currency exposures which may offset each other, providing a natural hedge against one another's currency risk. When appropriate, we enter into derivative financial instruments, such as forward exchange contracts, to mitigate the impact of foreign exchange rate movements on our operating results. The counterparties are major financial institutions. Such forward exchange contracts would not subject us to additional risk from exchange rate because gains and losses on these contracts would offset losses and gains on the assets, liabilities, and transactions being hedged. At December 31, 2017, we did not have any foreign currency derivative contracts outstanding.

Assets and liabilities of our international subsidiaries are translated to their parent company's reporting currency at current exchange rates during consolidation; gains and losses stemming from these translations are included as a component of Other Comprehensive Income and reported within Accumulated Comprehensive Income within our Consolidated Balance Sheets. Income and expenses of our international subsidiaries are translated at average exchange rates for the period and, when included within retained earnings in the balance sheet at current exchange rates, the differences to those average exchange rates are included within Other Comprehensive Income and reported within Accumulated Comprehensive Income. When our subsidiaries transact business in currencies other than their functional currency, those transactions are revalued in their functional currency and differences resulting from such revaluations are included within other non-operating income (deduction), net within our Consolidated Statement of Income.

We do not anticipate that near-term changes in exchange rates will have a material impact on our future earnings or cash flows. However, there can be no assurance that a sudden and significant change in the value of foreign currencies would not have a material adverse effect on our financial condition and results of operations.

### ***Interest Rate Sensitivity***

A portion of our long-term bank debt bears interest at variable rates (see Note 12 to the Consolidated Financial Statements) and our results of operations would be affected by interest rate changes to such bank debt outstanding. The Company utilizes interest rate swaps to limit exposure to market fluctuations on floating-rate debt. During the second quarter of 2016, the Company entered into a floating to fixed interest rate swap for an initial aggregate notional amount of \$300 million. An immediate 10% increase in the interest rates would not have a material effect on our results of operations over the next fiscal year. A one percentage point change in interest rates would cost \$8.3 million in incremental interest charges on an annual basis.

### ***Credit Risk***

We are exposed to credit risk on certain assets, primarily accounts receivable. We provide credit to customers in the ordinary course of business and perform ongoing credit evaluations. Concentrations of credit risk with respect to trade receivables are limited due to the large number of customers comprising our customer base. We currently believe our allowance for doubtful accounts is sufficient to cover customer credit risks. Our accounts receivable financial instruments are carried at amounts that approximate fair value.

### ***Sovereign Debt Risk***

We do not have any material credit risk with sovereign governments currently facing this situation as we do not sell our products to them. We do, however, sell to customers in these countries, but we believe our risk associated with these customers is not material.

## **Item 8. Financial Statements and Supplementary Data**

The financial information required by Item 8 is contained in Item 15 of Part IV of this report.

## **Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure**

None.

## **Item 9A. Controls and Procedures**

### ***Disclosure Controls and Procedures***

As of the end of the period covered by this report, and under the supervision and with participation of the Company's management, including the Chief Executive Officer and the Chief Financial Officer, the Company carried out an evaluation of the effectiveness of the design and operation of the Company's disclosure controls and procedures, pursuant to Exchange Act Rule 13a-15(b). Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2017.

As of December 31, 2017, the Company completed the implementation of a global enterprise resource planning ("ERP") system for the businesses acquired from AMCOL. This transition proceeded without material adverse effects. We reviewed each system as it was being implemented and the controls affected by the implementation of the new systems, and made the appropriate changes to the affected internal controls as we implemented the new systems. We believe that the controls as modified are appropriate and functioning effectively.

Pursuant to Section 404 of the Sarbanes-Oxley Act of 2002, we have included a report of management's assessment of the design and operating effectiveness of our internal controls as part of this report. Management's report is included in our consolidated financial statements beginning on page F-1 of this report under the caption entitled "Management's Report on Internal Control Over Financial Reporting."

### ***Changes in Internal Control Over Financial Reporting***

There were no changes in the Company's internal control over financial reporting during the most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect the Company's internal control over financial reporting.

## **Item 9B. Other Information**

None

## PART III

### Item 10. Directors, Executive Officers and Corporate Governance

Set forth below are the names and ages of all Executive Officers of the Registrant indicating all positions and offices with the Registrant held by each such person, and each such person's principal occupations or employment during the past five years.

<u>Name</u>	<u>Age</u>	<u>Position</u>
Douglas T. Dietrich.....	48	Chief Executive Officer
Brett Argirakis .....	53	Vice President and Managing Director, Minteq International Inc.
Gary L. Castagna .....	56	Group President, Performance Materials
Michael A. Cipolla.....	60	Vice President, Corporate Controller and Chief Accounting Officer
Matthew E. Garth.....	43	Senior Vice President, Finance and Treasury, Chief Financial Officer
Jonathan J. Hastings.....	55	Senior Vice President, Corporate Development
Andrew M. Jones .....	59	Vice President and Managing Director, Energy Services
Douglas W. Mayger.....	60	Senior Vice President and Director – MTI Supply Chain
Thomas J. Meek.....	60	Senior Vice President, General Counsel, Human Resources, Secretary and Chief Compliance Officer
D.J. Monagle, III.....	55	Group President, Specialty Minerals and Refractories

Douglas T. Dietrich was elected Chief Executive Officer effective December 2016 having served previously as Senior Vice President, Finance and Treasury, Chief Financial Officer effective January 2011. Prior to that, he was appointed Vice President, Corporate Development and Treasury effective August 2007. He had been Vice President, Alcoa Wheel Products since 2006 and President, Alcoa Latin America Extrusions and Global Rod and Bar Products since 2002.

Brett Argirakis was elected Vice President and Managing Director, Minteq International in January 2016. Prior to that, he was Global Vice President & General Manager, Refractories. Prior to that, he was Director, Marketing, Minteq Europe. Prior to that, he served as Director of Sales and Field Operations for Minteq U.S. Mr. Argirakis joined the Company in 1987 and has held positions of increasing responsibility.

Gary L. Castagna was named Group President, Performance Materials and Construction Technologies in March 2017. Prior to that, he was elected Senior Vice President and Managing Director, Performance Materials in May 2014. Prior to that, he was Executive Vice President of AMCOL and President of Performance Materials segment since May 2008. Prior to that, he had been the Senior Vice President, Chief Financial Officer and Treasurer of AMCOL since February 2001 and a consultant to AMCOL since June 2000. Prior to that, he was the Vice President of AMCOL and President of Chemdal International Corporation (former subsidiary of AMCOL) since August 1997.

Michael A. Cipolla was elected Vice President, Corporate Controller and Chief Accounting Officer in July 2003. Prior to that, he served as Corporate Controller and Chief Accounting Officer of the Company since 1998. From 1992 to 1998 he served as Assistant Corporate Controller.

Matthew E. Garth was elected Senior Vice President, Finance and Treasury, Chief Financial Officer effective January 2017. Mr. Garth joined the Company from Arconic Inc. (formerly Alcoa Inc.), where most recently he had been Vice President, Financial Planning & Analysis and Investor Relations since 2015. Prior to his most recent position, he was Vice President, Finance & CFO Operations-Alcoa Global Packing from 2014 to 2015; Vice President, Finance- Alcoa Global Packing from 2011 to 2014; Vice President, Finance – Alcoa North American Rolled Products from 2010 to 2011; Director, Investor Relations Alcoa Inc. from 2009 to 2010; and Director, Corporate Treasury Alcoa Inc. from 2007 to 2009.

Jonathan J. Hastings was elected Senior Vice President, Corporate Development effective September 2012. Before that, he was Vice President, Corporate Development. Prior to that, he was Senior Director of Strategy and New Business Development—Coatings, Global at The Dow Chemical Company. Prior to that he held positions of increasing responsibility at Rohm and Haas, including Vice President & General Manager—Packaging and Building Materials— Europe.

Andrew M. Jones was elected Vice President and Managing Director, Energy Services in October 2016. Prior to that, he was Vice President and Managing Director, Eastern Hemisphere, Energy Services since 2014. Prior to that, he was the Vice President of CETCO Oilfield Services West Africa since 2012. Prior to that, he was Managing Director of Africa Oilfield Services since 2009.

Douglas W. Mayger was elected Senior Vice President and Director—MTI Supply Chain in November 2015. Prior to that, he was Senior Vice President, Performance Minerals and Supply Chain. Prior to that, he was Vice President and Managing Director, Performance Minerals, which encompasses the Processed Minerals product line and the Specialty PCC product line. Prior to that, he

was General Manager—Carbonates West, Performance Minerals and Business Manager—Western Region. Before joining the Company as plant manager in Lucerne Valley in 2002, he served as Vice President of Operations for Aggregate Industries.

Thomas J. Meek was elected Senior Vice President, General Counsel and Secretary, Chief Compliance Officer in October 2012. In December 2011, he was given the additional responsibility for Human Resources. Prior to that, he was Vice President, General Counsel and Secretary of the Company effective September 1, 2009. Prior to that, he served as Deputy General Counsel at Alcoa Inc. Before joining Alcoa Inc. in 1999, Mr. Meek worked with Koch Industries, Inc. of Wichita, Kansas, where he held numerous supervisory positions. His last position there was Interim General Counsel. From 1985 to 1990, Mr. Meek was an Associate/Partner in the Wichita, Kansas law firm of McDonald, Tinker, Skaer, Quinn & Herrington, P.A.

D.J. Monagle III was named Group President, Specialty Minerals and Refractories in March 2017. Prior to that, he was Senior Vice President, Chief Operating Officer—Specialty Minerals Inc. and Minteq Group, effective February 2014. Prior to that, he was Senior Vice President and Managing Director, Paper PCC, effective October 2008. In November 2007, he was appointed Vice President and Managing Director—Performance Minerals. He joined the Company in January of 2003 and held positions of increasing responsibility including Vice President, Americas, Paper PCC and Global Marketing Director, Paper PCC. Before joining the Company, Mr. Monagle worked for the Paper Technology Group at Hercules between 1990 and 2003, where he held sales and marketing positions of increasing responsibility. Between 1985 and 1990, he served as an aviation officer in the U.S. Army's 11th Armored Cavalry Regiment, leaving the service as a troop commander with a rank of Captain.

The information concerning the Company's Board of Directors required by this item is incorporated herein by reference to the Company's Proxy Statement, under the captions "Corporate Governance", "Committees of the Board of Directors" and "Item 1- Election of Directors."

The information regarding compliance with Section 16(a) of the Securities Exchange Act of 1934 required by this Item is incorporated herein by reference to the Company's Proxy Statement, under the caption "Section 16(a) Beneficial Ownership Reporting Compliance."

The Board has established a code of ethics for the Chief Executive Officer, the Chief Financial Officer, and the Chief Accounting Officer entitled "Code of Ethics for the Senior Financial Officers," which is available on our website, [www.mineralstech.com](http://www.mineralstech.com), under the links entitled *Our Company*, *Corporate Responsibility* and *Policies and Charters*.

#### **Item 11. Executive Compensation**

The information appearing in the Company's Proxy Statement under the captions "Compensation Discussion and Analysis," "Report of the Compensation Committee" and "Compensation of Executive Officers and Directors" is incorporated herein by reference.

#### **Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters**

The information appearing in the Company's Proxy Statement under the caption "Security Ownership of Certain Beneficial Owners and Management" is incorporated herein by reference.

#### **Item 13. Certain Relationships and Related Transactions, and Director Independence**

The information appearing in the Company's Proxy Statement under the caption "Certain Relationships and Related Transactions" is incorporated herein by reference.

The Board has established Corporate Governance principles which include guidelines for determining Director independence, which is available on our website, [www.mineralstech.com](http://www.mineralstech.com), under the links entitled *Our Company*, *Corporate Responsibility* and *Policies and Charters*. The information appearing in the Company's Proxy Statement under the caption "Corporate Governance – Director Independence" is incorporated herein by reference.

#### **Item 14. Principal Accountant Fees and Services**

The information appearing in the Company's Proxy Statement under the caption "Principal Accountant Fees and Services" is incorporated herein by reference.

## PART IV

### Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as part of this report:

1. Financial Statements. The following Consolidated Financial Statements of Mineral Technologies Inc. and subsidiary companies and Reports of Independent Registered Public Accounting Firm are set forth on pages F-2 to F-38.

Consolidated Balance Sheets as of December 31, 2017 and 2016

Consolidated Statements of Income for the years ended December 31, 2017, 2016 and 2015

Consolidated Statements of Comprehensive Income for the years ended December 31, 2017, 2016 and 2015

Consolidated Statements of Cash Flows for the years ended December 31, 2017, 2016 and 2015

Consolidated Statements of Shareholders' Equity for the years ended December 31, 2017, 2016 and 2015

Notes to the Consolidated Financial Statements

Reports of Independent Registered Public Accounting Firm

Management's Report on Internal Control Over Financial Reporting

2. Financial Statement Schedule. The following financial statement schedule is filed as part of this report:

	<u>Page</u>
Schedule II - Valuation and Qualifying Accounts.....	S-1

All other schedules for which provision is made in the applicable accounting regulations of the SEC are not required under the related instructions or are inapplicable and, therefore, have been omitted.

3. Exhibits. The following exhibits are filed as part of, or incorporated by reference into, this report.

- 3.1 - Restated Certificate of Incorporation of the Company (Incorporated by reference to exhibit 3.1 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2003)
- 3.2 - By-Laws of the Company as amended and restated effective March 16, 2016 (Incorporated by reference to exhibit 3.1 filed with the Company's Current Report on Form 8-K (file no. 001-11430) filed on July 24, 2017)
- 4.1 - Specimen Certificate of Common Stock (Incorporated by reference to exhibit 4.1 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2003)
- 10.1 - Asset Purchase Agreement, dated as of September 28, 1992, by and between Specialty Refractories Inc. and Quigley Company Inc. (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-51292), originally filed on August 25, 1992)
- 10.1(a) - Agreement dated October 22, 1992 between Specialty Refractories Inc. and Quigley Company Inc., amending Exhibit 10.1 (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-59510), originally filed on March 15, 1993)
- 10.1(b) - Letter Agreement dated October 29, 1992 between Specialty Refractories Inc. and Quigley Company Inc., amending Exhibit 10.1 (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-59510), originally filed on March 15, 1993)
- 10.2 - Reorganization Agreement, dated as of September 28, 1992, by and between the Company and Pfizer Inc. (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-51292), originally filed on August 25, 1992)
- 10.3 - Asset Contribution Agreement, dated as of September 28, 1992, by and between Pfizer Inc. and Specialty Minerals Inc. (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-51292), originally filed on August 25, 1992)
- 10.4 - Asset Contribution Agreement, dated as of September 28, 1992, by and between Pfizer Inc. and Barretts Minerals Inc. (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-51292), originally filed on August 25, 1992)
- 10.4(a) - Agreement dated October 22, 1992 between Pfizer Inc, Barretts Minerals Inc. and Specialty Minerals Inc., amending Exhibits 10.3 and 10.4 (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-59510), originally filed on March 15, 1993)
- 10.5 - Employment Agreement, dated December 13, 2016, between the Company and Douglas T. Dietrich (Incorporated by reference to exhibit 10.1 filed with the Company's Current Report on Form 8-K (file no. 001-11430) filed on December 16, 2016) (+)



- 10.6 - Form of Employment Agreement between the Company and each of Brett Argirakis, Gary L. Castagna, Michael A. Cipolla, Matthew E. Garth, Jonathan J., Hastings, Andrew Jones, Douglas W. Mayger, Thomas J. Meek, and D.J. Monagle, III (Incorporated by reference to exhibit 10.6 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2016) (+)
- 10.7 - Severance Agreement between the Company and Douglas T. Dietrich (Incorporated by reference to the exhibit 10.2 filed with the Company's Current Report on form 8-K (file no. 001-11430) filed on December 16, 2016) (+)
- 10.8 - Form of Severance Agreement between the Company and each of Brette Argirakis, Gary L. Castagna, Michael A. Cipolla, Matthew E. Garth, Jonathan J., Hastings, Andrew Jones, Douglas W. Mayger, Thomas J. Meek, and D.J. Monagle, III (Incorporated by reference to exhibit 10.8 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2016) (+)
- 10.9 - Form of Indemnification Agreement between the Company and each of Michael A. Cipolla, Douglas T. Dietrich, Jonathan J. Hastings, Andrew Jones, Douglas W. Mayger, Thomas J. Meek, D.J. Monagle III and each of the Company's non-employee directors (Incorporated by reference to exhibit 10.1 filed with the Company's Current Report on Form 8-K (file no. 001-11430) filed on May 8, 2009) (+)
- 10.10 - Company Employee Protection Plan, as amended August 27, 1999 (Incorporated by reference to exhibit 10.7 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2004) (+)
- 10.11 - Company Nonfunded Deferred Compensation and Unit Award Plan for Non-Employee Directors, as amended and restated effective January 1, 2008 (Incorporated by reference to exhibit 10.8 filed with the Company's Quarterly Report on Form 10-Q (file no. 001-11430) for the quarter ended March 30, 2008) (+)
- 10.11(a) - First Amendment to the Company Nonfunded Deferred Compensation and Unit Award Plan for Non-Employee Directors, dated January 18, 2012 (Incorporated by reference to exhibit 10.11(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2011) (+)
- 10.12 - 2015 Stock Award and Incentive Plan of the Company (Incorporated by reference to Appendix B to the Company's 2015 Proxy Statement (file no. 001-11430) filed on April 2, 2015) (+)
- 10.13 - Company Retirement Plan, as amended and restated, dated December 21, 2012 (Incorporated by reference to exhibit 10.12 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2012) (+)
- 10.13(a) - Second Amendment to Company Retirement Plan, as amended and restated, dated December 22, 2014 (Incorporated by reference to exhibit 10.13(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.13(b) - Third Amendment to Company Retirement Plan, as amended and restated, dated June 12, 2015 (Incorporated by reference to exhibit 10.2 filed with the Company's Quarterly Report on Form 10-Q (file no. 001-11430) for the quarter ended June 28, 2015)(+)
- 10.13(c) - Fourth Amendment to Company Retirement Plan, as amended and restated, dated December 16, 2016 (Incorporated by reference to exhibit 10.13(c) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2016)(+)
- 10.13(d) - Fifth Amendment to Company Retirement Plan, as amended and restated, dated December 6, 2017 (\*) (+)
- 10.14 - Company Supplemental Retirement Plan, amended and restated effective December 31, 2009 (Incorporated by reference to exhibit 10.13 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2009) (+)
- 10.14(a) - First Amendment to Company Supplemental Retirement Plan, as amended and restated, dated December 22, 2014 (Incorporated by reference to exhibit 10.14(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.15 - Company Savings and Investment Plan, as amended and restated, dated December 21, 2012 (Incorporated by reference to exhibit 10.14 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2012) (+)
- 10.15(a) - Amendment to the Company Savings and Investment Plan, as amended and restated, dated December 5, 2013 (Incorporated by reference to exhibit 10.15(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2013) (+)
- 10.15(b) - Amendment to the Company Savings and Investment Plan, as amended and restated, dated December 5, 2013 (Incorporated by reference to exhibit 10.15(b) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2013) (+)
- 10.15(c) - Third Amendment to the Company Savings and Investment Plan, as amended and restated, dated December 22, 2014 (Incorporated by reference to exhibit 10.15(c) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.15(d) - Amendment to the Company Savings and Investment Plan, as amended and restated, dated December 31, 2015 (Incorporated by reference to exhibit 10.15(d) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2015)(+)
- 10.16 - Company Supplemental Savings Plan, amended and restated effective December 31, 2009 (Incorporated by reference to exhibit 10.15 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2009) (+)

