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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): November 16, 2021

ECOVYST INC.

Commission File Number: 001-38221

Delaware **(State or other jurisdiction of incorporation or organization)**	**81-3406833** **(I.R.S. Employer Identification No.)**
300 Lindenwood Drive **Malvern, Pennsylvania** **(Address of principal executive offices)**	**19355** **(Zip Code)**

(610) 651-4400
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

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

Title of each class	Trading symbol	Name of each exchange on which registered
Common stock, par value $0.01 per share	**ECVT**	**New York Stock Exchange**

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth 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. ☐

Item 8.01 Other Events.

As previously disclosed, effective August 1, 2021, Ecovyst Inc. (the "Company") completed the sale of its Performance Chemicals business to Sparta Aggregator L.P., a partnership established by Koch Minerals & Trading, LLC and Cerberus Capital Management, L.P. (the "Purchaser"), pursuant to a Stock Purchase Agreement (the "Purchase Agreement"), dated February 28, 2021, as amended, between the Company and the Purchaser, for a purchase price of $1.1 billion in cash, subject to certain adjustments specified in the Purchase Agreement, including for indebtedness, cash, working capital and transaction expenses of the Performance Chemicals business at the closing of the transaction. In conjunction with entering into the Purchase Agreement, the Performance Chemicals business met the criteria set forth in Accounting Standards Codification 205-20, Presentation of Financial Statements – Discontinued Operations ("ASC 205-20"). As a result, the results of operations of the Performance Chemicals business have been presented as discontinued operations in the consolidated statements of income for all periods presented beginning with the Company's quarterly financial statements filed on Form 10-Q for the quarter ended March 31, 2021, filed with the U.S. Securities and Exchange Commission (the "SEC") on May 17, 2021. The Company is issuing this Current Report on Form 8-K to recast the Performance Chemicals business as discontinued operations as of and for each of the periods covered by the Company's Annual Report on Form 10-K for the year ended December 31, 2020 ("2020 Form10-K"), filed with the SEC on March 17, 2021.

The information included in Exhibit 99.1 to this Current Report on Form8-K ("Exhibit 99.1") is presented solely in connection with the presentation changes described above. Exhibit 99.1 does not reflect events occurring after the Company filed its 2020 Form 10-K except as otherwise stated therein, and does not modify or update the disclosures therein, except as otherwise stated therein and to reflect the presentation of the Performance Chemicals business as discontinued operations as described above. Therefore, Exhibit 99.1 should be read in conjunction with the Company's other filings made with the SEC, including, and subsequent to the date of, the 2020 Form 10-K. The Company's subsequent SEC filings contain important information regarding events, developments, and updates affecting the Company that have occurred since the filing of the 2020 Form 10-K.

Exhibit 99.1 presents a recast of the following historical financial information and related disclosures, originally included in the 2020 Form10-K, to reflect the presentation of the Performance Chemicals business as discontinued operations.

Ecovyst Inc. has revised the following items of the 2020 Form 10-K to reflect the retrospective revisions described above:

Part II:

- Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.
- Item 8. Financial Statements and Supplementary Data.

Exhibit 99.1 is attached hereto and incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
23.1	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
99.1	Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations and Item 8. Financial Statements and Supplementary Data
104	The cover page from this Current Report on Form8-K of Ecovyst Inc., formatted in Inline XBRL and included as Exhibit 101

SIGNATURE

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

Date: November 16, 2021	**Ecovyst Inc.**	
	By:	/s/ Michael Feehan
	Name:	Michael Feehan
	Title:	Vice President and Chief Financial Officer

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on FormS-3 (No. 333-255514) and Form S-8 (Nos. 333-220774 and 333-227643) of Ecovyst Inc. (formerly known as PQ Group Holdings Inc.) of our report dated March 17, 2021, except with respect to our opinion on the consolidated financial statements insofar as it relates to the effects of discontinued operations discussed in Note 5, as to which the date is November 16, 2021, relating to the financial statements and financial statement schedules and the effectiveness of internal control over financial reporting, which appears in this Current Report on Form 8-K.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
November 16, 2021

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on FormS-3 (No. 333-255514) and Form S-8 (Nos. 333-220774 and 333-227643) of Ecovyst Inc. (formerly known as PQ Group Holdings Inc.) of our report dated March 17, 2021, except with respect to our opinion on the consolidated financial statements insofar as it relates to the effects of discontinued operations discussed in Note 5, as to which the date is November 16, 2021, relating to the financial statements and financial statement schedules and the effectiveness of internal control over financial reporting, which appears in this Current Report on Form 8-K.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
November 16, 2021

EXHIBIT 99.1

Explanatory Note

Ecovyst Inc. (the "Company") is filing this Exhibit 99.1 to its Current Report on Form8-K (the "Exhibit") to recast the financial information and financial statements in its Annual Report on Form 10-K for the fiscal year ended December 31, 2020 (the "2020 Form10-K") to reflect the sale of the Performance Chemicals business. As previously disclosed, on February 28, 2021, we entered into a definitive agreement, as subsequently amended, to sell the Performance Chemicals business to Sparta Aggregator L.P., a partnership established by Koch Minerals & Trading, LLC and Cerberus Capital Management, L.P., for $1.1 billion subject to certain adjustments including indebtedness, cash, working capital and transaction expenses. Upon entering into the definitive agreement, the transaction met the held for sale criteria, and we began presenting the Performance Chemicals business as discontinued operations and held for sale in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2021. The information included in this Exhibit is presented in connection with the reporting changes described above and does not otherwise amend or restate our audited consolidated financial statements that were included in the 2020 Form 10-K. Other than as required to reflect the presentation of the Performance Chemicals business as discontinued operations, this Exhibit continues to describe conditions as of the date of the Form 10-K filing and does not reflect events occurring after we filed the 2020 Form 10-K, except as otherwise stated in this Exhibit. This Exhibit does not purport to update the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section included in the 2020 Form 10-K except with respect to the effects of the presentation of the Performance Chemicals business as discontinued operations and as otherwise provided herein. More current information is contained in the Company's Quarterly Reports on Form 10-Q and Current Reports on Form 8-K filed subsequent to the 2020 Form 10-K, which also contain important information regarding forward-looking statements, events, developments or updates to certain of our expectations that have occurred subsequent to the filing of the 2020 Form 10-K. Therefore, this Exhibit should be read in conjunction with our other filings made with the Securities and Exchange Commission, including, and subsequent to, the date of the 2020 Form 10-K.