- 10.16(a) - Amendment to the Company Supplemental Savings Plan, dated December 28, 2011 (Incorporated by reference to exhibit 10.16(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2011)(+)
- 10.16(b) - First Amendment to the Company Supplemental Savings Plan, dated December 22, 2014 (Incorporated by reference to exhibit 10.16(b) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.16(c) - Second Amendment to the Company Supplemental Savings Plan, dated December 22, 2014 (Incorporated by reference to exhibit 10.16(c) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.16(d) - Third Amendment to the Company Supplemental Savings Plan, dated December 16, 2016 (Incorporated by reference to exhibit 10.16(d) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2016)(+)
- 10.17 - Company Health and Welfare Plan, effective as of April 1, 2003 and amended and restated as of January 1, 2006 (Incorporated by reference to exhibit 10.14 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2006)(+)
- 10.17(a) - Amendment to the Company Health and Welfare Plan, dated May 19, 2009 (Incorporated by reference to exhibit 10.16(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2009) (+)
- 10.17(b) - First Amendment to Company Health and Welfare Plan, dated December 22, 2014 (Incorporated by reference to exhibit 10.17(b) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.18 - Company Retiree Medical Plan, effective as of January 1, 2011 (Incorporated by reference to exhibit 10.17 filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2010)(+)
- 10.18(a) - First Amendment to Company Retiree Medical Plan, dated December 22, 2014 (Incorporated by reference to exhibit 10.18(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.19 - Amended and Restated Grantor Trust Agreement, dated as of April 1, 2010, by and between the Company and the Wilmington Trust Company (Incorporated by reference to exhibit 10.1 filed with the Company's Quarterly Report on Form 10-Q (file no. 001-11430) for the period ended April 4, 2010)(+)
- 10.19(a) - Agreement and Amendment No. 1, dated October 1, 2017, to the Amended and Restated Grantor Trust Agreement, dated as of April 1, 2010, by and between the Company and the Wilmington Trust Company (\*) (+)
- 10.20 - AMCOL International Corporation Nonqualified Deferred Compensation Plan, as amended (Incorporated by reference to exhibit 10.1 filed with the Annual Report on Form 10-K for the year ended December 31, 2008 of AMCOL International Corporation (file no. 0-15661)) (+)
- 10.20(a) - First Amendment to AMCOL International Corporation Nonqualified Deferred Compensation Plan, as amended, dated December 22, 2014 (Incorporated by reference to exhibit 10.20(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.20(b) - Third Amendment to the AMCOL International Corporation Nonqualified Deferred Compensation Plan, as amended, dated August 21, 2015 (Incorporated by reference to exhibit 10.1 filed with the Company's Quarterly Report on Form 10-Q (file no. 001-11430) for the quarter ended September 27, 2015)(+)
- 10.21 - AMCOL International Corporation Amended and Restated Supplementary Pension Plan for Employees (Incorporated by reference to the exhibit 10.6 filed with the Annual Report on Form 10-K for the year ended December 31, 2008 of AMCOL International Corporation (file no. 0-15661)) (+)
- 10.21(a) - First Amendment to AMCOL International Corporation Amended and Restated Supplementary Pension Plan for Employees, dated December 22, 2014 (Incorporated by reference to exhibit 10.21(a) filed with the Company's Annual Report on Form 10-K (file no. 001-11430) for the year ended December 31, 2014)(+)
- 10.21(b) - Second Amendment to Amended and Restated Supplementary Pension Plan for Employees of AMCOL International Corporation, dated August 21, 2015 (Incorporated by reference to exhibit 10.2 filed with the Company's Quarterly Report on Form 10-Q (file no. 001-11430) for the quarter ended September 27, 2015)(+)
- 10.22 - Second Amendment, dated as of February 14, 2017, to the Credit Agreement, dated as of May 9, 2014, among Minerals Technologies Inc., the subsidiary borrowers party thereto, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent and collateral agent, and the other agents party thereto, JPMorgan Chase Bank, N.A., as administrative agent and collateral agent, and the other agents party thereto (Incorporated by reference to the exhibit 10.1 filed with the Company's Current Report on Form 8-K (file no. 001-11430) filed on February 15, 2017)
- 10.23 - Indenture, dated July 22, 1963, between the Cork Harbour Commissioners and Roofchrome Limited (Incorporated by reference to the exhibit so designated filed with the Company's Registration Statement on Form S-1 (Registration No. 33-51292), originally filed on August 25, 1992)
- 21.1 - Subsidiaries of the Company (\*)
- 23.1 - Consent of Independent Registered Public Accounting Firm (\*)
- 24 - Power of Attorney (\*)

- 31.1 - Rule 13a-14(a)/15d-14(a) Certification executed by the Company's principal executive officer (\*)
  - 31.2 - Rule 13a-14(a)/15d-14(a) Certification executed by the Company's principal financial officer (\*)
  - 32 - Section 1350 Certification (\*)
  - 95 Information Concerning Mine Safety Violations (\*)
- (\*) Filed herewith.
- (+) Management contract or compensatory plan or arrangement required to be filed pursuant to Item 601 of Regulation S-K.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

By: /s/ Douglas T. Dietrich

Douglas T. Dietrich  
Chief Executive Officer

February 16, 2018

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated:

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
<u>/s/ Douglas T. Dietrich</u> Douglas T. Dietrich	Chief Executive Officer (principal executive officer)	February 16, 2018
<u>/s/ Matthew E. Garth</u> Matthew E. Garth	Senior Vice President-Finance and Treasury, Chief Financial Officer (principal financial officer)	February 16, 2018
<u>/s/ Michael A. Cipolla</u> Michael A. Cipolla	Vice President - Controller and Chief Accounting Officer (principal accounting officer)	February 16, 2018

*		
_____ Joseph C. Breunig	Director	February 16, 2018
*		
_____ John J. Carmola	Director	February 16, 2018
*		
_____ Robert L. Clark	Director	February 16, 2018
/s/ Douglas T. Dietrich		
_____ Douglas T. Dietrich	Director	February 16, 2018
*		
_____ Duane R. Dunham	Chairman & Director	February 16, 2018
*		
_____ Franklin L. Feder	Director	February 16, 2018
*		
_____ Carolyn K. Pittman	Director	February 16, 2018
*		
_____ Marc E. Robinson	Director	February 16, 2018
*		
_____ Donald C. Winter	Director	February 16, 2018

\* By: /s/ Thomas J. Meek  
Thomas J. Meek  
Attorney-in-Fact



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**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**CONSOLIDATED BALANCE SHEETS**

	December 31,	
	2017	2016
(millions of dollars, except share and per share amounts)		
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 212.2	\$ 188.5
Short-term investments, at cost which approximates market	2.7	2.0
Accounts receivable, less allowance for doubtful accounts - 2017 - \$4.2; 2016 - \$ 7.9	383.0	341.3
Inventories	219.3	186.9
Prepaid expenses	30.1	28.0
Other current assets	4.9	4.4
Total current assets	852.2	751.1
Property, plant and equipment, less accumulated depreciation and depletion	1,061.3	1,051.8
Goodwill	779.3	778.7
Intangible assets	196.5	204.4
Deferred income taxes	25.6	27.1
Other assets and deferred charges	55.5	50.3
Total assets	\$ 2,970.4	\$ 2,863.4
<b>LIABILITIES AND SHAREHOLDERS' EQUITY</b>		
Current liabilities:		
Short-term debt	\$ 6.3	\$ 6.1
Current maturities of long-term debt	3.8	6.8
Accounts payable	179.0	144.9
Income tax payable	8.4	21.5
Accrued compensation and related items	55.4	61.3
Other current liabilities	57.1	54.9
Total current liabilities	310.0	295.5
Long-term debt, net of unamortized discount and deferred financing costs	959.8	1,069.9
Deferred income taxes	159.4	238.8
Accrued pension and postretirement benefits	155.0	147.3
Other non-current liabilities	107.1	81.0
Total liabilities	1,691.3	1,832.5
Shareholders' equity:		
Preferred stock, without par value; 1,000,000 shares authorized; none issued	-	-
Common stock, par value at \$0.10 per share; 100,000,000 shares authorized; Issued 48,644,736 shares in 2017 and 48,229,826 shares in 2016	4.9	4.8
Additional paid-in capital	422.7	400.0
Retained earnings	1,607.2	1,419.1
Accumulated other comprehensive loss	(186.1)	(221.1)
Less common stock held in treasury, at cost; 13,270,391 shares in 2017 and 13,259,839 shares in 2016	(597.0)	(596.3)
Total MTI shareholders' equity	1,251.7	1,006.5
Non-controlling interest	27.4	24.4
Total shareholders' equity	1,279.1	1,030.9
Total liabilities and shareholders' equity	\$ 2,970.4	\$ 2,863.4

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**CONSOLIDATED STATEMENTS OF INCOME**

	Year Ended December 31,		
	2017	2016	2015
	(millions of dollars, except per share amounts)		
Product sales	\$ 1,599.0	\$ 1,552.1	\$ 1,615.4
Service revenue	76.7	85.9	182.2
Total net sales	1,675.7	1,638.0	1,797.6
Cost of goods sold	1,158.5	1,117.7	1,190.0
Cost of service revenue	50.0	59.9	136.6
Total cost of sales	1,208.5	1,177.6	1,326.6
Production margin	467.2	460.4	471.0
Marketing and administrative expenses	182.4	179.4	190.1
Research and development expenses	23.7	23.8	23.6
Acquisition related transaction and integration costs	3.4	8.0	11.8
Restructuring and other items, net	15.0	28.3	45.2
Income from operations	242.7	220.9	200.3
Interest expense, net	(43.4)	(54.4)	(60.9)
Debt modification costs and fees	(3.9)	-	(4.5)
Other non-operating income (deductions), net	(4.5)	3.8	(2.3)
Total non-operating deductions, net	(51.8)	(50.6)	(67.7)
Income from operations before provision for taxes and equity in earnings	190.9	170.3	132.6
Provision (benefit) for taxes on income	(6.6)	35.3	22.8
Equity in earnings of affiliates, net of tax	1.5	2.1	1.8
Consolidated net income	199.0	137.1	111.6
Less:			
Net income attributable to non-controlling interests	3.9	3.7	3.7
Net income attributable to Minerals Technologies Inc. (MTI)	\$ 195.1	\$ 133.4	\$ 107.9
<b>Earnings per share:</b>			
Basic:			
Income from operations attributable to MTI	\$ 5.54	\$ 3.82	\$ 3.11
Diluted:			
Income from operations attributable to MTI	\$ 5.48	\$ 3.79	\$ 3.08
Cash dividends declared per common share	\$ 0.20	\$ 0.20	\$ 0.20
<b>Shares used in computation of earnings per share:</b>			
Basic	35.2	34.9	34.7
Diluted	35.6	35.2	35.0

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME**

	Year Ended December 31,		
	2017	2016	2015
	(millions of dollars)		
Consolidated net income	\$ 199.0	\$ 137.1	\$ 111.6
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	44.7	(40.2)	(76.6)
Pension and postretirement plan adjustments	(8.5)	(3.2)	7.3
Unrealized gains on cash flow hedges	0.3	1.6	-
Total other comprehensive income (loss), net of tax	36.5	(41.8)	(69.3)
Total comprehensive income including non-controlling interests	235.5	95.3	42.3
Less: Net income attributable to non-controlling interest	3.9	3.7	3.7
Less: Foreign currency translation adjustments attributable to non-controlling interest	1.5	(1.6)	(1.3)
Comprehensive income attributable to non-controlling interest	5.4	2.1	2.4
Comprehensive income attributable to MTI	\$ 230.1	\$ 93.2	\$ 39.9

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

	Year Ended December 31,		
	2017	2016	2015
	(millions of dollars)		
<b>Operating Activities:</b>			
Consolidated net income	\$ 199.0	\$ 137.1	\$ 111.6
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation, depletion and amortization	91.0	91.9	98.3
Loss on disposal of property, plant and equipment	1.8	1.9	0.1
Deferred income taxes	(76.1)	(10.9)	(2.5)
Pension amortization and settlement loss	7.4	7.9	9.9
Provision for bad debts	3.8	6.2	2.6
Stock-based compensation	8.1	6.3	11.2
Asset impairment charge	5.3	18.5	34.2
Non-cash debt modification costs	1.8	-	-
Other non-cash items	(1.7)	(3.1)	(0.2)
Changes in operating assets and liabilities			
Accounts receivable	(27.3)	(4.9)	36.6
Inventories	(25.2)	3.1	3.1
Pension plan funding	(10.8)	(10.5)	(10.4)
Accounts payable	28.0	(4.8)	(9.7)
Restructuring liabilities	4.5	(4.3)	(3.0)
Income taxes payable	(12.6)	5.4	(15.4)
Prepaid expenses and other	10.6	(14.7)	3.6
Net cash provided by operating activities	<u>207.6</u>	<u>225.1</u>	<u>270.0</u>
<b>Investing Activities:</b>			
Purchases of property, plant and equipment	(76.7)	(62.4)	(86.0)
Proceeds from sale of assets	1.4	1.4	5.0
Purchases of short-term investments	3.8	(6.7)	(4.7)
Proceeds from sale of short-term investments	(4.5)	8.0	1.1
Other	(1.5)	(1.9)	-
Net cash used in investing activities	<u>(77.5)</u>	<u>(61.6)</u>	<u>(84.6)</u>
<b>Financing Activities:</b>			
Proceeds from issuance of long-term debt	-	7.2	11.8
Repayment of long-term debt	(118.9)	(193.2)	(191.8)
Net issuance (repayment) of short-term debt	(0.2)	(0.1)	1.3
Purchase of common shares for treasury	(0.7)	(2.6)	-
Proceeds from issuance of stock under option plan	14.6	5.5	2.5
Excess tax benefits related to stock incentive programs	(3.6)	0.3	0.5
Dividends paid to non-controlling interest	(2.4)	(4.9)	(1.1)
Cash dividends paid	(7.0)	(7.0)	(7.0)
Net cash used in financing activities	<u>(118.2)</u>	<u>(194.8)</u>	<u>(183.8)</u>
Effect of exchange rate changes on cash and cash equivalents	<u>11.8</u>	<u>(9.6)</u>	<u>(21.8)</u>
Net increase (decrease) in cash and cash equivalents	23.7	(40.9)	(20.2)
Cash and cash equivalents at beginning of period	188.5	229.4	249.6
Cash and cash equivalents at end of period	<u>\$ 212.2</u>	<u>\$ 188.5</u>	<u>\$ 229.4</u>

See Notes to Consolidated Financial Statements, which are an integral part of these statements.



**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY**

	Equity Attributable to MTI					Non-controlling Interests	Total
	Common Stock	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock		
	(millions of dollars)						
<i>Balance as of December 31, 2014</i>	\$ 4.8	\$ 373.0	\$ 1,191.8	\$ (112.9)	\$ (593.7)	\$ 25.9	\$ 888.9
Net income	-	-	107.9	-	-	3.7	111.6
Other comprehensive income (loss)	-	-	-	(68.0)	-	(1.3)	(69.3)
Dividends declared	-	-	(7.0)	-	-	-	(7.0)
Dividends to non-controlling interest	-	-	-	-	-	(1.1)	(1.1)
Issuance of shares pursuant to employee stock compensation plans	-	2.4	-	-	-	-	2.4
Income tax benefit arising from employee stock compensation plans	-	1.0	-	-	-	-	1.0
Stock-based compensation	-	11.2	-	-	-	-	11.2
<i>Balance as of December 31, 2015</i>	<u>\$ 4.8</u>	<u>\$ 387.6</u>	<u>\$ 1,292.7</u>	<u>\$ (180.9)</u>	<u>\$ (593.7)</u>	<u>\$ 27.2</u>	<u>\$ 937.7</u>
Net income	-	-	133.4	-	-	3.7	137.1
Other comprehensive income (loss)	-	-	-	(40.2)	-	(1.6)	(41.8)
Dividends declared	-	-	(7.0)	-	-	-	(7.0)
Dividends to non-controlling interest	-	-	-	-	-	(4.9)	(4.9)
Issuance of shares pursuant to employee stock compensation plans	-	5.5	-	-	-	-	5.5
Income tax benefit arising from employee stock compensation plans	-	0.6	-	-	-	-	0.6
Purchase of common stock for treasury	-	-	-	-	(2.6)	-	(2.6)
Stock-based compensation	-	6.3	-	-	-	-	6.3
<i>Balance as of December 31, 2016</i>	<u>\$ 4.8</u>	<u>\$ 400.0</u>	<u>\$ 1,419.1</u>	<u>\$ (221.1)</u>	<u>\$ (596.3)</u>	<u>\$ 24.4</u>	<u>\$ 1,030.9</u>
Net income	-	-	195.1	-	-	3.9	199.0
Other comprehensive income (loss)	-	-	-	35.0	-	1.5	36.5
Dividends declared	-	-	(7.0)	-	-	-	(7.0)
Dividends to non-controlling interest	-	-	-	-	-	(2.4)	(2.4)
Issuance of shares pursuant to employee stock compensation plans	0.1	14.6	-	-	-	-	14.7
Income tax benefit arising from employee stock compensation plans	-	-	-	-	-	-	-
Purchase of common stock for treasury	-	-	-	-	(0.7)	-	(0.7)
Stock-based compensation	-	8.1	-	-	-	-	8.1
<i>Balance as of December 31, 2017</i>	<u>\$ 4.9</u>	<u>\$ 422.7</u>	<u>\$ 1,607.2</u>	<u>\$ (186.1)</u>	<u>\$ (597.0)</u>	<u>\$ 27.4</u>	<u>\$ 1,279.1</u>

See Notes to Consolidated Financial Statements, which are an integral part of these statements.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**Note 1. Summary of Significant Accounting Policies**

*Business*

The Company is a resource- and technology-based company that develops, produces and markets on a worldwide basis a broad range of specialty mineral, mineral-based and synthetic mineral products and supporting systems and services.

*Basis of Presentation*

The accompanying consolidated financial statements include the accounts of Minerals Technologies Inc. (the "Company"), its wholly and majority-owned subsidiaries, as well as variable interest entities for which the Company is the primary beneficiary. All intercompany balances and transactions have been eliminated in consolidation.

*Use of Estimates*

The Company employs accounting policies that are in accordance with U.S. generally accepted accounting principles and require management to make estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reported period. Significant estimates include those related to revenue recognition, valuation of long-lived assets, goodwill and other intangible assets, pension plan assumptions, income tax, and litigation and environmental liabilities. Actual results could differ from those estimates.

*Cash Equivalents and Short-term Investments*

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. Short-term investments consist of financial instruments, mainly bank deposits, with original maturities beyond three months, but less than twelve months. Short-term investments amounted to \$2.7 million and \$2.0 million at December 31, 2017 and 2016, respectively. There were no unrealized holding gains and losses on the short-term bank investments held at December 31, 2017.

*Trade Accounts Receivable*

Trade accounts receivables are recorded at the invoiced amount and do not bear interest. The allowance for doubtful accounts is the Company's best estimate of the amount of probable credit losses in the Company's existing accounts receivable. The Company determines the allowance based on historical write-off experience and specific allowances for bankrupt customers. The Company also analyzes the collection history and financial condition of its other customers, considering current industry conditions and determines whether an allowance needs to be established. The Company reviews its allowance for doubtful accounts monthly. Past due balances over 90 days based on payment terms are reviewed individually for collectability. Account balances are charged off against the allowance after all means of collection have been exhausted and the potential for recovery is considered remote. The Company does not have any off-balance-sheet credit exposure related to its customers.

*Inventories*

Inventories are valued at the lower of cost or market. Cost is determined by the first-in, first-out (FIFO) method.

Additionally, items such as idle facility expense, excessive spoilage, freight handling costs, and re-handling costs are recognized as current period charges. The allocation of fixed production overheads to the costs of conversion are based upon the normal capacity of the production facility. Fixed overhead costs associated with idle capacity are expensed as incurred.

*Property, Plant and Equipment*

Property, plant and equipment are recorded at cost. Significant improvements are capitalized, while maintenance and repair expenditures are charged to operations as incurred. The Company capitalizes interest cost as a component of construction in progress. The straight-line method of depreciation is used for substantially all of the assets for financial reporting purposes, except for mining related equipment which uses units-of-production method. The annual rates of depreciation are 3% - 6.67% for buildings, 6.67% - 12.5% for machinery and equipment, 8% - 12.5% for furniture and fixtures and 12.5% - 25% for computer equipment and software-related assets. The estimated useful lives of our PCC production facilities and machinery and equipment pertaining to our natural stone mining and processing plants and our chemical plants are 15 years.

Property, plant and equipment are depreciated over their useful lives. Useful lives are based on management's estimates of the period that the assets can generate revenue, which does not necessarily coincide with the remaining term of a customer's contractual obligation to purchase products made using those assets. The Company's sales of PCC are predominantly pursuant to long-term evergreen contracts, initially ten years in length, with paper mills at which the Company operates satellite PCC plants. The terms of many of these agreements have been extended, often in connection with an expansion of the satellite PCC plant. Failure of a PCC customer to renew an agreement or continue to purchase PCC from a Company facility could result in an impairment of assets charge or accelerated depreciation at such facility.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

Depletion of mineral reserves is determined on a unit-of-extraction basis for financial reporting purposes, based upon proven and probable reserves, and on a percentage depletion basis for tax purposes.

*Stripping Costs Incurred During Production*

Stripping costs are those costs incurred for the removal of waste materials for the purpose of accessing ore body that will be produced commercially. Stripping costs incurred during the production phase of a mine are variable costs that are included in the costs of inventory produced during the period that the stripping costs are incurred.

*Accounting for the Impairment of Long-Lived Assets*

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable, the Company estimates the undiscounted future cash flows (excluding interest), resulting from the use of the asset and its ultimate disposition. If the sum of the undiscounted cash flows (excluding interest) is less than the carrying value, the Company recognizes an impairment loss, measured as the amount by which the carrying value exceeds the fair value of the asset, determined principally using discounted cash flows.

*Goodwill and Other Intangible Assets*

Goodwill represents the excess of purchase price and related costs over the value assigned to the net tangible and identifiable intangible assets of businesses acquired. Goodwill is not amortized, but instead assessed for impairment. Intangible assets with estimable useful lives are amortized on a straight-line basis over their respective estimated lives to the estimated residual values, and reviewed for impairment.

The Company performs a qualitative assessment for each of its reporting units to determine if the two step process for impairment testing is required. If the Company determines that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, the Company would then evaluate the recoverability of goodwill using a two-step impairment test approach at the reporting unit level. In the first step, the fair value for the reporting unit is compared to its book value including goodwill. In the case that the fair value of the reporting unit is less than book value, a second step is performed which compares the fair value of the reporting unit's goodwill to the book value of the goodwill. The fair value for the goodwill is determined based on the difference between the fair values of the reporting unit and the net fair values of the identifiable assets and liabilities of such reporting unit. If the fair value of the goodwill is less than the book value, the difference is recognized as impairment.

*Investment in joint ventures*

The Company uses the equity method of accounting to incorporate the results of its investments in companies in which it has significant influence, but does not control; and cost method of accounting in companies in which it cannot exercise significant control. The Company records the equity in earnings of its investments in joint ventures on a one month lag. At December 31, 2017, the book value of Company's equity method investment was \$16.1 million. The Company had no cost method investments at December 31, 2017.

*Accounting for Asset Retirement Obligations*

The Company provides for obligations associated with the retirement of long-lived assets and the associated asset retirement costs. The fair value of a liability for an asset retirement obligation is recognized in the period in which it is incurred if a reasonable estimate of fair value can be made. The associated asset retirement costs are capitalized as part of the carrying amount of the long-lived asset. The Company also provides for legal obligations to perform asset retirement activities where timing or methods of settlement are conditional on future events.

The Company also records liabilities related to land reclamation as a part of the asset retirement obligations. The Company mines land for various minerals using a surface-mining process that requires the removal of overburden. In many instances, the Company is obligated to restore the land upon completion of the mining activity. As the overburden is removed, the Company recognizes this liability for land reclamation based on the estimated fair value of the obligation. The obligation is adjusted to reflect the passage of time and changes in estimated future cash outflows.

*Fair Value of Financial Instruments*

The recorded amounts of cash and cash equivalents, receivables, short-term borrowings, accounts payable, accrued interest, and variable-rate long-term debt approximate fair value because of the short maturity of those instruments or the variable nature of underlying interest rates. Short-term investments are recorded at cost, which approximates fair market value.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

*Derivative Financial Instruments*

The Company records derivative financial instruments which are used to hedge certain foreign exchange risk at fair value on the balance sheet. See Note 9 for a full description of the Company's hedging activities and related accounting policies.

*Revenue Recognition*

Revenue from sale of products is recognized when title passes to the customer, the customer assumes the risks and rewards of ownership, and collectability is reasonably assured; generally, this occurs when the goods are shipped to the customer. In most of the Company's PCC contracts, the price per ton is based upon the total number of tons sold to the customer during the year. Under those contracts the price billed to the customer for shipments during the year is based on periodic estimates of the total annual volume that will be sold to such customer. Revenues are adjusted at the end of each year to reflect the actual volume sold. The Company also has consignment arrangements with certain customers in our Refractories segment. Revenues for these transactions are recorded when the consigned products are consumed by the customer.

Revenue from sales of equipment is recorded upon completion of installation and receipt of customer acceptance. Revenue from services is recorded when the services have been performed and collectability is reasonably assured.

Revenue from long-term construction contracts is recorded using the percentage-of-completion method. Progress is generally based upon costs incurred to date as compared to the total estimated costs to complete the work under the contract or the amount of product installed in relation to the total amount expected to be installed. All known or anticipated losses on contracts are provided when they become evident. Cost adjustments that are in the process of being negotiated with customers for extra work or changes in scope of work are included in revenue when collection is reasonably assured.

*Foreign Currency*

The assets and liabilities of the Company's international subsidiaries are translated into U.S. dollars using exchange rates at the respective balance sheet date. The resulting translation adjustments are recorded in accumulated other comprehensive income (loss) in shareholders' equity. Income statement items are generally translated at monthly average exchange rates prevailing during the period. International subsidiaries operating in highly inflationary economies translate non-monetary assets at historical rates, while net monetary assets are translated at current rates, with the resulting translation adjustments included in net income. At December 31, 2017, the Company had no international subsidiaries operating in highly inflationary economies.

*Income Taxes*

Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the year in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

The Company operates in multiple taxing jurisdictions, both within the U.S. and outside the U.S. In certain situations, a taxing authority may challenge positions that the Company has adopted in its income tax filings. The Company regularly assesses its tax position for such transactions and includes reserves for those differences in position. The reserves are utilized or reversed once the statute of limitations has expired or the matter is otherwise resolved.

The application of income tax law is inherently complex. Laws and regulations in this area are voluminous and are often ambiguous. As such, we are required to make many subjective assumptions and judgments regarding our income tax exposures. Interpretations of and guidance surrounding income tax laws and regulations change over time. As such, changes in our subjective assumptions and judgments can materially affect amounts recognized in the consolidated balance sheets and statements of operations. The Company's accounting policy is to recognize interest and penalties as part of its provision for income taxes. See Note 5 for additional detail on our uncertain tax positions.

The accompanying financial statements do not include a provision for foreign withholding taxes on international subsidiaries' unremitted earnings, which are expected to be permanently reinvested overseas.

*Research and Development*

Research and development costs are expensed as incurred.

*Accounting for Stock-Based Compensation*

The Company recognizes compensation expense for share-based awards based upon the grant date fair value over the vesting period.

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

*Pension and Post-retirement Benefits*

The Company has defined benefit pension plans covering the majority of its employees. The benefits are generally based on years of service and an employee's modified career earnings.

The Company also provides post-retirement healthcare benefits for the majority of its retirees and employees in the United States. The Company measures the costs of its obligation based on its best estimate. The net periodic costs are recognized as employees render the services necessary to earn the post-retirement benefits.

*Environmental*

Expenditures that relate to current operations are expensed or capitalized as appropriate. Expenditures that relate to an existing condition caused by past operations and which do not contribute to current or future revenue generation are expensed. Liabilities are recorded when it is probable the Company will be obligated to pay amounts for environmental site evaluation, remediation or related costs, and such amounts can be reasonably estimated.

*Earnings Per Share*

Basic earnings per share have been computed based upon the weighted average number of common shares outstanding during the period.

Diluted earnings per share have been computed based upon the weighted average number of common shares outstanding during the period assuming the issuance of common shares for all potentially dilutive common shares outstanding.

*Subsequent Events*

The Company has evaluated for subsequent events through the date of issuance of its financial statements.

*Recently Issued Accounting Standards*

Changes to accounting principles generally accepted in the United States of America (U.S. GAAP) are established by the Financial Accounting Standards Board (FASB) in the form of accounting standards updates (ASUs) to the FASB's Accounting Standards Codification. The Company considers the applicability and impact of all ASUs. ASUs not listed below were assessed and determined to be either not applicable or are expected to have minimal impact on our consolidated financial position and results of operations.

*Revenue from Contracts with Customers*

In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers" which will supersede nearly all existing revenue recognition guidance under U.S. GAAP. The underlying principle is that an entity will recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price, and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. The guidance is effective for the interim and annual periods beginning on or after December 15, 2017. The guidance permits the use of either a retrospective or cumulative effect transition method. The Company has completed its evaluation of the provisions of this standard and we have concluded that our adoption of ASU No. 2014-09 will not materially change the amount or timing of revenues recognized by us, nor will it materially affect our financial position. We have adopted this new standard effective January 1, 2018. The Company has elected to use the cumulative effect transition method and there will not be a change to our previously reported financial results.

*Leases*

In February 2016, the FASB issued ASU 2016-02, "Leases", which requires lessees to recognize most leases on-balance sheet, thereby increasing their reported assets and liabilities, in some cases very significantly. Lessor accounting remains substantially similar to current U.S. GAAP. ASU 2016-02 is effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2018. ASU 2016-02 mandates a modified retrospective transition method for all entities. The Company is currently evaluating the impact of this ASU on the Company's consolidated financial statements and related disclosures. Based on the current status of this assessment, the adoption of this guidance is not expected to have a material impact on the Company's financial statements.

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*Intangibles – Goodwill and Other*

In January 2017, the FASB issued ASU 2017-04, “Intangibles-Goodwill and Other: Simplifying the Test for Goodwill Impairment”, which no longer requires an entity to perform a hypothetical purchase price allocation to measure goodwill impairment. Instead, goodwill will be measured using the difference between the carrying amount and the fair value of the reporting unit. The guidance is effective for the interim and annual periods beginning on or after December 15, 2019, with early adoption permitted. The adoption of this guidance is not expected to have a material impact on the Company’s financial statements.

*Compensation – Retirement Benefits*

In March 2017, the FASB issued ASU 2017-07, “Compensation – Retirement Benefits: Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost”, which requires companies to present the service cost component of the net benefit cost in the same line items in which they report compensation cost. All other components of net periodic benefit cost will be presented outside operating income. The guidance is effective for the interim and annual periods beginning on or after December 15, 2017. We adopted this new standard effective January 1, 2018. The adoption of this guidance is not expected to have a material impact on the Company’s financial statements.

*Derivatives and Hedging*

In August 2017, the FASB issued accounting guidance to improve and simplify existing guidance to allow companies to better reflect their risk management activities in the financial statements. The guidance expands the ability to hedge nonfinancial and financial risk components, eliminates the requirement to separately measure and recognize hedge ineffectiveness and eases requirements of an entity’s assessment of hedge effectiveness. The adoption of this guidance is not expected to have a material impact on the Company’s financial statements.

*Adoption of ASU 2016-09, Stock Compensation- Improvements to Employee Share-Based Payment Accounting*

On January 1, 2017, the Company adopted the provisions of ASU 2016-09, “Stock Compensation – Improvements to Employee Share-Based Payment Accounting”, an amendment to account standards codification (“ASC”) 718, which simplifies several aspects of accounting for share-based payments, including accounting for income taxes, forfeitures, statutory withhold rates as well as presentation on the statement of cash flows. The Company has elected to adopt the standard on a prospective basis. As a result of this adoption, the Company recognizes excess tax benefits in the current account period. The cash flow benefit of the excess tax benefit is included as an operating activity in the Consolidated Statement of Cash Flows for the period ended December 31, 2017. Additionally, taxes paid for shares withheld for tax-withholding purposes are reported as financing activities in the Condensed Consolidated Statements of Cash Flows. Previously, this activity was included in operating activities. Prior year Condensed Consolidated Statement of Cash Flows has not been restated. In accordance with the standard, the Company will continue to account for forfeitures using an estimated forfeiture rate.

**Note 2. Restructuring and Other Items, net**

In 2015, the Company recognized impairment charges for certain underutilized coiled tubing equipment within the Energy Services segment which have been abandoned by the Company.

In 2016, the Company recognized additional restructuring charges for lease termination costs, inventory write-offs and impairment of assets relating to its exit from the Nitrogen and Pipeline product lines and restructuring of other onshore services within the Energy Services segment as a result of the significant reduction in oil prices and overcapacity in the onshore oil service market. The Company expects to realize further annualized savings from this restructuring program of \$11.5 million (unaudited). In addition, the Company recognized a \$2.9 million gain on previously impaired assets in the Refractories and Energy Services Segments.

In 2017, the Company recognized \$15.0 million in restructuring and non-cash impairment charges from the closure of paper mills in North America, as well as the alignment of corporate and Paper PCC staffing levels into higher growth regions. The restructuring is expected to result in approximately \$6 million (unaudited) in savings on an annualized basis.