Forward-looking Statements

This Exhibit includes statements that express our opinions, expectations, beliefs, plans, objectives, assumptions or projections regarding future events or future results and therefore are, or may be deemed to be, "forward-looking statements". The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," "expect," "should" and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our expectations and projections as of the date made about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy, short- and long-term business operations and objectives, and financial needs. Examples of forward-looking statements include, but are not limited to, statements we make our financial results and our liquidity, including our belief that our existing cash, cash equivalents and cash flow from operations, combined with availability under our asset based lending revolving credit facility will be sufficient to meet our presently anticipated future cash needs for at least the next 12 months. These forward-looking statements are subject to a number of risks, uncertainties and assumptions. Moreover, we operate in a very competitive and rapidly changing environment and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed herein may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. Examples of risks and uncertainties that could cause actual results to differ materially from historical performance and any forward-looking statements include, but are not limited to, those described in "Risk Factors" in Item 1A of the 2020 Form 10-K.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

Overview

We are a leading integrated and innovative global provider of specialty catalysts and services. We believe that our products, which are predominantly inorganic, and services contribute to improving the sustainability of the environment.

We conduct operations through two reporting segments: (1) Ecoservices (formerly Refining Services prior to the sale of the Performance Chemicals business) and (2) Catalyst Technologies (including our 50% interest in the Zeolyst Joint Venture) (formerly Catalysts prior to the sale of the Performance Chemicals business).

Ecoservices: We are the leading provider of sulfuric acid recycling services to North American refineries for the production of alkylate, an essential gasoline component for lowering vapor pressure and increasing octane to meet stringent gasoline specifications and fuel efficiency standards. We are also a leading North American producer of on-purpose virgin sulfuric acid for water treatment, mining, and industrial applications.

Catalyst Technologies: We are a global supplier of finished silica catalysts and catalyst supports necessary to produce high strength and high stiffness plastics used in packaging films, bottles, containers, and other molded applications. This segment includes our 50% interest in the Zeolyst Joint Venture, where we are a leading global supplier of zeolites used for catalysts that remove nitrogen oxides from diesel engine emissions as well as sulfur from fuels during the refining process.

We are focused on implementing and accelerating sustainability initiatives. Our commitment to innovation is how we differentiate ourselves in the marketplace. We tailor our products for the specific needs of our customers and support them in addressing their technical and operational challenges. Through close collaboration with our global customers, we have been long standing suppliers of sustainability products and services, addressing tightening global regulatory standards and changing consumer preferences. For example, we continue to develop products that improve air quality through lower sulfur and NOx emissions in fuels. We are focused on the development of catalysts that help make plastics stronger and lighter enabling the recycling of mixed plastics to complete the plastics circularity curve. We also enable higher alkylation for improved fuel economy and help transform biomass into biofuels and synthetic rubber for green tires. We segment our projects into distinct development themes that we believe are core to our sustainability efforts. With greater focus and resources, Ecovyst has expanded and accelerated the commercialization of its portfolio of sustainable products and solutions. Our innovation investment ratio, defined as the weighted average sustainability impact our projects will have on the environment, on new sustainable products is 85% in 2021, and we anticipate further advancement in the future. Fundamental to our future is the fact that approximately 75% of our end use sales for the year ended December 31, 2020 served consumer demand for more sustainable products and services.

In 2020, we served global customers across many end uses and, as of December 31, 2020, operated out of 10 strategically located manufacturing facilities.

Recent Developments

On December 14, 2020, we completed the sale of our Performance Materials business to Potters Buyer, LLC (the "Purchaser"), an affiliate of The Jordan Company, L.P., for a purchase price of $650 million, which was subject to certain adjustments for indebtedness, working capital and cash at the closing of the transaction. The results of operations, financial condition, and cash flows for the Performance Materials businesses are presented herein as discontinued operations. Refer to Note 4 to our Consolidated Financial Statements for additional information.

Effective on August 1, 2021, we completed the sale of our Performance Chemicals business for $1.1 billion, subject to certain adjustments set forth in the agreement. We used a portion of the net cash proceeds to repay the entire Senior Secured Term Loan Facility due February 2027 of $231.4 million and the 5.750% Senior Notes due 2025 (the "Senior Notes") of $295.0 million. The Senior Notes were redeemed at a redemption price equal to the sum of 102.875% of the principal amount of the Senior Notes plus accrued and unpaid interest to, but excluding, August 2, 2021. Additionally, our Board of Directors (the "Board") declared a special cash dividend of $3.20 per share, payable on August 23, 2021 to shareholders of record as of the close of business on August 12, 2021. The results of operations, financial condition, and cash flows for the Performance Chemicals business are presented herein as discontinued operations. Refer to Note 4 to our Consolidated Financial Statements for additional information.

In connection with the closing of the sale of the Performance Chemicals business, we changed our name from "PQ Group Holdings Inc." to "Ecovyst Inc.", changed the ticker symbol of our common stock listed on the New York Stock Exchange from "PQG" to "ECVT" and rebranded our former segments from "Refining Services" to "Ecoservices" and "Catalysts" to "Catalyst Technologies." Financial information presented herein related to the Ecoservices and Catalyst Technologies segments remains unchanged from our previously issued financial statements filed on Form 10-K for the years ended December 31, 2020, 2019 and 2018, respectively.

Impact of COVID-19 on our Business and Results

In March 2020, the outbreak ofCOVID-19 was declared a national emergency by the United States. The spread ofCOVID-19 has adversely impacted economic activity and contributed to volatility in financial markets. In response to the COVID-19 pandemic, the federal government, various states, local and foreign governments have issued decrees and orders that have disrupted many businesses and implemented social distancing, travel and other restrictions. In response to these restrictions, we have taken a variety of actions, including an international travel ban, distribution of personal protective equipment to employees, and work-at-home requirements for many of our employees who are not an integral part of our manufacturing operations. We have also implemented and refined our existing business continuity plans in an effort to minimize disruptions to our operations. These measures were in place as of December 31, 2020.

Recent and Near Term Trends on Business Segment End Uses

The COVID-19 pandemic led to unprecedented disruptions within the macro economy, with lower sales volume demand during 2020, including the fourth quarter. The timing and magnitude of the impact to sales volume demand varied across our portfolio of businesses due to the many end uses.

Most of our end use customers experienced improved demand during the fourth quarter, largely driven by economic recovery as miles driven increased demand for gasoline. The company continues to match costs and production with the pattern and pace of demand recovery, which remains variable across end use subsectors.

During the year ended December 31, 2020 we took actions to mitigate the slowdown in our business as a result of the effects of COVID-19, including adjusting our production levels to meet anticipated customer demand, reducing discretionary spending, furloughs, delaying headcount additions and deferring capital maintenance expenditures.

Key end use trends in our business segments during the year and expectations are described below:

- Ecoservices (formerly Refining Services): This business segment was impacted the quickest by COVID-19, but began to see a significant rebound in demand through the fourth quarter of 2020. Stay-at-home mandates during the first and second quarters led to rapid and significant reductions in gasoline demand in the U.S. As stay-at-home restrictions were lifted near the end of the second quarter, gasoline consumption recovered to approximately 90% of 2019 levels during the third and fourth quarters. Apart from weather events, we expect refinery utilization to continue to improve through 2021. Once demand is restored to 2019 levels, we believe alkylate production will continue to grow, driven by higher octane fuel blending. Virgin sulfuric acid demand from industrial and mining customers began to rebound during the third quarter and reached 2019 demand levels by year end. We expect demand for virgin sulfuric acid to grow in 2021.
- Catalyst Technologies (formerly Catalysts): We experienced strong demand for hydrocracking catalysts, which we sold through the Zeolyst Joint Venture during the first half of the year. During the second half of 2020, some customers deferred catalyst bed change-outs due to lower refinery utilization rates. We expect a rebound in the second half of 2021 with demand for hydrocracking catalysts improving as the year progresses. Demand for our emission control catalysts used in heavy-duty diesel vehicles decreased during the second and third quarters as our customers temporarily curtailed their production to align with lower demand. Demand for emission control catalysts began to improve near year end and the improvement is continuing into 2021. Polyethylene catalyst demand remains strong due to increased consumer consumption of films and packaging. Demand for catalysts used to make polyethylene improved in 2020 and we expect it to continue to improve in 2021. Overall, we expect the strong polyethylene catalyst demand and recovering emission catalyst demand to be more than offset by lower refinery catalyst demand during the first half of 2021. During the second half of the year we also expect to see improvement in refinery catalyst demand.

Operations and Supply

Throughout the COVID-19 pandemic, our manufacturing facilities have continued to operate and have been providing critical materials necessary to aid in combating the COVID-19 pandemic and products we manufacture for other essential businesses. Our manufacturing plants require a limited number of on-site employees in order to continue to operate effectively. We have not experienced any material production issues to date, but have had limited and temporary shutdowns or slowdowns in some of our facilities. We have also seen limited disruptions in the availability of certain of our raw materials and other supplies, which to date have not had a material impact on production.

Coronavirus Aid, Relief and Economic Security ("CARES") Act

On March 27, 2020, the CARES Act was signed into law. The provisions of the CARES Act provide substantial stimulus and financial assistance measures intended to mitigate the impact of the COVID-19 pandemic, including certain tax relief provisions. As permitted within the CARES Act, we began deferring payment of the employer portion of social security taxes in the second quarter and continued to defer through the end of 2020, with 50% of the deferred amount due December 31, 2021 and the remaining 50% due December 31, 2022. This deferral provided approximately $2.0 million in additional liquidity in 2020.

The impact of the COVID-19 outbreak and associated containment and remediation efforts is rapidly evolving. We expect the duration and magnitude of the virus's impact on the levels of economic activity in the United States and globally to affect the magnitude of its impact on our results of operations, which could be material.

Basis of Presentation

Our zeolite catalysts product group operates through the Zeolyst Joint Venture, which we account for as an equity method investment in accordance with accounting principles generally accepted in the United States ("GAAP"). We do not record sales by the Zeolyst Joint Venture as revenue and such sales are not consolidated within our results of operations. However, Adjusted EBITDA reflects our share of the earnings of the Zeolyst Joint Venture that have been recorded as equity in net income from affiliated companies in our consolidated statements of income and includes Zeolyst Joint Venture adjustments on a proportionate basis based on our 50% ownership interest.

Key Performance Indicators

Adjusted EBITDA and Adjusted Net Income

Adjusted EBITDA and adjusted net income are financial measures that are not prepared in accordance with GAAP and that we use to evaluate our operating performance, for business planning purposes and to measure our performance relative to that of our competitors. Adjusted EBITDA and adjusted net income are presented as key performance indicators as we believe these financial measures will enhance a prospective investor's understanding of our results of operations and financial condition. EBITDA consists of net income (loss) attributable to continuing operations before interest, taxes, depreciation and amortization. Adjusted EBITDA consists of EBITDA adjusted for (i) non-operating income or expense, (ii) the impact of certainnon-cash, nonrecurring or other items included in net income (loss) and EBITDA that we do not consider indicative of our ongoing operating performance, and (iii) depreciation, amortization and interest of our 50% share of the Zeolyst Joint Venture. Adjusted net income consists of net income (loss) attributable to Ecovyst Inc. adjusted for (i) non-operating income or expense and (ii) the impact of certainnon-cash, nonrecurring or other items included in net income (loss) that we do not consider indicative of our ongoing operating performance. We believe that these non-GAAP financial measures provide investors with useful financial metrics to assess our operating performance from period-to-period by excluding certain items that we believe are not representative of our core business.

You should not consider adjusted EBITDA or adjusted net income in isolation or as alternatives to the presentation of our financial results in accordance with GAAP. The presentation of adjusted EBITDA and adjusted net income financial measures may differ from similar measures reported by other companies and may not be comparable to other similarly titled measures. In evaluating adjusted EBITDA and adjusted net income, you should be aware that we are likely to incur expenses similar to those eliminated in this presentation in the future and that certain of these items could be considered recurring in nature. Our presentation of adjusted EBITDA and adjusted net income should not be construed as an inference that our future results will be unaffected by unusual or nonrecurring items. Reconciliations of adjusted EBITDA and adjusted net income to GAAP net income (loss) are included in the results of operations discussion that follows for each of the respective periods.

Key Factors and Trends Affecting Operating Results and Financial Condition

Sales

Our Ecoservices and Catalyst Technologies segments' sales have grown primarily due to expansion into new end applications, including emission control catalysts, polymer catalysts, and refining catalysts, as well as continued supply share gains. Sales in our Ecoservices and Catalyst Technologies segments are made on both a purchase order basis and pursuant to long-term contracts.

Cost of Goods Sold

Cost of goods sold consists of variable product costs, fixed manufacturing expenses, depreciation expense and freight expenses. Variable product costs include all raw materials, energy and packaging costs that are directly related to the manufacturing process. Fixed manufacturing expenses include all plant employment costs, manufacturing overhead and periodic maintenance costs.

The primary raw materials for our Ecoservices segment include spent sulfuric acid, sulfur, acids, bases (including sodium hydroxide, or "caustic soda"), and certain metals. Spent sulfuric acid for our Ecoservices segment is supplied by customers for a nominal charge as part of their contracts. The primary raw materials used in the manufacture of products in our Catalyst Technologies segment include sodium silicate and cesium hydroxide.

Most of our Ecoservices contracts feature take-or-pay volume protection and/or quarterly price adjustments for commodity inputs, labor, the Chemical Engineering Index (U.S. chemical plant construction cost index) and natural gas. Over 80% of our Ecoservices segment sales for the year ended December 31, 2020 were under contracts featuring quarterly price adjustments. The price adjustments generally reflect actual costs for producing acid and tend to protect us from volatility in labor, fixed costs and raw material pricing. The take-or-pay volume protection allows us to cover fixed costs through intermittent, temporary production issues at customer refineries.

While natural gas is not a direct feedstock for any product, natural gas powered furnaces are used to heat raw materials and create the chemical reactions necessary to produce end-products. We maintain multiple suppliers wherever possible and structure our customer contracts when possible to allow for the pass-through of raw material and natural gas costs.