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The following table outlines the amount of restructuring charges recorded within the Consolidated Statements of Income, and the segments they relate to:

Restructuring and Other Items, net	Year Ended December 31, 2017		
	2017	2016	2015
	(millions of dollars)		
<i>Impairment of assets</i>			
Specialty Minerals	\$ 5.3	\$ -	\$ -
Performance Materials	-	-	-
Energy Services	-	18.5	33.0
Corporate	-	-	1.2
Total impairment of assets charges	\$ 5.3	\$ 18.5	\$ 34.2
<i>Severance and other employee costs</i>			
Specialty Minerals	\$ 5.0	\$ -	\$ -
Performance Materials	-	-	-
Refractories	-	-	2.0
Energy Services	1.7	12.7	9.0
Corporate	4.1	-	-
Total severance and other employee costs	\$ 10.8	\$ 12.7	\$ 11.0
<i>Other</i>			
Refractories	\$ -	\$ (2.0)	\$ -
Energy Services	(1.1)	(0.9)	-
Total restructuring and other items, net	\$ 15.0	\$ 28.3	\$ 45.2

At December 31, 2017 and 2016, the Company had \$8.1 million and \$3.6 million, respectively, included within other current liabilities within our Consolidated Balance Sheets for cash expenditures needed to satisfy remaining obligations under these reorganization initiatives. The Company expects to pay these amounts by the end of 2018.

The following table is a reconciliation of our restructuring liability balance:

	(millions of dollars)
Restructuring liability, December 31, 2016	\$ 3.6
Additional provisions	10.8
Cash payments	(6.3)
Restructuring liability, December 31, 2017	<u>\$ 8.1</u>

**Note 3. Stock-Based Compensation**

At the Company's 2015 Annual Meeting of Stockholders, the Company's stockholders ratified the adoption of the Company's 2015 Stock Award and Incentive Plan (the "2015 Plan"), which provides for grants of incentive and non-qualified stock options, restricted stock, stock appreciation rights, stock awards or performance unit awards. The 2015 Plan is substantially similar to the Company's 2001 Stock Award and Incentive Plan (as amended and restated as of March 18, 2009, the "2001 Plan" and collectively with the 2015 Plan, the "Plans"). The Company established the 2015 Plan to increase the total number of shares of common stock reserved and available for issuance by 880,000 shares from the number of shares remaining under the 2001 Plan. With the ratification of the 2015 Plan by the Company's stockholders, the 2001 Plan was discontinued as to new grants (however, all awards previously granted under the 2001 Plan remained unchanged). The Plans are administered by the Compensation Committee of the Board of Directors. Stock options granted under the Plans generally have a ten year term. The exercise price for stock options are at prices at or above the fair market value of the common stock on the date of the grant, and each award of stock options will vest ratably over a specified period, generally three years.

Stock-based compensation expense is recognized in the consolidated financial statements for stock options based on the grant date fair value.

Net income for years ended 2017, 2016 and 2015 include \$4.1 million, \$3.5 million and \$4.0 million pre-tax compensation costs, respectively, related to stock option expense as a component of marketing and administrative expenses. All stock option expense is recognized in the consolidated statements of operations. The related tax benefit included in the



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statement of income on the non-qualified stock options was \$1.1 million, \$1.4 million and \$1.6 million for 2017, 2016 and 2015, respectively.

*Stock Options*

The fair value of options granted is estimated on the date of grant using the Black-Scholes valuation model. Compensation expense is recognized only for those options expected to vest, with forfeitures estimated at the date of grant based on the Company's historical experience and future expectations. The forfeiture rate assumption used for the periods ended December 31, 2017, 2016 and 2015 was 8.71%, 7.38% and 7.34%, respectively.

The weighted average grant date fair value for stock options granted during the years ended December 31, 2017, 2016 and 2015 was \$30.28, \$14.34 and \$22.68, respectively. The weighted average grant date fair value for stock options vested during 2017, 2016 and 2015 was \$18.45, \$20.94 and \$17.83, respectively. The total intrinsic value of stock options exercised during the years ended December 31, 2017, 2016 and 2015 was \$11.7 million, \$4.9 million and \$2.4 million, respectively.

The fair value for stock awards was estimated at the date of grant using the Black-Scholes option valuation model with the following weighted average assumptions for the years ended December 31, 2017, 2016 and 2015:

	2017	2016	2015
Expected life (in years)	6.4	6.5	6.4
Interest rate	2.04%	1.72%	1.52%
Volatility	36.61%	36.75%	36.86%
Expected dividend yield	0.26%	0.54%	0.33%

The expected term of the options represents the estimated period of time until exercise and is based on historical experience of similar awards, based upon contractual terms, vesting schedules, and expectations of future employee behavior. The expected stock-price volatility is based upon the historical and implied volatility of the Company's stock. The interest rate is based upon the implied yield on U.S. Treasury bills with an equivalent remaining term. Estimated dividend yield is based upon historical dividends paid by the Company.

The following table summarizes stock option activity for the year ended December 31, 2017:

	Awards	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (Millions)
Awards outstanding at December 31, 2016	1,198,725	\$ 41.66		
Granted	187,533	77.99		
Exercised	(353,636)	41.56		
Canceled	(35,783)	50.47		
Awards outstanding at December 31, 2017	<u>996,839</u>	\$ 48.21	6.32	\$ 22.2
Awards exercisable at December 31, 2017	<u>596,446</u>	\$ 41.01	4.94	\$ 16.60

The aggregate intrinsic value above is calculated before applicable income taxes, based on the Company's closing stock price of \$68.85 as of the last business day of the period ended December 31, 2017 had all options been exercised on that date. The weighted average intrinsic value of the options exercised during 2017, 2016 and 2015 was \$32.95, \$32.34 and \$32.07 per share, respectively. As of December 31, 2017, total unrecognized stock-based compensation expense related to non-vested stock options was approximately \$4.5 million, which is expected to be recognized over a weighted average period of approximately three years.

The Company issues new shares of common stock upon the exercise of stock options

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Non-vested stock option activity for the year ended December 31, 2017 is as follows:

	Awards	Weighted Average Grant date Fair Value Per Share
Nonvested awards outstanding at December 31, 2016	431,412	\$ 45.61
Granted	187,533	77.99
Vested	(183,679)	48.78
Canceled	(34,873)	50.08
Nonvested awards outstanding at December 31, 2017	<u>400,393</u>	\$ 58.94

*Restricted Stock*

The Company has granted key employees rights to receive shares of the Company's common stock pursuant to the Plan. The rights will be deferred for a specified number of years of service, subject to restrictions on transfer and other conditions. Compensation expense for these shares is recognized over the vesting period. The Company granted 69,539 shares, 155,165 shares and 216,502 shares for the periods ended December 31, 2017, 2016 and 2015, respectively. The fair value was determined based on the market value of unrestricted shares. As of December 31, 2017, there was unrecognized stock-based compensation related to restricted stock of \$5.1 million, which will be recognized over approximately the next three years. The compensation expense amortized with respect to all units was approximately \$5.9 million, \$5.8 million and \$8.8 million for the periods ended December 31, 2017, 2016 and 2015, respectively. In addition, the Company recorded reversals of \$2.4 million, \$3.8 million and \$1.6 million for periods ended December 31, 2017, 2016 and 2015, respectively, related to restricted stock forfeitures. Such costs and reversals are included in marketing and administrative expenses.

The following table summarizes the restricted stock activity for the Plan:

	Awards	Weighted Average Grant Date Fair Value Per Share
Unvested balance at December 31, 2016	227,213	\$ 49.57
Granted	69,539	78.00
Vested	(61,274)	52.51
Canceled	(55,368)	52.74
Unvested balance at December 31, 2017	<u>180,110</u>	\$ 58.57

**Note 4. Earnings Per Share (EPS)**

	Year Ended December 31,		
	2017	2016	2015
	(in millions, except per share data)		
<b>Net income attributable to MTI</b>	<u>\$ 195.1</u>	<u>\$ 133.4</u>	<u>\$ 107.9</u>
Weighted average shares outstanding	35.2	34.9	34.7
Dilutive effect of stock options and stock units	0.4	0.3	0.3
Weighted average shares outstanding, adjusted	<u>35.6</u>	<u>35.2</u>	<u>35.0</u>
<b>Basic earnings per share attributable to MTI</b>	<u>\$ 5.54</u>	<u>\$ 3.82</u>	<u>\$ 3.11</u>
<b>Diluted earnings per share attributable to MTI</b>	<u>\$ 5.48</u>	<u>\$ 3.79</u>	<u>\$ 3.08</u>

Options to purchase 181,003 shares, 784 shares and 386,766 shares of common stock for the years ended December 31, 2017, 2016 and 2015, respectively, were not included in the computation of diluted earnings per share because they were anti-dilutive, as the exercise prices of the options were greater than the average market price of the common shares.

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In the first quarter of 2017, the Company adopted the provisions of ASU 2016-09, “Stock Compensation – Improvements to Employee Share-Based Payment Accounting”. Under the new guidance excess income tax benefits are no longer included in the calculation of assumed proceeds. As such, the dilutive effect of stock options and stock units for the period ended December 31, 2017 is reflective of the new guidance.

**Note 5. Income Taxes**

The U.S. Tax Cuts and Jobs Act (“U.S. Tax Reform”), enacted in December 2017, significantly changes U.S. corporate income tax laws by, among other things, reducing the U.S. corporate income tax rate to 21% starting in 2018 and creating a territorial tax system with a one-time mandatory tax on previously deferred foreign earnings of U.S. subsidiaries. Under U.S. GAAP (specifically, ASC Topic 740), the effects of changes in tax rates and laws on deferred tax balances are recognized in the period in which the new legislation is enacted.

In response to U.S. Tax Reform, the Staff of the U.S. Securities and Exchange Commission issued Staff Accounting Bulletin No. 118 (“SAB No. 118”) to provide guidance to registrants in applying ASC Topic 740 in connection with U.S. Tax Reform. SAB No. 118 provides that in the period of enactment, the income tax effects of U.S. Tax Reform may be reported as a provisional amount based on a reasonable estimate (to the extent a reasonable estimate can be determined), which would be subject to adjustment during a “measurement period.” The measurement period begins in the reporting period of the U.S. Tax Reform enactment date and ends when a registrant has obtained, prepared and analyzed the information that was needed in order to complete the accounting requirements under ASC Topic 740. SAB No. 118 also describes supplemental disclosure that should accompany the provisional amounts.

U.S. Tax Reform represents the first significant change in U.S. tax law in over 30 years. As permitted by SAB No. 118, some elements of the tax expense recorded in the fourth quarter of 2017 due to the enactment of U.S. Tax Reform are based on reasonable estimates and considered provisional. The Company is continuing to collect and analyze detailed information about the earnings and profits of its non-U.S. subsidiaries, the related taxes paid, the amounts which could be repatriated, the foreign taxes which may be incurred on repatriation and the associated impact of these items under U.S. Tax Reform. The Company may record adjustments to refine those estimates during the measurement period, as additional analysis is completed.

As a result, we have recorded a net tax benefit of \$47.3 million during the fourth quarter of 2017. This amount, which is reflected within the provision for income taxes in the Consolidated Statement of Income, includes the estimated impact of the one-time mandatory tax on previously deferred earnings of non-U.S. subsidiaries offset in part by the benefit from revaluation of net deferred tax liabilities based on the new lower corporate income tax rate. The impact of the U.S. Tax Reform may differ from this estimate, possibly materially, due to, among other things, changes in interpretations and assumptions made, additional guidance that may be issued and actions taken by the Company as a result of the U.S. Tax Reform.

Income from operations before provision for taxes by domestic and foreign source is as follows:

	2017	2016	2015
	(millions of dollars)		
Income from continuing operations before income taxes and income from affiliates and joint ventures:			
Domestic	\$ 96.7	\$ 72.9	\$ 32.6
Foreign	94.2	97.4	100.0
	<u>\$ 190.9</u>	<u>\$ 170.3</u>	<u>\$ 132.6</u>

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The provision (benefit) for taxes on income consists of the following:

	2017	2016	2015
	(millions of dollars)		
<b>Domestic</b>			
Taxes currently payable			
Federal	\$ 46.0	\$ 18.7	\$ 1.4
State and local	2.4	4.4	1.2
Deferred income taxes	(78.1)	(8.8)	(3.2)
Domestic tax provision (benefit)	<u>(29.7)</u>	<u>14.3</u>	<u>(0.6)</u>
<b>Foreign</b>			
Taxes currently payable	21.1	23.2	22.7
Deferred income taxes	2.0	(2.2)	0.7
Foreign tax provision	<u>23.1</u>	<u>21.0</u>	<u>23.4</u>
Total tax provision (benefit)	<u>\$ (6.6)</u>	<u>\$ 35.3</u>	<u>\$ 22.8</u>

The provision (benefit) for taxes on income shown in the previous table is classified based on the location of the taxing authority, regardless of the location in which the taxable income is generated.

The major elements contributing to the difference between the U.S. federal statutory tax rate and the consolidated effective tax rate are as follows:

	2017	2016	2015
U.S. statutory rate	35.0%	35.0%	35.0%
Depletion	(6.7)%	(6.6)%	(8.4)%
Difference between tax provided on foreign earnings and the U.S. statutory rate	(3.8)%	(6.4)%	(8.3)%
State and local taxes, net of federal tax benefit	1.1%	1.1%	0.3%
Tax credits and foreign dividends	0.3%	0.6%	(0.5)%
Change in valuation allowance	(1.9)%	(1.1)%	(0.9)%
Impact of uncertain tax positions	0.4%	0.4%	(0.1)%
Impact of officer's non-deductible compensation	0.8%	0.1%	2.9%
Manufacturing deduction	(1.6)%	(2.0)%	(2.0)%
Impact of US Tax Reform	(24.8)%	0.0%	0.0%
Other	(2.3)%	(0.4)%	(0.8)%
Consolidated effective tax rate	<u>(3.5)%</u>	<u>20.7%</u>	<u>17.2%</u>

The Company believes that its accrued liabilities are sufficient to cover its U.S. and foreign tax contingencies. The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities are presented below:

	2017	2016
	(millions of dollars)	
Deferred tax assets attributable to:		
Accrued liabilities	\$ 28.6	\$ 49.7
Net operating loss carry forwards	33.2	34.6
Pension and post-retirement benefits costs	40.4	55.4
Other	22.0	35.0
Valuation allowance	(21.4)	(24.8)
Total deferred tax assets	<u>102.8</u>	<u>149.9</u>
Deferred tax liabilities attributable to:		
Plant and equipment, principally due to differences in depreciation	161.6	251.3
Intangible assets	63.4	96.3
Other	11.6	14.0
Total deferred tax liabilities	<u>236.6</u>	<u>361.6</u>
Net deferred tax asset (liability)	<u>\$ (133.8)</u>	<u>\$ (211.7)</u>

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Net deferred tax assets and net deferred tax liabilities are as follows:

	2017	2016
	(millions of dollars)	
Net deferred tax asset, long-term	\$ 25.6	\$ 27.1
Net deferred tax liability, long-term	159.4	238.8
Net deferred tax asset (liability), long-term	<u>\$ (133.8)</u>	<u>\$ (211.7)</u>

The Company has \$33.2 million of deferred tax assets arising from tax loss carry forwards which will be realized through future operations. Carry forwards of approximately \$15.5 million expire over the next 20 years, and \$17.7 million can be utilized over an indefinite period.

On December 31, 2017, the Company had \$14.7 million of total unrecognized tax benefits. Included in this amount were a total of \$11.9 million of unrecognized income tax benefits that, if recognized, would affect the Company's effective tax rate. While it is expected that the amount of unrecognized tax benefits will change in the next 12 months, we do not expect the change to have a significant impact on the results of operations or the financial position of the Company.

The following table summarizes the activity related to our unrecognized tax benefits:

	2017	2016
	(millions of dollars)	
Balance at beginning of the year	\$ 13.7	\$ 4.0
Increases related to current year tax positions	1.2	8.8
Increases related to new judgements	1.2	0.9
Decreases related to audit settlements and statute expirations	(1.4)	-
Balance at the end of the year	<u>\$ 14.7</u>	<u>\$ 13.7</u>

The Company's accounting policy is to recognize interest and penalties accrued, relating to unrecognized income tax benefits as part of its provision for income taxes. The Company had recorded a \$0.4 million benefit in interest and penalties during 2017 and had a total accrued balance on December 31, 2017 of \$1.7 million.

The Company operates in multiple taxing jurisdictions, both within and outside the U.S. In certain situations, a taxing authority may challenge positions that the Company has adopted in its income tax filings. The Company, with a few exceptions (none of which are material), is no longer subject to U.S. federal, state, local, and European income tax examinations by tax authorities for years prior to 2010.

Net cash paid for income taxes were \$47.7 million, \$30.6 million and \$43.8 million for the years ended December 31, 2017, 2016 and 2015, respectively.

The Company had approximately \$531.2 million of foreign subsidiaries' undistributed earnings as of December 31, 2017. We intend to continue to permanently reinvest these earnings overseas for the foreseeable future and while U.S. federal tax expense as been recognized as a result of U.S. Tax Reform, no deferred tax liabilities with respect to foreign withholding taxes or state taxes have been recognized.

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**Note 6. Inventories**

The following is a summary of inventories by major category:

	<b>2017</b>	<b>2016</b>
	<b>(millions of dollars)</b>	
Raw materials	\$ 82.5	\$ 70.6
Work-in-process	7.9	5.4
Finished goods	92.3	80.5
Packaging and supplies	36.6	30.4
Total inventories	<u>\$ 219.3</u>	<u>\$ 186.9</u>

**Note 7. Property, Plant and Equipment**

The major categories of property, plant and equipment and accumulated depreciation and depletion are presented below:

	<b>December 31,</b>	
	<b>2017</b>	<b>2016</b>
	<b>(millions of dollars)</b>	
Mineral rights and reserves	\$ 545.9	\$ 547.8
Land	44.5	42.7
Buildings	199.6	195.6
Machinery and equipment	1,247.5	1,193.6
Furniture and fixtures and other	132.3	123.3
Construction in progress	49.8	38.4
	<u>2,219.6</u>	<u>2,141.4</u>
Less: accumulated depreciation and depletion	<u>(1,158.3)</u>	<u>(1,089.6)</u>
Property, plant and equipment, net	<u>\$ 1,061.3</u>	<u>\$ 1,051.8</u>

Depreciation and depletion expense for the years ended December 31, 2017, 2016 and 2015 was \$75.6 million, \$75.4 million and \$82.1 million, respectively.