Joint Ventures

We account for our investments in our equity joint ventures under the equity method. Our largest joint venture, the Zeolyst Joint Venture, manufactures high performance, specialty, zeolite-based catalysts for use in the packaging and engineered plastics, emission control, refining and petrochemical industries and other areas of the broader chemicals industry. Demand for the Zeolyst Joint Venture products fluctuates based upon the timing of our customer's fixed bed catalyst replacements. We share proportionally in the management of our joint ventures with the other parties to each such joint venture.

Seasonality

Our regeneration services product group, which is a part of our Ecoservices segment, typically experiences seasonal fluctuations as a result of higher demand for gasoline products in the summer months and lower demand in the winter months. These demand fluctuations results in higher sales and working capital requirements in the second and third quarter.

Foreign Currency

As a global business, we are subject to the impact of gains and losses on currency translations, which occur when the financial statements of foreign operations are translated into U.S. dollars. Approximately 10% of our sales for the years ended December 31, 2020 and 2019 in currencies other than the U.S. dollar. Because our consolidated financial results are reported in U.S. dollars, sales or earnings generated in currencies other than the U.S. dollar can result in a significant increase or decrease in the amount of those sales and earnings when translated to U.S. dollars. The foreign currency to which we have the most significant exchange rate exposure is the British Pound.

Results of Operations

Year Ended December 31, 2020 Compared to the Year Ended December 31, 2019

Highlights

The following is a summary of our financial performance for the year ended December 31, 2020 compared with the year ended December 31, 2019.

Sales

- Sales decreased $36.8 million to $495.9 million. The decrease in sales was primarily due to lower sales volumes and pass-through of lower sulfur pricing.

Gross Profit

- Gross profit decreased $16.3 million to $150.9 million. The decrease in gross profit was primarily due to lower sales volumes partly offset by favorable fixed manufacturing costs.

Operating Income

- Operating income decreased $14.4 million to $51.6 million. The decrease in operating income was primarily due to a decrease in gross profit for the year ended December 31, 2020.

Equity in Net Income from Affiliated Companies

- Equity in net income of affiliated companies for the year ended December 31, 2020 was $21.0 million, compared with net income of $45.8 million for the year ended December 31, 2019. The decrease was due to lower earnings of $24.6 million generated by the Zeolyst Joint Venture during the year ended December 31, 2020 as compared to the year ended December 31, 2019.

The following is our consolidated statement of income and a summary of financial results for the years ended December 31, 2020 and 2019.

	Years ended December 31,		Change	
	2020	**2019**	**$**	**%**
	(in millions, except percentages)			
Sales	$ 495.9	$532.7	$ (36.8)	(6.9)%
Cost of goods sold	345.0	365.5	(20.5)	(5.6)%
Gross profit	150.9	167.2	(16.3)	(9.7)%
Gross profit margin	*30.4%*	*31.4%*		
Selling, general and administrative expenses	81.5	83.5	(2.0)	(2.4)%
Other operating expense, net	17.8	17.7	0.1	0.6%
Operating income	51.6	66.0	(14.4)	(21.8)%
Operating income margin	*10.4%*	*12.4%*		
Equity in net income from affiliated companies	(21.0)	(45.8)	24.8	(54.1)%
Interest expense, net	50.4	66.9	(16.5)	(24.7)%
Debt extinguishment costs	25.0	3.4	21.6	635.3%
Other (income) expense, net	(5.0)	(1.9)	(3.1)	163.2%
Income from continuing operations before income taxes and noncontrolling interest	2.2	43.4	(41.2)	(94.9)%
(Benefit) provision for income taxes	(52.1)	12.3	(64.4)	(523.6)%
Effective tax rate	*(2,350.6)%*	*28.3%*		
Net income from continuing operations	54.3	31.1	23.2	74.6%
Net (loss) income from discontinued operations, net of tax	(336.0)	49.2	(385.2)	(782.9)%
Net (loss) income	(281.7)	80.3	(362.0)	(450.8)%
Less: Net (loss) income attributable to the noncontrolling interest—discontinued operations	$ (2.9)	$ 0.8	$ (3.7)	(462.5)%
Net (loss) income attributable to Ecovyst Inc.	$ (278.8)	$ 79.5	$(358.3)	(450.7)%

Sales

	Years ended December 31,		Change	
	2020	2019	$	%
	(in millions, except percentages)			
Sales:				
Ecoservices	$401.9	$447.1	$(45.2)	(10.1)%
Catalyst Technologies	94.0	85.7	8.3	9.7%
Total sales	$495.9	$532.8	$(36.9)	(6.9)%

Ecoservices: Sales in Ecoservices for the year ended December 31, 2020 were $401.9 million, a decrease of $45.2 million, or 10.1%, compared to sales of $447.1 million for the year ended December 31, 2019. The decrease in sales was primarily due to lower sales volumes of $26.7 million and lower average selling price from pass-through costs of $18.5 million.

The decrease in volumes was due to lower regeneration services demand from refinery utilization rates driven byCOVID-19. The unfavorable pricing was driven by pass-through of lower sulfur costs.

Catalyst Technologies: Sales in Catalyst Technologies for the year ended December 31, 2020 were $94.0 million, an increase of $8.3 million, or 9.7%, compared to sales of $85.7 million for the year ended December 31, 2019. The increase in sales was primarily due to higher sales volumes of $10.6 million, partly offset by lower average selling price from product mix of $1.2 million and the unfavorable effects of foreign currency translation of $1.1 million.

The increase in sales was due to higher customer demand within our polyolefin catalysts product line.

Gross Profit

Gross profit for the year ended December 31, 2020 was $150.9 million, a decrease of $16.3 million, or 9.7%, compared with $167.2 million for the year ended December 31, 2019. The decrease in gross profit was due to unfavorable average selling price of $19.7 million and lower volumes of $10.9 million which was partly offset by favorable manufacturing costs of $23.1 million.

Unfavorable customer pricing was primarily a result of pass-through of lower sulfur costs. The decrease in volumes was due to a decline in sulfuric acid sales which was partially offset by increased customer demand within our polyolefin catalysts product line. The favorable change in manufacturing costs were driven by the timing of plant maintenance projects.

Selling, General and Administrative Expenses

Selling, general and administrative expenses for the year ended December 31, 2020 were $81.5 million, a decrease of $2.0 million, or 2.4%, compared with $83.5 million for the year ended December 31, 2019. The decrease in selling, general and administrative expenses was due to lower discretionary spending partially offset by an increase in stock compensation expense.

Other Operating Expense, Net

Other operating expense, net for the year ended December 31, 2020 was $17.8 million, an increase of $0.1 million, or 0.6%, compared with $17.7 million for the year ended December 31, 2019. Other operating expense, net was consistent between both periods.

Equity in Net Income of Affiliated Companies

Equity in net income of affiliated companies for the year ended December 31, 2020 was $21.0 million, a decrease of $24.8 million, compared with income of $45.8 million for the year ended December 31, 2019. The decrease was primarily due to $26.7 million of earnings generated by the Zeolyst Joint Venture during the year ended December 31, 2020 as compared to $52.2 million for the year ended December 31, 2019, which was a result of the timing of hydrocracking catalyst change-outs and lower demand for custom catalysts and emission control catalysts in heavy duty diesel production driven by the COVID-19 pandemic.