**Note 8. Goodwill and Other Intangible Assets**

Goodwill and other intangible assets with indefinite lives are not amortized, but instead are assessed for impairment, at least annually. The carrying amount of goodwill was \$779.3 million and \$778.7 million as of December 31, 2017 and December 31, 2016, respectively. The net change in goodwill since December 31, 2016 was attributable to the effects of foreign exchange.

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The balance of goodwill by segment and the activity occurring in the past two fiscal years is as follows:

	Specialty Minerals	Refractories	Performance Materials	Consolidated
	(millions of dollars)			
Balance at December 31, 2015	\$ 13.3	\$ 47.0	\$ 720.9	\$ 781.2
Change in goodwill relating to:				
Foreign exchange translation	(1.2)	(1.3)	-	(2.5)
Total Changes	\$ (1.2)	\$ (1.3)	\$ -	\$ (2.5)
Balance at December 31, 2016	\$ 12.1	\$ 45.7	\$ 720.9	\$ 778.7
Change in goodwill relating to:				
Foreign exchange translation	0.6	-	-	0.6
Total Changes	0.6	-	-	0.6
Balance at December 31, 2017	\$ 12.7	\$ 45.7	\$ 720.9	\$ 779.3

Acquired intangible assets subject to amortization as of December 31, 2017 and December 31, 2016 were as follows:

	Weighted Average Useful Life (Years)	December 31, 2017		December 31, 2016	
		Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
		(millions of dollars)			
Tradenames	34	\$ 199.8	\$ 20.7	\$ 199.8	\$ 15.3
Technology	12	18.8	4.8	18.8	3.6
Patents and trademarks	17	6.4	5.3	6.4	4.8
Customer relationships	30	4.5	2.2	4.5	1.4
	28	\$ 229.5	\$ 33.0	\$ 229.5	\$ 25.1

The weighted average amortization period of the acquired intangible assets subject to amortization is approximately 28 years. Amortization expense was approximately \$8.0 million, \$8.2 million and \$7.9 million for the years ended December 31, 2017, 2016 and 2015, respectively and is recorded within the Marketing and administrative expenses line within the Consolidated Statements of Income. The estimated amortization expense is \$7.9 million annually for 2018-2022, and \$157.0 million thereafter.

**Note 9. Derivative Financial Instruments and Hedging Activities**

As a multinational corporation with operations throughout the world, the Company is exposed to certain market risks. The Company uses a variety of practices to manage these market risks, including, when considered appropriate, derivative financial instruments. The Company's objective is to offset gains and losses resulting from interest rates and foreign currency exposures with gains and losses on the derivative contracts used to hedge them. The Company uses derivative financial instruments only for risk management and not for trading or speculative purposes.

By using derivative financial instruments to hedge exposures to changes in interest rates and foreign currencies, the Company exposes itself to credit risk and market risk. Credit risk is the risk that the counterparty will fail to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is negative, the Company owes the counterparty, and therefore, it does not face any credit risk. The Company minimizes the credit risk in derivative instruments by entering into transactions with major financial institutions.

Market risk is the adverse effect on the value of a financial instrument that results from a change in interest rates, currency exchange rates, or commodity prices. The market risk associated with interest rate and forward exchange contracts is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.



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*Cash flow hedges:*

For derivative instruments that are designated and qualify as cash flow hedges, the Company records the effective portion of the gain or loss in accumulated other comprehensive income (loss) as a separate component of shareholders' equity. The Company subsequently reclassifies the effective portion of gain or loss into earnings in the period during which the hedged transaction is recognized in earnings.

The Company utilizes interest rate swaps to limit exposure to market fluctuations on floating-rate debt. During the second quarter of 2016, the Company entered into a floating to fixed interest rate swap for an initial aggregate notional amount of \$300 million. The notional amount at December 31, 2017 was \$200 million. This interest rate swap is designated as a cash flow hedge. The gains and losses associated with this interest rate swap are recorded in accumulated other comprehensive income (loss). The fair value of this swap was an asset of \$2.9 million at December 31, 2017 and is recorded in other assets and deferred charges on the Consolidated Balance Sheet.

In addition, the Company uses foreign exchange forward contracts to protect against foreign currency exchange rate risks inherent in its forecasted inventory purchases. The Company had 2 open foreign exchange contracts as of December 31, 2017, designated as cash flow hedges. The gains and losses associated with these forward exchange contracts are recognized into cost of sales. Gains and losses and hedge ineffectiveness associated with these derivatives were not significant. The fair value of these contracts at December 31, 2017 and 2016 was not significant.

*Other:*

The Company is exposed to potential gains or losses from foreign currency fluctuations affecting net investments and earning denominated in foreign currencies. The Company is particularly sensitive to currency exchange rate fluctuations for the following currencies: British pound sterling (GBP), Chinese renminbi (CYN), Euro, Malaysian ringgit (MYR), Polish zloty (PLN), South African Rand (ZAR), Thai baht (THB) and Turkish lira (TRY). When considered appropriate, the Company enters into foreign exchange derivative contracts to mitigate the risk of fluctuations on these exposures. The Company does not designate these contracts for hedge accounting treatment and the changes in fair value of these contracts are recorded in earnings. The Company recorded (gains) losses of \$(1.2) million and \$0.6 million in other non-operating income (deductions), net within the Consolidated Statements of Income for the years ended 2017 and 2016, respectively. There were no open contracts at December 31, 2017. There were 2 open foreign exchange contracts at December 31, 2016. The fair value of the 2016 foreign exchange contracts was not significant.

**Note 10. Fair Value of Financial Instruments**

Fair value is an exchange price that would be received for an asset or paid to transfer a liability (exit price) in an orderly transaction between market participants at the measurement date. The Company utilizes market data or assumptions that market participants would use in pricing the asset or liability. The Company follows a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value. These tiers include: Level 1, defined as observable inputs such as quoted prices in active markets; Level 2, defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and Level 3, defined as unobservable inputs about which little or no market data exists, therefore requiring an entity to develop its own assumptions.

Assets and liabilities measured at fair value are based on one or more of three valuation techniques. The three valuation techniques are as follows:

- Market approach - prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities.
- Cost approach - amount that would be required to replace the service capacity of an asset or replacement cost.
- Income approach - techniques to convert future amounts to a single present amount based on market expectations, including present value techniques, option-pricing and other models.

The Company primarily applies the income approach for foreign exchange derivatives for recurring fair value measurements and attempts to utilize valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs.

The following table sets forth by level within the fair value hierarchy the Company's financial assets and liabilities accounted for at fair value on a recurring basis at the end of each of the past two years. Assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The Company's assessment

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of the significance of a particular input to the fair value measurement requires judgment, and may affect the valuation of fair value assets and liabilities and their placement within the fair value hierarchy levels.

Description	Asset / (Liability)  Balance at 12/31/17	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(millions of dollars)				
Deferred compensation plan assets	\$ 12.9	\$ -	\$ 12.9	\$ -
Supplementary pension plan assets	11.6	-	11.6	-
Interest rate swap	2.9	-	2.9	-

Description	Asset / (Liability)  Balance at 12/31/17	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(millions of dollars)				
Money market funds	\$ 0.7	\$ 0.7	\$ -	\$ -

The fair value of investment in the money market funds is determined by quoted prices in active markets and is categorized as Level 1.

The fair value of foreign exchange contracts is determined based on inputs that are readily available in public markets or can be derived from information available in publicly quoted markets and are categorized as Level 2. Deferred compensation and supplementary pension plan assets related to the acquisition of AMCOL businesses and are valued using quoted prices for similar assets in active markets.

The Company does not have any financial assets or liabilities measured at fair value on a recurring basis categorized as Level 3, except for pension assets discussed in Note 13, and there were no transfers in or out of Level 3 during the year ended December 31, 2017 and 2016. There were also no changes to the Company's valuation techniques used to measure asset and liability fair values on a recurring basis.

**Note 11. Financial Instruments and Concentrations of Credit Risk**

The following methods and assumptions were used to estimate the fair value of each class of financial instrument:

*Cash and cash equivalents, short-term investments, accounts receivable and payable:* The carrying amounts approximate fair value because of the short maturities of these instruments.

*Short-term debt and other liabilities:* The carrying amounts of short-term debt and other liabilities approximate fair value because of the short maturities of these instruments.

*Long-term debt:* The fair value of the long-term debt of the Company is estimated based on the quoted market prices for that debt or similar debt and approximates the carrying amount.

*Forward exchange contracts:* The fair value of forward exchange contracts (used for hedging purposes) is based on information derived from active markets. If appropriate, the Company would enter into forward exchange contracts to mitigate the impact of foreign exchange rate movements on the Company's operating results. It does not engage in speculation. Such foreign exchange contracts would offset losses and gains on the assets, liabilities and transactions being hedged.

*Credit risk:* The Company provides credit to customers in the ordinary course of business. The Company's customer base is diverse and includes customers located throughout the world. Credit risk results from the possibility that a loss may occur

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from the failure of another party to perform according to the terms of the contracts. The Company regularly monitors its credit risk exposures and takes steps to mitigate the likelihood of these exposures resulting in actual loss. The Company's extension of credit is based on an evaluation of the customer's financial condition and collateral is generally not required.

The Company's bad debt expense for the years ended December 31, 2017, 2016 and 2015 was \$3.8 million, \$6.2 million and \$2.6 million, respectively.

**Note 12. Long-Term Debt and Commitments**

The following is a summary of long term debt:

	December 31,	
	2017	2016
	(millions of dollars)	
Term Loan Facility- Variable Tranche due February 14, 2024, net of unamortized discount and deferred financing costs of \$ 22.7 million and \$ 25.8 million	\$ 655.3	\$ 762.3
Term Loan Facility- Fixed Tranche due May 9, 2021, net of unamortized discount and deferred financing costs of \$0.5 million and \$0.6 million	\$ 299.5	\$ 299.4
Japan Loan Facilities	5.6	5.8
China Loan Facilities	3.2	9.2
Total	\$ 963.6	\$ 1,076.7
Less: Current maturities	3.8	6.8
Long-term debt	\$ 959.8	\$ 1,069.9

On May 9, 2014, in connection with the acquisition of AMCOL International Corporation (“AMCOL”), the Company entered into a credit agreement providing for a \$1,560 million senior secured term loan facility (the “Term Facility”) and a \$200 million senior secured revolving credit facility (the “Revolving Facility” and, together with the Term Facility, the “Facilities”).

On June 23, 2015, the Company entered into an amendment (the “First Amendment”) to the credit agreement to reprice the \$1.378 billion then outstanding on the Term Facility. As amended, the Term Facility had a \$1.078 billion floating rate tranche and a \$300 million fixed rate tranche. On February 14, 2017, the Company entered into an amendment (the “Second Amendment”) to the credit agreement to reprice the \$788 million floating rate tranche then outstanding, which extended the maturity and lowered the interest costs by 75 basis points. Following the Second Amendment, the loans outstanding under the floating rate tranche of the Term Facility will mature on February 14, 2024, the loans outstanding under the fixed rate tranche of the Term Facility will mature on May 9, 2021 and the loans outstanding (if any) and commitments under the Revolving Facility will mature and terminate, as the case may be, on May 9, 2019. After the Second Amendment, loans under the floating rate tranche of the Term Facility bear interest at a rate equal to an adjusted LIBOR rate (subject to a floor of 0.75%) plus an applicable margin equal to 2.25% per annum. Loans under the fixed rate tranche of the Term Facility bear interest at a rate of 4.75%. Loans under the Revolving Facility will bear interest at a rate equal to an adjusted LIBOR rate plus an applicable margin equal to 1.75% per annum. Such rates are subject to decrease by up to 25 basis points in the event that, and for so long as, the Company’s net leverage ratio (as defined in the credit agreement) is less than certain thresholds. The floating rate tranche of the Term Facility was issued at par and the fixed rate tranche of the Term Facility was issued at a 0.25% discount in connection with the First Amendment. The variable rate tranche of the Term Facility was issued at a 0.25% discount in connection with the Second Amendment. The variable rate tranche has a 1% required amortization per year. The Company will pay certain fees under the credit agreement, including customary annual administration fees. The loans under the fixed rate tranche of the Term Facility are subject to prepayment premiums in the event of certain prepayments prior to the third anniversary of the effective date of the First Amendment. The obligations of the Company under the Facilities are unconditionally guaranteed jointly and severally by, subject to certain exceptions, all material domestic subsidiaries of the Company (the “Guarantors”) and secured, subject to certain exceptions, by a security interest in substantially all of the assets of the Company and the Guarantors.

The credit agreement contains certain customary affirmative and negative covenants that limit or restrict the ability of the Company and its restricted subsidiaries to enter into certain transactions or take certain actions. In addition, the credit agreement contains a financial covenant that requires the Company, if on the last day of any fiscal quarter loans or letters of credit were outstanding under the Revolving Facility (excluding up to \$15 million of letters of credit), to maintain a maximum net leverage ratio (as defined in the credit agreement) of, initially, 5.25 to 1.00 for the four fiscal quarter period preceding such day. Such maximum net leverage ratio requirement is subject to decrease during the duration of the facility to a minimum level (when applicable) of 3.50 to 1.00. As of December 31, 2017, there were no loans and \$12.9 million in

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letters of credit outstanding under the Revolving Facility. The Company is in compliance with all the covenants associated with the Revolving Facility as of the end of the period covered by this report.

During 2017, the Company repaid \$110 million on its Term Facility.

The Company has four committed loan facilities for the funding of new manufacturing facilities in China, for a combined 94.8 million RMB and \$1.8 million. In December 2016, the Company entered into a committed loan facility in Japan in the amount of 680 million Yen (approximately \$6.0 million). As of December 31, 2017, on a combined basis, \$8.8 million was outstanding. Principal will be repaid in accordance with the payment schedules ending in 2021. The Company repaid \$6.9 million on these loans in 2017.

As of December 31, 2017, the Company had \$37.1 million in uncommitted short-term bank credit lines, of which approximately \$6.3 million was in use.

Short-term borrowings as of December 31, 2017 and 2016 were \$6.3 million and \$6.1 million, respectively. The weighted average interest rate on short-term borrowings outstanding as of December 31, 2017 and December 31, 2016 was 3.9% and 3.7%, respectively.

The aggregate maturities of long-term debt are as follows: \$3.8 million in 2018; \$0.6 million in 2019; \$0.6 million in 2020, \$304 million in 2021; \$0.0 million in 2022 and \$678 million thereafter.

During 2017, 2016 and 2015, respectively, the Company incurred interest costs of \$45.4 million, \$56.5 million and \$62.6 million, including \$0.2 million, \$0.1 million and \$0.5 million, respectively, which were capitalized. Interest paid approximated the incurred interest cost.

**Note 13. Benefit Plans**

*Pension Plans and Other Postretirement Benefit Plans*

The Company and its subsidiaries have pension plans covering the majority of eligible employees on a contributory or non-contributory basis. Benefits under defined benefit plans are generally based on years of service and an employee's career earnings. Employees generally become fully vested after five years.

The Company also provides postretirement health care and life insurance benefits for the majority of its U.S. retired employees. Employees are generally eligible for benefits upon retirement and completion of a specified number of years of creditable service. The Company does not pre-fund these benefits and has the right to modify or terminate the plan in the future.

The Company's disclosures for the U.S. plans have been combined with those outside of the U.S. as the international plans do not have significantly different assumptions, and together represent less than 25% of our total benefit obligation.

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The following table set forth Company's pension obligation and funded status at December 31:

	Pension Benefits		Post-Retirement Benefits	
	2017	2016	2017	2016
	(millions of dollars)			
Change in benefit obligations:				
Beginning projected benefit obligation	\$ 427.9	\$ 416.6	\$ 9.3	\$ 9.3
Service cost	7.9	8.2	0.3	0.3
Interest cost	12.6	13.0	0.3	0.3
Actuarial (gain)/loss	31.5	21.2	(3.0)	(0.6)
Benefits paid	(20.4)	(18.3)	(0.1)	-
Settlements	-	(0.9)		
Foreign exchange impact	9.6	(11.4)	0.1	-
Other	0.4	(0.5)	-	
Ending projected benefit obligation	<u>469.5</u>	<u>427.9</u>	<u>6.9</u>	<u>9.3</u>
Change in plan assets:				
Beginning fair value	289.3	282.5	-	-
Actual return on plan assets	33.8	22.9	-	-
Employer contributions	10.7	10.5	0.1	-
Plan participants' contributions	0.4	0.4	-	-
Benefits paid	(20.4)	(18.3)	(0.1)	-
Settlements	(0.8)	(0.5)	-	-
Foreign exchange impact	7.2	(8.2)	-	-
Ending fair value	<u>320.2</u>	<u>289.3</u>	<u>-</u>	<u>-</u>
Funded status of the plan	<u>\$ (149.3)</u>	<u>\$ (138.6)</u>	<u>\$ (6.9)</u>	<u>\$ (9.3)</u>

Amounts recognized in the consolidated balance sheet consist of:

	Pension Benefits		Post-Retirement Benefits	
	2017	2016	2017	2016
	(millions of dollars)			
Current liability	\$ (0.8)	\$ (0.8)	\$ (0.5)	\$ (0.6)
Non-current liability	(148.5)	(137.8)	(6.4)	(8.7)
Recognized liability	<u>\$ (149.3)</u>	<u>\$ (138.6)</u>	<u>\$ (6.9)</u>	<u>\$ (9.3)</u>

The current portion of pension liabilities is included in accrued compensation and related items.

Amounts recognized in accumulated other comprehensive income, net of related tax effects, consist of:

	Pension Benefits		Post-Retirement Benefits	
	2017	2016	2017	2016
	(millions of dollars)			
Net actuarial (gain) loss	\$ 91.4	\$ 82.1	\$ (4.1)	\$ (1.7)
Prior service cost	(0.1)	(0.1)	(0.7)	(2.4)
Amount recognized end of year	<u>\$ 91.3</u>	<u>\$ 82.0</u>	<u>\$ (4.8)</u>	<u>\$ (4.1)</u>

The accumulated benefit obligation for all defined benefit pension plans was \$435.4 million and \$394.5 million at December 31, 2017 and 2016, respectively.