Interest Expense, Net

Interest expense, net for the year ended December 31, 2020 was $50.4 million, a decrease of $16.5 million, as compared with $66.9 million for the year ended December 31, 2019. The decrease in interest expense was due to lower interest rates on our variable rate debt along with lower average debt balances and a favorable increase in variable versus fixed rate debt.

Debt Extinguishment Costs

Debt extinguishment costs for the years ended December 31, 2020 and 2019 were $25.0 million and $3.4 million, respectively.

On December 14, 2020, we completed the sale of our Performance Materials business which triggered an obligation to provide partial payment under our existing senior secured term loan facility and our new senior secured term loan facility. As a result of the required payments, previous unamortized deferred financing costs of $2.7 million and original issue discount of $5.8 million were written off as debt extinguishment costs.

On July 22, 2020, we entered into an agreement for a new senior secured term loan facility in an aggregate principal amount of $650.0 million, which was used to repay the remaining outstanding balance of $625.0 million on the 6.75% Senior Secured Notes due 2022. In conjunction with the issuance of the senior secured term loan facility, we paid $10.6 million in prepayment premiums and recorded $0.1 million of new creditor and third-party financing fees as debt extinguishment costs. In addition, previous unamortized deferred financing costs of $2.1 million and original issue discount of $1.2 million associated with the 6.75% Senior Secured Notes due 2022 were written off as debt extinguishment costs.

On February 7, 2020, we amended our existing senior secured term loan facility to reduce the applicable interest rates and extend the maturity of the facility to February 2027. We recorded $2.2 million of new creditor and third-party financing fees as debt extinguishment costs. In addition, previously unamortized deferred financing costs of $0.1 million and original issue discount of $0.2 million associated with the existing senior secured term loan facility were written off as debt extinguishment costs.

During the year ended December 31, 2019, we prepaid $210.0 million of outstanding principal balance on the Term Loan Facility (as defined below). In connection with this prepayment, we wrote off $1.0 million of previously unamortized deferred financing costs and original issue discount of $2.4 million as debt extinguishment costs.

Other (Income) Expense, Net

Other (income) expense, net was income of $5.0 million for the year ended December 31, 2020, a favorable change of $3.1 million, compared with income of $1.9 million for the year ended December 31, 2019. The change primarily related to $5.3 million of foreign currency gains on the non-permanent intercompany debt denominated in local currency and translated to U.S. dollars and transactional currency translation in the current year period as compared to foreign currency loss of $1.2 million in the prior year period.

(Benefit) Provision for Income Taxes

The (benefit) provision for income taxes for the year ended December 31, 2020 was a $52.1 million benefit compared to a $12.3 million provision for the year ended December 31, 2019. The effective income tax rate for the year ended December 31, 2020 was (2,350.6)% compared to 28.3% for the year ended December 31, 2019. The difference between the U.S. federal statutory income tax rate and our effective income tax rate for the year ended December 31, 2020 was mainly due to the impact of the Global Intangible Low Taxed Income (“GILTI”) provisions of U.S. tax reform, foreign tax credit benefit and the impact of intra-period allocation as a result of the Performance Chemicals and Performance Materials businesses being classified as held for sale. The difference between the U.S. federal statutory income tax rate and our effective income tax rate for the year ended December 31, 2019 was mainly due to state and local taxes, GILTI and the impact of intra-period allocation as a result of the Performance Chemicals and Performance Materials businesses being classified as held for sale.

Net (Loss) Income Attributable to Ecovyst Inc.

For the foregoing reasons and after the effect of the non-controlling interest in earnings of subsidiaries for each period presented, net loss attributable to Ecovyst Inc. was $278.8 million for the year ended December 31, 2020 as compared to net income of $79.5 million for the year ended December 31, 2019.

Adjusted EBITDA

Summarized Segment Adjusted EBITDA information is shown below in the following table:

	Years ended December 31,		Change	
	2020	2019	$	%
	(in millions, except percentages)			
Segment Adjusted EBITDA[1]:				
Ecoservices	$157.2	$175.6	$(18.4)	(10.5)%
Catalyst Technologies[2]	74.5	107.8	(33.3)	(30.9)%
Total Segment Adjusted EBITDA[3]	231.7	283.4	(51.7)	(18.2)%
Unallocated corporate expenses	(39.1)	(43.3)	4.2	(9.7)%
Adjusted EBITDA	$192.6	$240.1	$(47.5)	(19.8)%

(1) We define Segment Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Our management evaluates the performance of our segments and allocates resources based primarily on Segment Adjusted EBITDA. Segment Adjusted EBITDA does not represent cash flow for periods presented and should not be considered as an alternative to net income as an indicator of our operating performance or as an alternative to cash flows as a source of liquidity. Segment Adjusted EBITDA may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(2) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $42.5 million for the year ended December 31, 2020, which includes $21.2 million of equity in net income, excluding $6.6 million of amortization of investment in affiliate step-up, plus $14.7 million of joint venture depreciation, amortization and interest. The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $68.1 million for the year ended December 31, 2019, which includes $45.9 million of equity in net income, excluding $7.5 million of amortization of investment in affiliate step-up, plus $14.7 million of joint venture depreciation, amortization and interest.

(3) Our total Segment Adjusted EBITDA differs from our total consolidated Adjusted EBITDA due to unallocated corporate expenses.

Ecoservices: Adjusted EBITDA for the year ended December 31, 2020 was $157.2 million, a decrease of $18.4 million, or 10.5%, compared with $175.6 million for the year ended December 31, 2019. Ecoservices adjusted EBITDA decreased due to lower regeneration services demand as a result of reduced refinery utilization rates, partially offset by fixed and SG&A related cost savings.

Catalyst Technologies: Adjusted EBITDA for the year ended December 31, 2020 was $74.5 million, a decrease of $33.3 million, or 30.9%, compared with $107.8 million for the year ended December 31, 2019. Adjusted EBITDA decreased due to lower volumes in the Zeolyst joint venture and unfavorable inventory absorption due to lower production and inventory depletion to align with expected lower demand.

A reconciliation of net income attributable to Ecovyst Inc. to Segment Adjusted EBITDA is as follows:

	Years ended December 31,	
	2020	2019
	(in millions)	
Reconciliation of net income attributable to Ecovyst Inc. to Segment Adjusted EBITDA		
Net income from continuing operations	$ 54.3	$ 31.1
(Benefit) provision for income taxes	(52.1)	12.3
Interest expense, net	50.4	66.9
Depreciation and amortization	76.9	74.8
EBITDA	129.5	185.1
Joint venture depreciation, amortization and interest[(a)]	14.7	14.7
Amortization of investment in affiliate step-up[(b)]	6.6	7.5
Debt extinguishment costs	25.0	3.4
Net loss on asset disposals[(c)]	4.7	4.6
Foreign currency exchange (gain) loss[(d)]	(5.3)	1.2
LIFO (benefit) expense[(e)]	(5.3)	6.5
Transaction and other related costs[(f)]	1.1	0.2
Equity-based compensation	17.2	13.3
Restructuring, integration and business optimization expenses[(g)]	2.0	2.6
Defined benefit plan pension (benefit) cost[(h)]	(0.6)	0.6
Other[(i)]	3.0	0.4
Adjusted EBITDA	192.6	240.1
Unallocated corporate expenses	39.1	43.3
Segment Adjusted EBITDA	$231.7	$283.4

(a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Catalyst Technologies segment includes our 50% interest in the Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of the Zeolyst Joint Venture.

(b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in the Zeolyst Joint Venture as a result of the combination of the businesses of PQ Holdings Inc. and Eco Services Operations LLC in May 2016 (the "Business Combination"). We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of the Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with fixed assets and intangible assets, including customer relationships and technical know-how.

(c) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.

(d) Reflects the exclusion of the foreign currency transaction gains and losses in the statements of income primarily related to the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.

(e) Represents non-cash adjustments to the Company's LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.

(f) Relates to certain transaction costs, including debt financing, due diligence and other costs related to transactions that are completed, pending or abandoned, that we believe are not representative of our ongoing business operations.

(g) Includes the impact of restructuring, integration and business optimization expenses which are incremental costs that are not representative of our ongoing business operations.

(h) Represents adjustments for defined benefit pension plan (benefit) costs in our statement of income. All of our defined benefit pension plan obligations are under defined benefit pension plans that are frozen. As such, we do not view such expenses as core to our ongoing business operations.

(i) Other costs consist of certain expenses that are not core to our ongoing business operations, including environmental remediation-related costs associated with the legacy operations of our business prior to a business combination consummated in a prior year period and capital and franchise taxes. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

Adjusted Net Income

Summarized adjusted net income information is shown below in the following table:

	Years ended December 31,					
	2020			2019		
	Pre-tax	Tax expense (benefit)	After-tax	Pre-tax	Tax expense (benefit)	After-tax
	(in millions)					
Reconciliation of net (loss) income attributable to Ecovyst Inc. to Adjusted Net Income [(1)(2)]						
Net income attributable to Ecovyst Inc.	$ 2.2	$ (52.1)	$ 54.3	$ 43.4	$ 12.3	$ 31.1
Amortization of investment in affiliate step-up[(b)]	6.6	1.7	4.9	7.5	1.8	5.7
Debt extinguishment costs	25.0	6.3	18.7	3.4	0.8	2.6
Net loss on asset disposals[(c)]	4.7	1.2	3.5	4.6	1.2	3.4
Foreign currency exchange (gain) loss[(d)]	(5.3)	(0.6)	(4.7)	1.2	(0.1)	1.3
LIFO (benefit) expense[(e)]	(5.3)	(1.3)	(4.0)	6.5	1.7	4.8
Transaction and other related costs[(f)]	1.1	0.3	0.8	0.2	0.1	0.1
Equity-based compensation	17.2	4.0	13.2	13.3	3.1	10.2
Restructuring, integration and business optimization expenses[(g)]	2.0	0.5	1.5	2.6	0.7	1.9
Defined benefit plan pension (benefit) cost[(h)]	(0.6)	(0.2)	(0.4)	0.6	0.2	0.4
Other[(i)]	3.0	0.7	2.3	0.4	(0.1)	0.5
Adjusted Net Income, including non-cash GILTI tax and tax reform	50.6	(39.5)	90.1	83.7	21.7	62.0
Impact of non-cash GILTI tax[(3)]	—	—	—	—	(1.0)	1.0
Impact of tax reform[(4)]	—	—	—	—	(3.6)	3.6
Adjusted Net Income	$ 50.6	$ (39.5)	$ 90.1	$ 83.7	$ 17.1	$ 66.6

(1) We define adjusted net income as net (loss) income attributable to Ecovyst Inc. adjusted fomon-operating income or expense and the impact of certain non-cash or other items that are included in net income that we do not consider indicative of our ongoing operating performance. Adjusted net income is presented as a key performance indicator as we believe it will enhance a prospective investor's understanding of our results of operations and financial condition. Adjusted net income may not be comparable with net income or adjusted net income as defined by other companies.

(2) Refer to the Adjusted EBITDA notes above for more information with respect to each adjustment.

(3) Amount represents the impact to tax expense in net income before non-controlling interest and the related adjustments to net income associated with the GILTI provisions of the Tax Cuts and Jobs Act of 2017 ("TCJA"). We are required to record the incremental tax provision impact with respect to GILTI as a result of having historical U.S. net operating loss ("NOL") amounts to offset the GILTI taxable income inclusion. This NOL utilization precluded us from recognizing GILTI credits which would otherwise help offset the tax impacts of GILTI. As a result of the sale of the Performance Materials business, our NOL balance will be fully utilized. Beginning with the year ended 2020, we are no longer adjusting for the impact of the GILTI provisions of the TCJA since the NOLs have been fully utilized and GILTI now represents a cash tax impact.

(4) Represents the rate change in the Netherlands related to the Dutch Tax Plan 2019 recorded in net income.

The adjustments to net (loss) income attributable to Ecovyst Inc. are shown net of applicable statutory tax rates.

Year Ended December 31, 2019 Compared to the Year Ended December 31, 2018

Highlights

The following is a summary of our financial performance for the year ended December 31, 2019 compared with the year ended December 31, 2018.

Sales

- Sales increased $5.1 million to $532.8 million. The increase in sales was primarily due to higher average customer prices and favorable mix, which was partially offset by lower sales volumes and the unfavorable effects of foreign currency translation.

Gross Profit

- Gross profit increased $9.1 million to $167.2 million. Our increase in gross profit was primarily due to the roll-off of a below-market contract in our virgin sulfuric acid product line which was partially offset by lower sales volumes and an increase in manufacturing costs.

Operating Income

- Operating income decreased by $3.9 million to $66.0 million. Our decrease in operating income was primarily due to the impact of non-recurring gains in the prior year period partially offset by an increase in gross profit for the year ended December 31, 2019.

Equity in Net Income from Affiliated Companies

- Equity in net income of affiliated companies for the year ended December 31, 2019 was $45.8 million, compared with net income of $37.3 million for the year ended December 31, 2018. The increase was due to higher earnings of $9.3 million generated by the Zeolyst Joint Venture during the year ended December 31, 2019 as compared to the year ended December 31, 2018.

The following is our consolidated statement of income and a summary of financial results for the years ended December 31, 2019 and 2018.