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Changes in the Plan assets and benefit obligations recognized in other comprehensive income:

	Pension Benefits		Post-Retirement Benefits	
	2017	2016	2017	2016
	(millions of dollars)			
Current year actuarial gain (loss)	\$ (15.8)	\$ (8.7)	\$ 2.6	\$ 0.3
Amortization of actuarial (gain) loss	7.2	6.8	(0.2)	(0.1)
Amortization of prior service credit (gain) loss	-	0.4	(2.3)	(1.9)
Total recognized in other comprehensive income	<u>\$ (8.6)</u>	<u>\$ (1.5)</u>	<u>\$ 0.1</u>	<u>\$ (1.7)</u>

The components of net periodic benefit costs are as follows:

	Pension Benefits			Post-Retirement Benefits		
	2017	2016	2015	2017	2016	2015
	(millions of dollars)					
Service cost	\$ 7.9	\$ 8.2	\$ 10.3	\$ 0.3	\$ 0.3	\$ 0.4
Interest cost	12.6	13.0	15.4	0.3	0.3	0.3
Expected return on plan assets	(18.7)	(18.6)	(19.7)	-	-	-
Amortization of prior service cost	-	0.6	0.8	(3.1)	(3.1)	(3.1)
Recognized net actuarial (gain) loss	10.8	10.7	12.1	(0.3)	(0.2)	(0.1)
Settlement/curtailment loss	-	0.3	-	-	-	-
Net periodic benefit cost	<u>\$ 12.6</u>	<u>\$ 14.2</u>	<u>\$ 18.9</u>	<u>\$ (2.8)</u>	<u>\$ (2.7)</u>	<u>\$ (2.5)</u>

Unrecognized prior service cost is amortized over the average remaining service period of each active employee.

The Company's funding policy for U.S. plans generally is to contribute annually into trust funds at a rate that provides for future plan benefits and maintains appropriate funded percentages. Annual contributions to the U.S. qualified plans are at least sufficient to satisfy regulatory funding standards and are not more than the maximum amount deductible for income tax purposes. The funding policies for the international plans conform to local governmental and tax requirements. The plans' assets are invested primarily in stocks and bonds.

The 2018 estimated amortization of amounts in other accumulated comprehensive income are as follows:

	Pension Benefits	Post-Retirement Benefits
	(millions of dollars)	
Amortization of prior service credit (gain) loss	\$ -	\$ (0.9)
Amortization of net (gain) loss	11.5	(0.6)
Total cost to be recognized	<u>\$ 11.5</u>	<u>\$ (1.5)</u>

*Additional Information*

The weighted average assumptions used to determine net periodic benefit cost in the accounting for the pension benefit plans and other benefit plans for the years ended December 31, 2017, 2016 and 2015 are as follows:

	2017	2016	2015
Discount rate	3.56%	3.88%	3.71%
Expected return on plan assets	6.61%	6.89%	6.89%
Rate of compensation increase	3.01%	3.03%	3.04%

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The weighted average assumptions used to determine benefit obligations for the pension benefit plans and other benefit plans at December 31, 2017, 2016 and 2015 are as follows:

	2017	2016	2015
Discount rate	3.16%	3.60%	3.89%
Rate of compensation increase	3.01%	2.96%	3.04%

For 2017, 2016 and 2015, the discount rate was based on a Citigroup yield curve of high quality corporate bonds with cash flows matching our plans' expected benefit payments. The expected return on plan assets is based on our asset allocation mix and our historical return, taking into account current and expected market conditions. The actual return on pension assets was approximately 11% in 2017, 8% in 2016 and 1% in 2015.

The Company maintains a self-funded health insurance plan for its retirees. This plan provided that the maximum health care cost trend rate would be 5%. Effective June 2010, the Company amended its plan to change the eligibility requirement for retirees and revised its plan so that increases in expected health care costs would be borne by the retiree.

*Plan Assets*

The Company's pension plan weighted average asset allocation percentages at December 31, 2017 and 2016 by asset category are as follows:

Asset Category	2017	2016
Equity securities	56.0%	60.2%
Fixed income securities	36.2%	32.7%
Real estate	0.8%	0.7%
Other	7.0%	6.4%
Total	<u>100.0%</u>	<u>100.0%</u>

The Company's pension plan fair values at December 31, 2017 and 2016 by asset category are as follows:

Asset Category	2017	2016
	(millions of dollars)	
Equity securities	\$ 179.2	\$ 174.1
Fixed income securities	116.0	94.7
Real estate	2.4	1.9
Other	22.5	18.6
Total	<u>\$ 320.1</u>	<u>\$ 289.3</u>

The following table presents domestic and foreign pension plan assets information at December 31, 2017, 2016 and 2015 (the measurement date of pension plan assets):

	U.S. Plans			International Plans		
	2017	2016	2015	2017	2016	2015
	(millions of dollars)					
Fair value of plan assets	\$ 241.9	\$ 221.9	\$ 213.0	\$ 78.3	\$ 67.4	\$ 69.5



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The following table summarizes our defined benefit pension plan assets measured at fair value as of December 31, 2017:

Pension Assets Fair Value as of December 31, 2017	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
(millions of dollars)				
Equity securities				
US equities	\$ 156.1	\$ -	\$ -	\$ 156.1
Non-US equities	23.1	-	-	23.1
Fixed income securities				
Corporate debt instruments	82.0	34.0	-	116.0
Real estate and other				
Real estate	-	-	2.4	2.4
Other	0.2	-	22.4	22.6
Total assets	<u>\$ 261.4</u>	<u>\$ 34.0</u>	<u>\$ 24.8</u>	<u>\$ 320.2</u>

The following table summarizes our defined benefit pension plan assets measured at fair value as of December 31, 2016:

Pension Assets Fair Value as of December 31, 2016	Quoted Prices In Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
(millions of dollars)				
Equity securities				
US equities	\$ 155.0	\$ 0.2	\$ -	\$ 155.2
Non-US equities	18.9	-	-	18.9
Fixed income securities				
Corporate debt instruments	63.4	31.3	-	94.7
Real estate and other				
Real estate	-	-	1.9	1.9
Other	-	0.2	18.4	18.6
Total assets	<u>\$ 237.3</u>	<u>\$ 31.7</u>	<u>\$ 20.3</u>	<u>\$ 289.3</u>

*U.S. equities*—This class included actively and passively managed common equity securities comprised primarily of large-capitalization stocks with value, core and growth strategies.

*Non-U.S. equities*—This class included actively managed common equity securities comprised primarily of international large-capitalization stocks.

*Fixed income*—This class included debt instruments issued by the US Treasury, and corporate debt instruments.

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*Real Estate and other*— This class includes assets related to real estate and other assets such as insurance contracts.

Asset classified as Level 1 are valued using quoted prices on major stock exchange on which individual assets are traded. Our Level 2 assets are valued using net asset value. The net asset value is quoted on a private market that is not active; however, the unit price is based on the underlying investments that are traded on an active market. Our Level 3 assets are estimated at fair value based on the most recent financial information available for the underlying securities, which are not traded on active market, and represents significant unobservable input.

The following is a reconciliation of changes in fair value measurement of plan assets using significant unobservable inputs (Level 3):

	<b>(millions of dollars)</b>
Beginning balance at December 31, 2015	\$ 17.9
Purchases, sales, settlements	-
Actual return on plan assets still held at reporting date	3.0
Foreign exchange impact	(0.6)
Ending balance at December 31, 2016	\$ 20.3
Purchases, sales, settlements	-
Actual return on plan assets still held at reporting date	3.9
Foreign exchange impact	0.5
Ending balance at December 31, 2017	\$ 24.7

There were no transfers in or out of Level 3 during the year ended December 31, 2017 and 2016.

*Contributions*

The Company expects to contribute \$15.0 million to its pension plans and \$0.5 million to its other post-retirement benefit plan in 2018.

*Estimated Future Benefit Payments*

The following benefit payments, which reflect expected future service, as appropriate, are expected to be paid:

	<b>Pension Benefits</b>	<b>Other Benefits</b>
	<b>(millions of dollars)</b>	
2018	\$ 22.9	\$ 0.5
2019	\$ 24.3	\$ 0.5
2020	\$ 25.5	\$ 0.5
2021	\$ 25.4	\$ 0.5
2022	\$ 26.2	\$ 0.5
2023-2026	\$ 131.6	\$ 2.7

*Investment Strategies*

The investment strategy for pension plan assets is to maintain a broadly diversified portfolio designed to both preserve and grow plan assets to meet future plan obligations. The Company's average rate of return on assets from inception through December 31, 2017 was over 9%. The Company's assets are strategically allocated among equity, debt and other investments to achieve a diversification level that dampens fluctuations in investment returns. The Company's long-term investment strategy is an investment portfolio mix of approximately 55%-65% in equity securities, 30%-35% in fixed income securities and 0%-15% in other securities.

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*Savings and Investment Plans*

The Company maintains a voluntary Savings and Investment Plan (a 401(k) plan) for most non-union employees in the U.S. Within prescribed limits, the Company bases its contribution to the Savings and Investment Plan on employee contributions. The Company's contributions amounted to \$5.2 million, \$5.1 million and \$6.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

**Note 14. Leases**

The Company has several non-cancelable operating leases, primarily for office space and equipment. Rent expense amounted to approximately \$19.3 million, \$16.2 million and \$19.5 million for the years ended December 31, 2017, 2016 and 2015, respectively. Total future minimum rental commitments under all non-cancelable leases for each of the years 2018 through 2022 and in aggregate thereafter are approximately \$18.1 million, \$14.5 million, \$10.7 million, \$7.6 million, \$6.5 million, respectively, and \$24.9 million thereafter. Total future minimum rentals to be received under non-cancelable subleases were approximately \$5.2 million at December 31, 2017.

Total future minimum payments to be received under direct financing leases for each of the years 2018 through 2022 and the aggregate thereafter are approximately: \$0.4 million, \$0.1 million, \$0 million, \$0 million, \$0 million and \$0 million thereafter.

**Note 15. Litigation**

The Company is party to a number of lawsuits arising in the normal course of our business.

On May 8, 2013, Armada (Singapore) PTE Limited, an ocean shipping company now in bankruptcy ("Armada") filed a case in federal court in the Northern District of Illinois against AMCOL and certain of its subsidiaries (*Armada (Singapore) PTE Limited v. AMCOL International Corp., et al., United States District Court for the Northern District of Illinois*, Case No. 13 CV 3455). We acquired AMCOL and its subsidiaries on May 9, 2014. A co-defendant is Ashapura Minechem Limited, a company located in Mumbai, India ("AML"). During the relevant time period, 2008-2010, AMCOL owned slightly over 20% of the outstanding AML stock through December 2009, after which it owned approximately 19%. In 2008, AML entered into two contracts of affreightment ("COA") with Armada for over 60 ship loads of bauxite from India to China. After one shipment, AML made no further shipments, which led Armada to file arbitrations in London against AML, one for each COA. AML did not appear in the London arbitrations and default awards of approximately \$70 million were entered. The litigation filed by Armada against AMCOL and AML relates to these awards, which AML has not paid. The substance of the allegations by Armada is that AML and AMCOL engaged in illegal conduct to thwart Armada's efforts to collect the arbitration award. AMCOL won a motion for judgement on the pleadings that resulted in the successful dismissal of all but one count in the complaint, including a dismissal of all counts alleging violations of Illinois' Fraudulent Transfer laws and federal RICO violations. Armada has filed an appeal of the dismissal and the district court proceedings are stayed pending the appeal. We have accrued an estimate of potential damages for the Armada lawsuit, the amount of which was not material to our financial position, results of operations or cash flows.

Certain of the Company's subsidiaries are among numerous defendants in a number of cases seeking damages for exposure to silica or to asbestos containing materials. The Company currently has three pending silica cases and 20 pending asbestos cases. To date, 1,493 silica cases and 53 asbestos cases have been dismissed, not including any lawsuits against AMCOL or American Colloid Company dismissed prior to our acquisition of AMCOL. Seven new asbestos cases were filed in 2017, including one that was previously reported on the Company's 2016 Annual Report on Form 10-K. Four asbestos cases were dismissed during the period. No silica cases were dismissed during the period. Most of these claims do not provide adequate information to assess their merits, the likelihood that the Company will be found liable, or the magnitude of such liability, if any. Additional claims of this nature may be made against the Company or its subsidiaries. At this time management anticipates that the amount of the Company's liability, if any, and the cost of defending such claims, will not have a material effect on its financial position or results of operations.

The Company has settled only one silica lawsuit, for a nominal amount, and no asbestos lawsuits to date (not including any that may have been settled by AMCOL prior to completion of the acquisition). We are unable to state an amount or range of amounts claimed in any of the lawsuits because state court pleading practices do not require identifying the amount of the claimed damage. The aggregate cost to the Company for the legal defense of these cases since inception continues to be insignificant. The majority of the costs of defense for these cases, excluding cases against AMCOL or American Colloid, are reimbursed by Pfizer Inc. pursuant to the terms of certain agreements entered into in connection with the Company's initial public offering in 1992. The Company is entitled to indemnification, pursuant to agreement, for sales prior to the initial public offering. Of the 20 pending asbestos cases, 13 of the non-AMCOL cases are subject to indemnification, in whole or in part, because the plaintiffs claim liability based on sales of products that occurred either entirely before the initial public

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
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offering, or both before and after the initial public offering. In the six remaining non-AMCOL cases, the plaintiffs have not alleged dates of exposure. The remaining case is an AMCOL case, which makes no allegation with respect to periods of exposure. Our experience has been that the Company is not liable to plaintiffs in any of these lawsuits and the Company does not expect to pay any settlements or jury verdicts in these lawsuits.

*Environmental Matters*

On April 9, 2003, the Connecticut Department of Environmental Protection issued an administrative consent order relating to our Canaan, Connecticut, plant where both our Refractories segment and Specialty Minerals segment have operations. We agreed to the order, which includes provisions requiring investigation and remediation of contamination associated with historic use of polychlorinated biphenyls ("PCBs") and mercury at a portion of the site. We have completed the required investigations and submitted several reports characterizing the contamination and assessing site-specific risks. We are awaiting regulators' approval of the risk assessment report, which will form the basis for a proposal by the Company concerning eventual remediation.

We believe that the most likely form of overall site remediation will be to leave the existing contamination in place (with some limited soil removal), encapsulate it, and monitor the effectiveness of the encapsulation. We anticipate that a substantial portion of the remediation cost will be borne by the United States based on its involvement at the site from 1942 – 1964, as historic documentation indicates that PCBs and mercury were first used at the facility at a time of U.S. government ownership for production of materials needed by the military. Pursuant to a Consent Decree entered on October 24, 2014, the United States paid the Company \$2.3 million in the 4<sup>th</sup> quarter of 2014 to resolve the Company's claim for response costs for investigation and initial remediation activities at this facility through October 24, 2014. Contribution by the United States to any future costs of investigation or additional remediation has, by agreement, been left unresolved. Though the cost of the likely remediation remains uncertain pending completion of the phased remediation decision process, we have estimated that the Company's share of the cost of the encapsulation and limited soil removal described above would approximate \$0.4 million, which has been accrued as of December 31, 2017.

The Company is evaluating options for upgrading the wastewater treatment facilities at its Adams, Massachusetts plant. This work has been undertaken pursuant to an administrative Consent Order originally issued by the Massachusetts Department of Environmental Protection ("DEP") on June 18, 2002. This order was amended on June 1, 2009 and on June 2, 2010. The amended Order includes the investigation by January 1, 2022 of options for ensuring that the facility's wastewater treatment ponds will not result in unpermitted discharge to groundwater. Additional requirements of the amendment include the submittal by July 1, 2022 of a plan for closure of a historic lime solids disposal area. Preliminary engineering reviews completed in 2005 indicate that the estimated cost of wastewater treatment upgrades to operate this facility beyond 2024 may be between \$6 million and \$8 million. The Company estimates that the remaining remediation costs would approximate \$0.4 million, which has been accrued as of December 31, 2017.

The Company and its subsidiaries are not party to any other material pending legal proceedings, other than routine litigation incidental to their businesses.

**Note 16. Stockholders' Equity**

*Capital Stock*

The Company's authorized capital stock consists of 100 million shares of common stock, par value \$0.10 per share, of which 35,374,345 shares and 34,969,987 shares were outstanding at December 31, 2017 and 2016, respectively, and 1,000,000 shares of preferred stock, none of which were issued and outstanding.

*Cash Dividends*

Cash dividends of \$7.0 million or \$0.20 per common share were paid during 2017. In January 2018, a cash dividend of approximately \$1.7 million or \$0.05 per share, was declared, payable in the first quarter of 2018.

*Stock Award and Incentive Plan*

At the Company's 2015 Annual Meeting of Stockholders, the Company's stockholders ratified the adoption of the Company's 2015 Stock Award and Incentive Plan (the "2015 Plan"), which provides for grants of incentive and non-qualified stock options, restricted stock, stock appreciation rights, stock awards or performance unit awards. The 2015 Plan is substantially similar to the Company's 2001 Stock Award and Incentive Plan (as amended and restated as of March 18, 2009, the "2001 Plan" and collectively with the 2015 Plan, the "Plans"). The Company established the 2015 Plan to increase the total number of shares of common stock reserved and available for issuance by 880,000 shares from the number of shares

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remaining under the 2001 Plan. With the ratification of the 2015 Plan by the Company's stockholders, the 2001 Plan was discontinued as to new grants (however, all awards previously granted under the 2001 Plan remained unchanged). The Plans are administered by the Compensation Committee of the Board of Directors. Stock options granted under the Plan have a term not in excess of ten years. The exercise price for stock options will not be less than the fair market value of the common stock on the date of the grant, and each award of stock options will vest ratably over a specified period, generally three years.

The following table summarizes stock option and restricted stock activity for the Plans:

	Shares Available for Grant	Stock Options		Restricted Shares	
		Shares	Weighted Average Exercise Price Per Share (\$)	Shares	Weighted Average Exercise Price Per Share (\$)
Balance January 1, 2015	996,127	951,079	\$ 37.46	175,488	\$ 50.56
Authorized	880,000	-	-	-	-
Granted	(455,275)	238,773	60.40	216,502	60.32
Exercised/vested	-	(74,839)	33.12	(59,801)	47.51
Canceled	71,113	(23,169)	60.22	(47,944)	51.43
Balance December 31, 2015	1,491,965	1,091,844	42.29	284,245	58.63
Granted	(538,787)	383,622	38.59	155,165	38.37
Exercised/vested	-	(150,944)	36.66	(88,746)	57.38
Canceled	249,248	(125,797)	43.78	(123,451)	50.72
Balance December 31, 2016	1,202,426	1,198,725	41.66	227,213	49.57
Granted	(257,072)	187,533	77.99	69,539	78.00
Exercised/vested	-	(353,636)	41.56	(61,274)	52.51
Canceled	91,151	(35,783)	50.47	(55,368)	52.74
Balance December 31, 2017	1,036,505	996,839	48.21	180,110	58.57

**Note 17. Accumulated Other Comprehensive Income (Loss)**

Accumulated other comprehensive income (loss) at December 31 comprised of the following components:

	2017	2016
	(millions of dollars)	
Cumulative foreign currency translation	\$ (104.1)	\$ (147.3)
Unrecognized pension costs (net of tax benefit of \$30.7 in 2017 and \$39.4 in 2016)	(86.5)	(78.0)
Unrealized gain (loss) on cash flow hedges (net of tax expense of \$0.7 in 2017 and \$1.8 in 2016)	4.5	4.2
	<u>\$ (186.1)</u>	<u>\$ (221.1)</u>

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The following table summarizes the changes in other comprehensive income (loss) by component:

	Year Ended December 31,								
	2017			2016			2015		
	Pre-Tax Amount	Tax (Expense) Benefit	Net-of- Tax Amount	Pre-Tax Amount	Tax (Expense) Benefit	Net-of- Tax Amount	Pre-Tax Amount	Tax (Expense) Benefit	Net-of- Tax Amount
	(millions of dollars)								
Foreign currency translation adjustment	\$ 44.70	\$ -	\$ 44.7	\$ (40.20)	\$ -	\$ (40.2)	\$ (76.6)	\$ -	\$ (76.6)
Pension plans:									
Net actuarial gains (losses) and prior service costs arising during the period	(17.6)	4.4	(13.2)	(12.5)	4.1	(8.4)	0.5	0.5	1.0
Amortization of net actuarial (gains) losses and prior service costs	7.6	(2.9)	4.7	8.0	(2.8)	5.2	9.6	(3.3)	6.3
Unrealized gains (losses) on cash flow hedges	0.2	0.1	0.3	2.4	(0.8)	1.6	-	-	-
Total other comprehensive income (loss)	<u>\$ 34.9</u>	<u>\$ 1.6</u>	<u>\$ 36.5</u>	<u>\$ (42.3)</u>	<u>\$ 0.5</u>	<u>\$ (41.8)</u>	<u>\$ (66.5)</u>	<u>\$ (2.8)</u>	<u>\$ (69.3)</u>

The pre-tax amortization amounts of pension plans in the table above are included within the components of net periodic pension benefit costs (see Note 13) and the related tax amounts are included within provision (benefit) for taxes on income line within Consolidated Statements of Income.

**Note 18. Accounting for Asset Retirement Obligations**

The Company records asset retirement obligations in which the Company will be required to retire tangible long-lived assets. These are primarily related to its PCC satellite facilities and mining operations. The Company has also recorded the provisions related to conditional asset retirement obligations at its facilities. The Company has recorded asset retirement obligations at all of its facilities except where there are no contractual or legal obligations. The associated asset retirement costs are capitalized as part of the carrying amount of the long-lived asset.

The following is a reconciliation of asset retirement obligations as of December 31, 2017 and 2016:

	2017	2016
	(millions of dollars)	
Asset retirement liability, beginning of period	\$ 21.5	\$ 21.4
Accretion expense	3.3	2.5
Payments	(3.2)	(1.6)
Foreign currency translation	0.5	(0.8)
Asset retirement liability, end of period	<u>\$ 22.1</u>	<u>\$ 21.5</u>

The Company mines various minerals using a surface mining process that requires the removal of overburden. In certain areas and under various governmental regulations, the Company is obligated to restore the land comprising each mining site to its original condition at the completion of the mining activity. This liability will be adjusted to reflect the passage of time, mining activities, and changes in estimated future cash outflows

The current portion of the liability of approximately \$1.6 million is included in other current liabilities and the long-term portion of the liability of approximately \$20.5 million is included in other non-current liabilities in the Consolidated Balance Sheet as of December 31, 2017.

Accretion expense is included in cost of goods sold in the Company's Consolidated Statements of Income.

**Note 19. Segment and Related Information**

The Company determines its operating segments based on the discrete financial information that is regularly evaluated by its chief operating decision maker, our Chief Executive Officer, in deciding how to allocate resources and in assessing performance. Accordingly, in the first quarter of 2017, the Company reorganized the management structure for its Performance Materials and Construction Technologies business units to better reflect the way performance is evaluated and resources are allocated. As a result, all of the product lines within these business segments were combined into one operating segment. The Company's operating segments are strategic business units that offer different products and serve different markets. They are managed separately and require different technology and marketing strategies.

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The Company now has four reportable segments: Specialty Minerals, Refractories, Performance Materials and Energy Services.

- The Specialty Minerals segment produces and sells the synthetic mineral product precipitated calcium carbonate ("PCC") and processed mineral product quicklime ("lime"), and mines mineral ores then processes and sells natural mineral products, primarily limestone and talc.

- The Refractories segment produces and markets monolithic and shaped refractory materials and specialty products, services and application and measurement equipment, and calcium metal and metallurgical wire products.

- The Performance Materials segment is a leading global supplier of bentonite and bentonite-related products, chromite and leonardite. This segment also provides products for non-residential construction, environmental and infrastructure projects worldwide, serving customers engaged in a broad range of construction projects.

- The Energy Services segment provides services to improve the production, costs, compliance, and environmental impact of activities performed in oil and gas industry. This segment offers a range of services for off-shore filtration and well testing to the worldwide oil and gas industry.

The accounting policies of the segments are the same as those described in the summary of significant accounting policies. The Company evaluates performance based on the operating income of the respective business units. The costs deducted to arrive at operating profit do not include several items, such as net interest or income tax expense. Depreciation expense related to corporate assets is allocated to the business segments and is included in their income from operations. However, such corporate depreciable assets are not included in the segment assets. Intersegment sales and transfers are not significant.

Segment information for the years ended December 31, 2017, 2016 and 2015 was as follows:

	2017	2016	2015
	(millions of dollars)		
<b>Net Sales</b>			
Specialty Minerals	\$ 584.8	\$ 591.5	\$ 624.6
Performance Materials	734.8	686.1	694.9
Refractories	279.4	274.5	295.9
Energy Services	76.7	85.9	182.2
Total	1,675.7	1,638.0	1,797.6
<b>Income from Operations</b>			
Specialty Minerals	88.9	102.7	100.8
Performance Materials	119.7	121.1	118.4
Refractories	39.8	37.0	27.8
Energy Services	6.1	(25.9)	(27.9)
Total	254.5	234.9	219.1
<b>Depreciation, Depletion and Amortization</b>			
Specialty Minerals	35.5	34.9	34.0
Performance Materials	40.5	38.9	39.4
Refractories	6.8	6.9	7.5
Energy Services	8.2	11.2	17.4
Total	91.0	91.9	98.3
<b>Segment Assets</b>			
Specialty Minerals	519.4	491.7	505.3
Performance Materials	1,989.6	1,942.1	1,965.4
Refractories	307.4	283.4	292.7
Energy Services	110.6	104.7	154.7
Total	2,927.0	2,821.9	2,918.1
<b>Capital Expenditures</b>			
Specialty Minerals	32.6	40.4	51.9
Performance Materials	33.1	12.8	11.1
Refractories	5.9	5.9	11.1
Energy Services	4.5	1.4	11.1
Total	76.1	60.5	85.2

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
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A reconciliation of the totals reported for the operating segments to the applicable line items in the consolidated financial statements is as follows:

	2017	2016	2015
	(millions of dollars)		
<b>Income from Operations before Provision (Benefit) for Taxes on Income</b>			
Income from operations for reportable segments	\$ 254.5	\$ 234.9	\$ 219.1
Acquisition related transaction and integration costs	(3.4)	(8.0)	(11.8)
Unallocated corporate expenses	(8.4)	(6.0)	(7.0)
Consolidated income from operations	242.7	220.9	200.3
Non-operating deductions, net	(51.8)	(50.6)	(67.7)
Income from continuing operations before provision (benefit) for taxes on income	190.9	170.3	132.6
<b>Total Assets</b>			
Total segment assets	2,927.0	2,821.9	2,918.1
Corporate assets	43.4	41.5	61.9
Consolidated total assets	2,970.4	2,863.4	2,980.0
<b>Capital Expenditures</b>			
Total segment capital expenditures	76.1	60.5	85.2
Corporate capital expenditures	0.6	1.9	0.8
Consolidated capital expenditures	76.7	62.4	86.0

Financial information relating to the Company's operations by geographic area was as follows:

	2017	2016	2015
	(millions of dollars)		
<b>Net Sales</b>			
United States	\$ 939.3	\$ 936.2	\$ 1,049.6
Canada/Latin America	81.6	82.6	86.3
Europe/Africa	349.0	338.8	382.1
Asia	305.8	280.4	279.6
Total International	736.4	701.8	748.0
Consolidated net sales	1,675.7	1,638.0	1,797.6
<b>Long-Lived Assets</b>			
United States	\$ 1,774.4	\$ 1,794.5	\$ 1,829.3
Canada/Latin America	14.8	14.8	13.0
Europe/Africa	115.9	98.2	117.6
Asia	132.0	127.3	138.3
Total International	262.7	240.3	268.9
Consolidated long-lived assets	2,037.1	2,034.8	2,098.2

Net sales and long-lived assets are attributed to countries and geographic areas based on the location of the legal entity. No individual foreign country represents more than 10% of consolidated net sales or consolidated long-lived asset.

The Company's sales by product category are as follows:



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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

	2017	2016	2015
	(millions of dollars)		
Paper PCC	\$ 377.7	\$ 387.9	\$ 423.3
Specialty PCC	66.0	64.3	64.8
Talc	53.8	55.7	55.9
Ground Calcium Carbonate	87.3	83.6	80.6
Metalcasting	294.3	258.0	266.4
Household, Personal Care & Specialty Products	169.6	171.2	172.7
Basic Minerals	125.0	103.9	106.0
Environmental Products	67.7	78.9	69.8
Building Materials	78.2	74.1	80.0
Refractory Products	226.9	219.0	230.7
Metallurgical Products	52.5	55.5	65.2
Energy Services	76.7	85.9	182.2
Total	<u>\$ 1,675.7</u>	<u>\$ 1,638.0</u>	<u>\$ 1,797.6</u>

**Note 20. Quarterly Financial Data (unaudited)**

	2017 quarters			
	First	Second	Third	Fourth
	(millions of dollars, except per share amounts)			
Net sales by segment				
Specialty Minerals segment	\$ 146.2	\$ 147.0	\$ 147.7	\$ 143.9
Performance Materials segment	169.9	180.3	188.8	\$ 195.8
Refractories segment	70.2	68.9	69.0	\$ 71.3
Energy Services segment	18.7	17.9	19.0	\$ 21.1
Net sales	<u>405.0</u>	<u>414.1</u>	<u>424.5</u>	<u>432.1</u>
Gross profit	113.7	119.7	119.3	114.5
Income from operations	61.7	68.5	66.8	45.7
Consolidated net income	35.6	43.8	42.8	76.7
Net income attributable to Minerals Technologies Inc. (MTI)	<u>34.6</u>	<u>43.0</u>	<u>41.7</u>	<u>75.8</u>
Basic earnings per share attributable to MTI shareholders	<u>\$ 0.99</u>	<u>\$ 1.23</u>	<u>\$ 1.18</u>	<u>\$ 2.14</u>
Diluted earnings per share attributable to MTI shareholders	<u>\$ 0.97</u>	<u>\$ 1.21</u>	<u>\$ 1.17</u>	<u>\$ 2.12</u>
Market price range per share of common stock:				
High	\$ 83.70	\$ 80.20	\$ 75.60	\$ 73.55
Low	\$ 72.20	\$ 70.50	\$ 62.95	\$ 66.40
Close	\$ 76.60	\$ 73.20	\$ 70.65	\$ 68.85
Dividends paid per common share	\$ 0.05	\$ 0.05	\$ 0.05	\$ 0.05

**MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

	2016 quarters			
	First	Second	Third	Fourth
	(millions of dollars, except per share amounts)			
Net sales by segment				
Specialty Minerals segment	\$ 155.6	\$ 150.6	\$ 147.3	\$ 138.0
Performance Materials segment	159.6	182.5	169.0	175.0
Refractories segment	69.2	73.9	63.4	68.0
Energy Services segment	25.8	20.0	19.8	20.3
Net sales	<u>410.2</u>	<u>427.0</u>	<u>399.5</u>	<u>401.3</u>
Gross profit	112.7	121.1	115.2	111.4
Income from operations	57.6	39.5	67.3	56.5
Consolidated net income	34.8	22.3	42.5	37.5
Net income attributable to MTI	<u>33.9</u>	<u>21.2</u>	<u>41.6</u>	<u>36.7</u>
Basic earnings per share attributable to MTI shareholders	<u>\$ 0.97</u>	<u>\$ 0.61</u>	<u>\$ 1.19</u>	<u>\$ 1.05</u>
Diluted earnings per share attributable to MTI shareholders	<u>\$ 0.97</u>	<u>\$ 0.60</u>	<u>\$ 1.18</u>	<u>\$ 1.04</u>
Market price range per share of common stock:				
High	\$ 57.12	\$ 61.66	\$ 72.51	\$ 82.90
Low	\$ 37.03	\$ 52.53	\$ 56.00	\$ 66.10
Close	\$ 57.12	\$ 57.38	\$ 70.69	\$ 77.25
Dividends paid per common share	\$ 0.05	\$ 0.05	\$ 0.05	\$ 0.05

Report of Independent Registered Public Accounting Firm

The Board of Directors and Shareholders  
Minerals Technologies Inc.:

*Opinion on the Consolidated Financial Statements*

We have audited the accompanying consolidated balance sheets of Minerals Technologies Inc. and subsidiary companies (the “Company”) as of December 31, 2017 and 2016, the related consolidated statements of income, comprehensive income, shareholders’ equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule (collectively, the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company’s internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 16, 2018 expressed an unqualified opinion on the effectiveness of the Company’s internal control over financial reporting.

*Basis for Opinion*

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company’s auditor since 1992.

New York, New York  
February 16, 2018

## Report of Independent Registered Public Accounting Firm

The Board of Directors and Shareholders  
Minerals Technologies, Inc.

### *Opinion on Internal Control Over Financial Reporting*

We have audited Minerals Technologies Inc. and subsidiary companies' (the "Company") internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2017 and 2016, the related consolidated statements of income, comprehensive income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule (collectively, the consolidated financial statements), and our report dated February 16, 2018 expressed an unqualified opinion on those consolidated financial statements.

### *Basis for Opinion*

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

### *Definition and Limitations of Internal Control Over Financial Reporting*

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

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

/s/ KPMG LLP

New York, New York  
February 16, 2018

## Management's Report On Internal Control Over Financial Reporting

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Management of Minerals Technologies Inc. is responsible for the preparation, integrity and fair presentation of its published consolidated financial statements. The financial statements have been prepared in accordance with U.S. generally accepted accounting principles and, as such, include amounts based on judgments and estimates made by management. The Company also prepared the other information included in the annual report and is responsible for its accuracy and consistency with the consolidated financial statements.

Management is also responsible for establishing and maintaining effective internal control over financial reporting. The Company's internal control over financial reporting includes those policies and procedures that pertain to the Company's ability to record, process, summarize and report reliable financial data. The Company maintains a system of internal control over financial reporting, which is designed to provide reasonable assurance to the Company's management and board of directors regarding the preparation of reliable published financial statements and safeguarding of the Company's assets. The system includes a documented organizational structure and division of responsibility, established policies and procedures, including a code of conduct to foster a strong ethical climate, which are communicated throughout the Company, and the careful selection, training and development of our people.

The Board of Directors, acting through its Audit Committee, is responsible for the oversight of the Company's accounting policies, financial reporting and internal control. The Audit Committee of the Board of Directors is comprised entirely of outside directors who are independent of management. The Audit Committee is responsible for the appointment and compensation of the independent registered public accounting firm. It meets periodically with management, the independent registered public accounting firm and the internal auditors to ensure that they are carrying out their responsibilities. The Audit Committee is also responsible for performing an oversight role by reviewing and monitoring the financial, accounting and auditing procedures of the Company in addition to reviewing the Company's financial reports. The independent registered public accounting firm and the internal auditors have full and unlimited access to the Audit Committee, with or without management, to discuss the adequacy of internal control over financial reporting, and any other matters which they believe should be brought to the attention of the Audit Committee.

Management recognizes that there are inherent limitations in the effectiveness of any system of internal control over financial reporting, including the possibility of human error and the circumvention or overriding of internal control. Accordingly, even effective internal control over financial reporting can provide only reasonable assurance with respect to financial statement preparation and may not prevent or detect misstatements. Further, because of changes in conditions, the effectiveness of internal control over financial reporting may vary over time.

The Company assessed its internal control system as of December 31, 2017 in relation to criteria for effective internal control over financial reporting described in "Internal Control - Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on its assessment, the Company has determined that, as of December 31, 2017, its system of internal control over financial reporting was effective.

The consolidated financial statements have been audited by the independent registered public accounting firm, which was given unrestricted access to all financial records and related data, including minutes of all meetings of stockholders, the Board of Directors and committees of the Board. Reports of the independent registered public accounting firm, which includes the independent registered public accounting firm's attestation of the effectiveness of the Company's internal control over financial reporting are also presented within this document.