	Years ended December 31,		Change	
	2019	2018	$	%
	(in millions, except percentages)			
Sales	$532.8	$527.7	$ 5.1	1.0%
Cost of goods sold	365.6	369.6	(4.0)	(1.1)%
Gross profit	167.2	158.1	9.1	5.8%
Gross profit margin	31.4%	29.9%		
Selling, general and administrative expenses	83.5	85.0	(1.5)	(1.8)%
Other operating expense, net	17.7	3.2	14.5	453.1%
Operating income	66.0	69.9	(3.9)	(5.6)%
Operating income margin	12.4%	13.2%		
Equity in net income from affiliated companies	(45.8)	(37.3)	(8.5)	22.8%
Interest expense, net	66.9	72.3	(5.4)	(7.5)%
Debt extinguishment costs	3.4	7.8	(4.4)	(56.4)%
Other (income) expense, net	(1.9)	13.9	(15.8)	(113.7)%
Income from continuing operations before income taxes and noncontrolling interest	43.4	13.2	30.2	228.8%
Provision for income taxes	12.3	8.0	4.3	53.8%
Effective tax rate	*28.3%*	*60.3%*		
Net income from continuing operations	31.0	5.2	25.8	496.2%
Net income from discontinued operations, net of tax	49.2	54.4	(5.2)	(9.6)%
Net income	80.3	59.6	20.6	34.6%
Less: Net income attributable to the noncontrolling interest - discontinued operations	$ 0.8	$ 1.3	$ (0.5)	(38.5)%
Net income attributable to Ecovyst Inc.	$ 79.5	$ 58.3	$ 21.1	36.2%

Sales

	Years ended December 31,		Change	
	2019	2018	$	%
	(in millions, except percentages)			
Sales:				
Ecoservices	$447.1	$455.6	$(8.5)	(1.9)%
Catalyst Technologies	85.7	72.1	13.6	18.9%
Total sales	$532.8	$527.7	$ 5.1	1.0%

Ecoservices: Sales in Ecoservices for the year ended December 31, 2019 were $447.1 million, a decrease of $8.5 million, or 1.9%, compared to sales of $455.6 million for the year ended December 31, 2018. The decrease in sales was primarily due to lower sales volumes of $30.4 million, which was partially offset by favorable customer mix driving higher average selling prices of $21.9 million.

The decrease in volumes was due to lower demand for virgin sulfuric acid and unexpected customer plant outages. The favorable customer mix was driven by the roll-off of a below-market contract and other contract renewals in our regenerated sulfuric acid and virgin sulfuric acid product lines.

Catalyst Technologies: Sales in Catalyst Technologies for the year ended December 31, 2019 were $85.7 million, an increase of $13.6 million, or 18.9%, compared to sales of $72.1 million for the year ended December 31, 2018. The increase in sales was primarily due to higher sales volumes of $11.6 million and higher average selling price from product mix of $3.3 million.

The increase in sales was due to the timing of customer orders for methyl methacrylate catalyst and higher customer demand and pricing within our polyolefin catalysts product line.

Gross Profit

Gross profit for the year ended December 31, 2019 was $167.2 million, an increase of $9.1 million, or 5.8%, compared with $158.1 million for the year ended December 31, 2018. The increase in gross profit was due to favorable customer pricing of $25.1 million and favorable product mix of $3.8 million, which was partially offset by lower volumes of $15.2 million and unfavorable manufacturing costs of $2.3 million.

Favorable customer pricing was primarily a result of a roll-off of a below-market contract in our virgin sulfuric acid product line. Favorable product mix was driven by increased volumes of higher-margin Catalyst Technologies products. The decrease in volumes was due to a decline in sulfuric acid sales. The unfavorable change in manufacturing costs was driven by the timing of plant maintenance projects and increased transportation costs during the year ended December 31, 2019.

Selling, General and Administrative Expenses

Selling, general and administrative expenses for the year ended December 31, 2019 were $83.5 million, a decrease of $1.5 million, or 1.8%, compared with $85.0 million for the year ended December 31, 2018. The decrease in selling, general and administrative expenses was due to lower research and development expenditures and a decrease in professional fees, which was partially offset by an increase in compensation-related costs.

Other Operating Expense, Net

Other operating expense, net for the year ended December 31, 2019 was $17.7 million, an increase of $14.5 million, or 453.1%, compared with $3.2 million for the year ended December 31, 2018. The increase in other operating expense, net was primarily due to the impact of non-recurring gains in the prior year as compared to the current year and a year-over year decrease in non-cash losses on asset disposals. During the year ended December 31, 2018, we recognized non-recurring gains on the termination of a customer supply contract of $20.6 million and insurance recoveries totaling $6.5 million related to losses sustained as a result of Hurricane Harvey in August 2017 (of which $5.5 million was recorded in other operating expense, net).

Equity in Net Income of Affiliated Companies

Equity in net income of affiliated companies for the year ended December 31, 2019 was $45.8 million, an increase of $8.5 million, compared with income of $37.3 million for the year ended December 31, 2018. The increase was primarily due to $52.2 million of earnings generated by the Zeolyst Joint Venture during the year ended December 31, 2019 as compared to $42.9 million for the year ended December 31, 2018 which was a result of higher year-over-year growth in hydrocracking catalyst and specialty chemical event-driven sales.

Interest Expense, Net

Interest expense, net for the year ended December 31, 2019 was $66.9 million, a decrease of $5.4 million, as compared with $72.3 million for the year ended December 31, 2018. The decrease in interest expense was due to lower average debt balances.

Debt Extinguishment Costs

Debt extinguishment costs for the years ended December 31, 2019 and 2018 were $3.4 million and $7.8 million, respectively.

During the year ended December 31, 2019, we prepaid $210.0 million of outstanding principal balance on the Term Loan Facility (as defined below). In connection with this prepayment, we wrote off $1.0 million of previously unamortized deferred financing costs and original issue discount of $2.4 million as debt extinguishment costs.

During the year ended December 31, 2018, we prepaid $100.0 million of outstanding principal balance on the Term Loan Facility (as defined below). In connection with this prepayment, we wrote off $0.6 million of previously unamortized deferred financing costs and original issue discount of $1.3 million as debt extinguishment costs.

On February 8, 2018 we refinanced our existing senior secured term loan facility with a $1,267.0 million senior secured term loan facility to reduce the applicable interest rates. We recorded $2.1 million of new creditor and third-party financing fees as debt extinguishment costs. In addition, previously unamortized deferred financing costs of $1.4 million and original issue discount of $2.4 million associated with the existing senior secured term loan facility were written off as debt extinguishment costs.

Other (Income) Expense, Net

Other (income) expense, net was income of $1.9 million for the year ended December 31, 2019, a favorable change of $15.8 million, compared with expense of $13.9 million for the year ended December 31, 2018. The change primarily consisted of $2.3 million in sales and use tax refunds received during the year ended December 31, 2019 and $12.7 million of lower foreign currency losses primarily related to the non-permanent intercompany debt denominated in local currency and translated to U.S. dollars.