**/s/ Douglas T. Dietrich**  
Chief Executive Officer

**/s/ Matthew E. Garth**  
Senior Vice President, Finance and Treasury,  
Chief Financial Officer

**/s/ Michael A. Cipolla**  
Vice President, Corporate Controller  
and Chief Accounting Officer

February 16, 2018

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**MINERALS TECHNOLOGIES INC. & SUBSIDIARY COMPANIES**  
**SCHEDULE II-VALUATION AND QUALIFYING ACCOUNTS**  
(millions of dollars)

Description	<u>Balance at Beginning of Period</u>	<u>Additions Charged to Costs, Provisions and Expenses</u>	<u>Deductions (a)</u>	<u>Balance at End of Period</u>
<b>Year ended December 31, 2017</b>				
Valuation and qualifying accounts deducted from assets to which they apply:				
Allowance for doubtful accounts.....	\$ 7.9	3.8	(7.5)	4.2
<b>Year ended December 31, 2016</b>				
Valuation and qualifying accounts deducted from assets to which they apply:				
Allowance for doubtful accounts.....	\$ 4.4	6.2	(2.7)	7.9
<b>Year ended December 31, 2015</b>				
Valuation and qualifying accounts deducted from assets to which they apply:				
Allowance for doubtful accounts.....	\$ 3.6	2.6	(1.8)	4.4

(a) Includes impact of translation of foreign currencies.

## SUBSIDIARIES OF THE COMPANY

<u>Name of the Company</u>	<u>Jurisdiction of Organization</u>
ADAE, Cetco Sp. Z o.o., s.k.a. (Short Name: ADAE SKA )	Poland
Alex Mining & Oil Service Company*	Egypt
Amcol Australia Pty. Ltd.	Australia
AMCOL CETCO do Brasil Serviços e Produtos de Construção Ltda.	Brazil
AMCOL Dongming Industrial Minerals Company Limited	China
AMCOL Health & Beauty Solutions, Incorporated	Delaware
AMCOL (Holdings) Ltd.	UK
.....	
Amcol International B.V.	Netherlands
AMCOL International Corporation	Delaware
AMCOL International Holdings Corporation	Delaware
Amcol International (Thailand) Limited	Thailand
AMCOL Korea Limited	S. Korea
Amcol Mauritius	Mauritius
Amcol Minchem Jianping Co., Ltd	China
Amcol Mineral Madencilik Sanayi ve Ticaret A.S. (Turkey)	Turkey
Amcol Minerals EU Limited	UK
Amcol Minerals Europe Limited	UK
Amcol Minerals and Materials (India) Private Limited	India
AMCOL (Tianjin) Industrial Minerals Company Limited	China
AMCOL Tianyu Industrial Minerals Co. Ltd.	China
AMCOL de México, S.A., de C.V.	Mexico
American Colloid Company	Delaware
Ameri-Co Carriers, Inc.	Nebraska
Ameri-Co Logistics, Inc.	Nebraska
APP China Specialty Minerals Pte Ltd.	Singapore
ASMAS Agir Sanayi Malzemeleri Imal ve Tic. A.S (has branch office in Bahrain).	Turkey
.....	
Barretts Minerals Inc.	Delaware
Bathlako Mining Ltd.	South Africa
Bonmerci Investments 103 (Pty) Ltd.	South Africa
CCS, Cetco Sp. Z o.o., s.k.a.	Poland
Centre International de Couchage CIC Inc.	Canada
CETCO Czech S.R.O.	Czech Rep
CETCO do Brasil Serviços E Produtos Minerais E De Meio-Ambiente Ltda.	Brazil
CETCO Energy Services Company LLC	Delaware
CETCO Energy Services de México, S.A. de C.V.	Mexico
CETCO Energy Services Limited	UK
CETCO Energy Services (Malaysia) Sdn. Bhd.	Malaysia
CETCO (Europe) Ltd.	UK
(has branch offices in Ireland, Sweden, Norway, Denmark)	
CETCO Germany GmbH	Germany
CETCO Iberia S.L.	Spain
CETCO Iberia Construcciones y Servicios S.L.	Spain
CETCO Korea , Ltd.	S. Korea
CETCO Lining Technologies India Private Limited	India
CETCO Oilfield Services Asia Ltd.	Malaysia
CETCO Oilfield Services Company Limited	Canada
CETCO Oilfield Services Company Nigeria Limited	Nigeria
CETCO Oilfield Services Pty. Ltd.	Australia
CETCO Poland, Cetco Sp. Zo.o. S.K.A. (aka CETCO Poland)	Poland
CETCO Poland Fundusz Investycyjny Zamkniety Aktywów Niepublicznych (aka CETCO Investment Fund)	Poland
CETCO Sp. Zo.o.	Poland
CETCO Technologies (Suzhou) Co., Ltd. (China)	China
Colloid Environmental Technologies Company LLC (Has a branch in Canada) ....	Delaware
Comercializadora y Exportadora CETCO Latino América Limitada (aka CVE	Chile



CETCO Latino America) .....	
Construction Technologies Poland Spółka Z Ograniczoną Odpowiedzialności (aka CT Poland SP Z.O.O.) .....	Poland
COS Employment Services de México, S.A. de C.V. ....	Mexico
Double A Specialty Minerals Co., Ltd. ....	Thailand
Egypt Nano-Technologies Company S.A.E.* .....	Egypt
Egypt Mining & Drilling Chemical Company S.A.E.* .....	Egypt
Egypt Bentonite & Derivatives Company S.A.E.* .....	Egypt
Gold Lun Chemicals (Zhenjiang) Co., Ltd. ....	China
Gold Sheng Chemicals (Zhenjiang) Co., Ltd. ....	China
Gold Zuan Chemicals (Suzhou) Co., Ltd. ....	China
Green Roof Insurance Co LLC .....	Vermont
Hi-Tech Specialty Minerals Company Limited.....	Thailand
Ingeniería y Construcción CETCO ICC Limitada .....	Chile
Maprid Tel Cast de S.A. de C.V.* .....	Mexico
Minerals Technologies do Brasil Comercio é Industria de Mineraiis Ltda. ....	Brazil
Minerals Technologies Europe S.A. (has branch office in France).....	Belgium
Minerals Technologies Holding China Co., Ltd. ....	China
Minerals Technologies Holdings Inc.....	Delaware
Minerals Technologies Holdings Ltd. ....	United Kingdom
Minerals Technologies India Private Limited .....	India
Minerals Technologies Mexico Holdings, S. de R. L. de C.V. ....	Mexico
Minerals Technologies South Africa (Pty) Ltd. ....	South Africa
Mintech Canada Inc. ....	Canada
Mintech Japan K.K.....	Japan
Minteq Australia Pty Ltd.....	Australia
Minteq B.V.....	The Netherlands
Minteq Europe Limited. ....	Ireland
Minteq International GmbH (has branch office in Schongau) .....	Germany
Minteq International Inc. ....	Delaware
Minteq International (Suzhou) Co., Ltd. ....	China
Minteq Italiana S.p.A. ....	Italy
Minteq Korea Inc* .....	Korea
Minteq Magnesite Limited (has a branch office in Spain) .....	Ireland
Minteq Shapes and Services Inc.....	Delaware
Minteq UK Limited.....	United Kingdom
Montana Minerals Development Company .....	Montana
MTI Bermuda L.P. ....	Bermuda
MTI Holding Singapore Pte. Ltd. ....	Singapore
MTI Holdco I LLC.....	Delaware
MTI Holdco II LLC.....	Delaware
MTI Netherlands B.V.....	Netherlands
MTI Technologies UK Limited .....	United Kingdom
MTI Ventures B.V. ....	Netherlands
MTX Singapore Holdings Pte. Ltd. ....	Singapore
Nanocor LLC .....	Delaware
Performance Minerals Netherlands C.V.....	Netherlands
PT. CETCO Oilfield Services Indonesia .....	Indonesia
PT Sinar Mas Specialty Minerals .....	Indonesia
Rayagada Minerals & Chemicals Private Limited .....	India
SMI NewQuest India Private Limited .....	India
SMI Poland Sp. z o.o.....	Poland
Specialty Minerals Bangladesh Limited .....	Bangladesh
Specialty Minerals Benelux SA .....	Belgium
Specialty Minerals (Changshu) Co., Ltd. ....	China
Specialty Minerals do Brasil Participacoes Ltda. ....	Brazil
Specialty Minerals FMT K.K.....	Japan
Specialty Minerals France S.A.S. ....	France
Specialty Minerals (Fuyang) Cp., Ltd. ....	China
Specialty Minerals Inc.....	Delaware
Specialty Minerals India Holding Inc.....	Delaware

Specialty Minerals International Inc. ....	Delaware
Specialty Minerals Malaysia Sdn. Bhd. ....	Malaysia
Specialty Minerals (Michigan) Inc. ....	Michigan
Specialty Minerals Nordic Oy Ab ....	Finland
Specialty Minerals (Portugal) Especialidades Minerais, S.A. ....	Portugal
Specialty Minerals-Qishun (Nanning) Co., Ltd. ....	China
Specialty Minerals Slovakia, spol. sr.o. ....	Slovakia
Specialty Minerals South Africa (Pty) Limited.....	South Africa
Specialty Minerals (Thailand) Limited .....	Thailand
Specialty Minerals UK Limited .....	United Kingdom
Specialty Minerals (Wuzhi) Co., Ltd. ....	China
Specialty Minerals (Yanzhou) Co., Ltd. ....	China
Volclay de México, S.A. de C.V.* .....	Mexico
Volcay International LLC .....	Delaware
Volclay Japan Co., Ltd. ....	Japan
Volclay South Africa (Proprietary) Limited .....	South Africa
Volclay Trading Co. ....	South Africa

\*Indicates MTI ownership is less than 50%

Consent of Independent Registered Public Accounting Firm

The Board of Directors  
Minerals Technologies Inc.:

We consent to the incorporation by reference in the registration statements (Nos. 333-160002, 33-59080, 333-62739, 333-138245 and 333-206244) on Form S-8 of Minerals Technologies Inc. of our reports dated February 16, 2018, with respect to the consolidated balance sheets of Minerals Technologies, Inc. as of December 31, 2017 and 2016, and the related consolidated statements of income, comprehensive income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule (collectively, the "consolidated financial statements"), and the effectiveness of internal control over financial reporting as of December 31, 2017, which reports appear in the December 31, 2017 annual report on Form 10 K of Minerals Technologies Inc.

/s/ KPMG LLP

New York, New York  
February 16, 2018

**RULE 13a-14(a)/15d-14(a) CERTIFICATION**

I, Douglas T. Dietrich, certify that:

1. I have reviewed this Annual Report on Form 10-K of Minerals Technologies Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) 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(s) 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:
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 16, 2018

/s/ Douglas T. Dietrich  
Douglas T. Dietrich  
Chief Executive Officer

**RULE 13a-14(a)/15d-14(a) CERTIFICATION**

I, Matthew E. Garth, certify that:

1. I have reviewed this Annual Report on Form 10-K of Minerals Technologies Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) 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 (the registrant's fourth fiscal quarter in the case of an annual report)
  - (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(s) 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:
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 16, 2018

/s/ Matthew E. Garth  
Matthew E. Garth  
Senior Vice President - Finance and Treasury,  
Chief Financial Officer

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**SECTION 1350 CERTIFICATION**

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350 of Chapter 63 of Title 18, United States Code), each of the undersigned officers of Minerals Technologies Inc., a Delaware corporation (the "Company"), does hereby certify that:

The Annual Report on Form 10-K for the year ended December 31, 2017 (the "Form 10-K") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 16, 2018

/s/ **Douglas T. Dietrich**  
Douglas T. Dietrich  
Chief Executive Officer

Dated: February 16, 2018

/s/ **Matthew E. Garth**  
Matthew E. Garth  
Senior Vice President-Finance and Treasury,  
Chief Financial Officer

The foregoing certification is being furnished solely pursuant to Exchange Act Rule 13a-14(b); is not deemed to be "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section; and is not deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Exchange Act of 1934.

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## Additional Information Regarding Non-GAAP Financial Measures (unaudited)

The letter to shareholders and other information set forth in the front part of this Annual Report present financial measures of the Company that exclude certain special items, and are therefore not in accordance with GAAP. The following is a presentation of the Company's non-GAAP net income and operating income, excluding special items for the years ended December 31, 2017 and December 31, 2016 and a reconciliation to GAAP net income and operating income, respectively, for such periods. The Company's management believes these non-GAAP measures provide meaningful supplemental information regarding its performance as inclusion of such special items are not indicative of the ongoing operating results and thereby affect the comparability of results between periods. The Company feels inclusion of these non-GAAP measures also provides consistency in its financial reporting and facilitates investors' understanding of historic operating trends.

(millions of dollars, except per share data)

	<u>Year Ended</u>	
	Dec. 31, 2017	Dec. 31, 2016
Net income attributable to MTI	\$ 195.1	\$ 133.4
Special items:		
Acquisition related transaction costs	3.4	8.0
Restructuring and other charges	15.0	28.3
Debt modification costs and fees	3.9	0.0
Write-off of receivables for Malaysia bankruptcy	2.1	0.0
Related tax effects on special items	(8.9)	(12.3)
Related tax effects on special items	<u>(47.3)</u>	<u>0.0</u>
Net income attributable to MTI, excluding special items	\$ <u>163.3</u>	\$ 157.4
Diluted earnings per share, excluding special items	\$ <u>4.59</u>	\$ <u>4.47</u>
Segment Operating Income Data		
Specialty Minerals Segment	\$ 88.9	\$ 102.7
Performance Materials Segment	119.7	121.1
Refractories Segment	39.8	37.0
Energy Services Segment	6.1	(25.9)
Unallocated Corporate Expenses	(8.4)	(6.0)
Acquisition related transaction costs	<u>(3.4)</u>	<u>(8.0)</u>
Consolidated	\$ <u>242.7</u>	\$ <u>220.9</u>
Special Items		
Specialty Minerals Segment	\$ 12.3	\$ 0.0
Refractories Segment	0.0	(2.0)
Energy Services Segment	0.7	30.3
Unallocated Corporate Expenses	4.1	0.0
Acquisition related transaction costs	<u>3.4</u>	<u>8.0</u>
Consolidated	\$ <u>20.5</u>	\$ <u>36.3</u>
Segment Operating Income, Excluding Special Items		
Specialty Minerals Segment	\$ <u>101.2</u>	\$ <u>102.7</u>
Performance Materials Segment	<u>119.7</u>	<u>121.1</u>
Refractories Segment	<u>39.8</u>	<u>35.0</u>
Energy Services Segment	<u>6.8</u>	<u>4.4</u>
Unallocated Corporate Expenses	<u>(4.3)</u>	<u>(6.0)</u>
Consolidated	\$ <u>263.2</u>	\$ <u>257.2</u>
% of Sales	<u>15.7%</u>	<u>15.7%</u>

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## DIRECTORS, OFFICERS AND INVESTOR INFORMATION

# MINERALS TECHNOLOGIES INC. AND SUBSIDIARY COMPANIES 2017 ANNUAL REPORT

### BOARD OF DIRECTORS

Duane R. Dunham  
Chairman of the Board  
Former President and Chief Operating Officer  
Bethlehem Steel Corporation

Douglas T. Dietrich  
Chief Executive Officer

Joseph C. Breunig  
Consultant to Private Equity Companies  
Former Executive Vice President, Chemicals  
Axiall Corporation

John J. Carmola  
Former Segment President at Goodrich Corporation

Robert L. Clark  
Provost and Senior Vice President for Research  
University of Rochester

Franklin L. Feder  
Former Regional Chief Executive Officer for Latin America  
and the Caribbean  
Alcoa Inc.

Carolyn K. Pittman  
Vice President – Finance and Controller  
Huntington Ingalls Newport News Shipbuilding

Marc E. Robinson  
Senior Vice President, Enterprise Strategy  
Aetna

Donald C. Winter  
Independent Consultant  
Professor of Engineering Practice at the University of Michigan

### CERTIFICATIONS

The Company's chief executive officer submitted the certification required by Section 303A.12(a) of the NYSE Listed Company Manual certifying without qualification to the NYSE that he is not aware of any violations by the Company of NYSE corporate governance listing standards as of June 9, 2017. The Company also filed as an exhibit to its Annual Report on Form 10-K for the year ended December 31, 2017, the certifications required by Section 302 of the Sarbanes-Oxley Act regarding the quality of the Company's public disclosure.

### CORPORATE OFFICERS

Douglas T. Dietrich \*  
Chief Executive Officer

Gary L. Castagna \*  
Group President, Performance Materials

Matthew E. Garth \*  
Senior Vice President, Finance and Treasury and Chief Financial Officer

Jonathan J. Hastings \*  
Senior Vice President, Corporate Development

Douglas W. Mayger \*  
Senior Vice President and Director, MTI Supply Chain

Thomas J. Meek \*  
Senior Vice President, General Counsel, Human Resources,  
Secretary and Chief Compliance Officer

D.J. Monagle III \*  
Group President, Specialty Minerals and Refractories

Brett Argirakis \*  
Vice President and Managing Director, Minteq International Inc.

Andrew M. Jones \*  
Vice President and Managing Director, Energy Services

Michael A. Cipolla  
Vice President, Corporate Controller and Chief Accounting Officer

\* Member, MTI Leadership Council

### STOCK LISTINGS

Minerals Technologies Common Stock is listed on the New York Stock Exchange (NYSE) under the symbol MTX.

### REGISTRAR AND TRANSFER AGENT

Computershare Trust Company, N.A.  
PO Box 30170  
College Station, TX 77842

### INVESTOR RELATIONS

Cindi Buckwalter  
Vice President, Investor Relations/Corporate Communications  
Minerals Technologies Inc.  
622 Third Avenue, 38th Floor, New York, NY 10017  
(212) 878-1831



MINERALS TECHNOLOGIES INC.

[WWW.MINERALSTECH.COM](http://WWW.MINERALSTECH.COM)