Provision for Income Taxes

The provision for income taxes for the year ended December 31, 2019 was $12.3 million compared to a $8.0 million provision for the year ended December 31, 2018. The effective income tax rate for the year ended December 31, 2019 was 28.3% compared to 60.3% for the year ended December 31, 2018. The difference between the U.S. federal statutory income tax rate and our effective income tax rate for the year ended December 31, 2019 was mainly due to state and local taxes, GILTI and the impact of intra-period allocation as a result of the Performance Chemicals and Performance Materials businesses being classified as held for sale. The difference between the U.S. federal statutory income tax rate and our effective income tax rate for the year ended December 31, 2018 was mainly due to state and local taxes, GILTI and the impact of intra-period allocation as a result of the Performance Chemicals and Performance Materials businesses being classified as held for sale.

Net Income Attributable to Ecovyst Inc.

For the foregoing reasons and after the effect of the non-controlling interest in earnings of subsidiaries for each period presented, net income attributable to Ecovyst Inc. was $79.5 million for the year ended December 31, 2019 as compared to a net income of $58.3 million for the year ended December 31, 2018.

Adjusted EBITDA

Summarized Segment Adjusted EBITDA information is shown below in the following table:

	Years ended December 31,		Change	
	2019	2018	$	%
	(in millions, except percentages)			
Segment Adjusted EBITDA[1]:				
Ecoservices	$ 175.6	$ 176.5	$ (0.9)	(0.5)%
Catalyst Technologies[2]	107.8	81.1	26.7	32.9%
Total Segment Adjusted EBITDA[3]	283.4	257.6	25.8	10.0%
Unallocated corporate expenses	(43.3)	(39.4)	(3.9)	9.9%
Adjusted EBITDA	$240.1	$218.2	$21.9	10.0%

(1) We define Segment Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Our management evaluates the performance of our segments and allocates resources based primarily on Segment Adjusted EBITDA. Segment Adjusted EBITDA does not represent cash flow for periods presented and should not be considered as an alternative to net income as an indicator of our operating performance or as an alternative to cash flows as a source of liquidity. Segment Adjusted EBITDA may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(2) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $68.1 million for the year ended December 31, 2019, which includes $45.9 million of equity in net income, excluding $7.5 million of amortization of investment in affiliate step-up plus $14.7 million of joint venture depreciation, amortization and interest. The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $56.7 million for the year ended December 31, 2018, which includes $37.5 million of equity in net income, excluding $6.6 million of amortization of investment in affiliate step-up plus $12.6 million of joint venture depreciation, amortization and interest.

(3) Our total Segment Adjusted EBITDA differs from our total consolidated Adjusted EBITDA due to unallocated corporate expenses.

Ecoservices: Adjusted EBITDA for the year ended December 31, 2019 was $175.6 million, a decrease of $0.9 million, or 0.5%, compared with $176.5 million for the year ended December 31, 2018. Ecoservices adjusted EBITDA was consistent with the prior year, and negatively impacted by decreased demand for virgin sulfuric acid, unexpected customer plant outages, timing of plant turnaround costs and the absence of a gain from insurance proceeds related to Hurricane Harvey, which was offset by the roll-off of a below-market contract and other contract renewals in our regenerated sulfuric acid and virgin sulfuric acid product lines.

Catalyst Technologies: Adjusted EBITDA for the year ended December 31, 2019 was $107.8 million, an increase of $26.7 million, or 32.9%, compared with $81.1 million for the year ended December 31, 2018. Adjusted EBITDA increased due to favorable costs from building inventories to meet future sales commitments, higher polyolefin catalysts product group sales and increased sales of chemical synthesis catalysts sold to the methyl methacrylate end market.

A reconciliation of net income attributable to Ecovyst Inc. to Segment Adjusted EBITDA is as follows:

	Years ended December 31,	
	2019	2018
	(in millions)	
Reconciliation of net income attributable to Ecovyst Inc. to Segment Adjusted EBITDA		
Net income from continuing operations	$ 31.1	$ 5.3
Provision for income taxes	12.3	8.0
Interest expense, net	66.9	72.3
Depreciation and amortization	74.8	72.2
EBITDA	185.1	157.8
Joint venture depreciation, amortization and interest[(a)]	14.7	12.6
Amortization of investment in affiliate step-up[(b)]	7.5	6.6
Debt extinguishment costs	3.4	7.8
Net loss on asset disposals[(c)]	4.6	10.4
Foreign currency exchange loss[(d)]	1.2	13.9
LIFO expense[(e)]	6.5	0.8
Transaction and other related costs[(f)]	0.2	0.5
Equity-based compensation	13.3	16.9
Restructuring, integration and business optimization expenses[(g)]	2.6	6.8
Defined benefit plan pension cost (benefit)[(h)]	0.6	(0.2)
Gain on contract termination[(i)]	—	(20.6)
Other[(j)]	0.4	5.0
Adjusted EBITDA	240.1	218.3
Unallocated corporate expenses	43.3	39.4
Segment Adjusted EBITDA	$283.4	$257.7

(a) We use Adjusted EBITDA as a performance measure to evaluate our financial results. Because our Catalyst Technologies segment includes our 50% interest in the Zeolyst Joint Venture, we include an adjustment for our 50% proportionate share of depreciation, amortization and interest expense of the Zeolyst Joint Venture.

(b) Represents the amortization of the fair value adjustments associated with the equity affiliate investment in the Zeolyst Joint Venture as a result of the Business Combination. We determined the fair value of the equity affiliate investment and the fair value step-up was then attributed to the underlying assets of the Zeolyst Joint Venture. Amortization is primarily related to the fair value adjustments associated with inventory, fixed assets and intangible assets, including customer relationships and technical know-how.

(c) When asset disposals occur, we remove the impact of net gain/loss of the disposed asset because such impact primarily reflects the non-cash write-off of long-lived assets no longer in use.

(d) Reflects the exclusion of the foreign currency transaction gains and losses in the statements of income primarily related to the Euro-denominated term loan (which was settled as part of the February 2018 term loan refinancing) and the non-permanent intercompany debt denominated in local currency translated to U.S. dollars.

(e) Represents non-cash adjustments to the Company's LIFO reserves for certain inventories in the U.S. that are valued using the LIFO method, which we believe provides a means of comparison to other companies that may not use the same basis of accounting for inventories.

(f) Relates to certain transaction costs, including debt financing, due diligence and other costs related to transactions that are completed, pending or abandoned and that we believe are not representative of our ongoing business operations.

(g) Includes the impact of restructuring, integration and business optimization expenses which are incremental costs that are not representative of our ongoing business operations.

(h) Represents adjustments for defined benefit pension plan (benefit) costs in our statement of income. All of our defined benefit pension plan obligations are under defined benefit pension plans that are frozen. As such, we do not view such expenses as core to our ongoing business operations.

(i) Represents a non-cash gain on the write-off of the remaining liability under a contractual supply arrangement. As part of Eco Services LLC's acquisition of substantially all of the assets of Solvay USA Inc.'s sulfuric acid refining services business unit on December 1, 2014, we recognized a liability as part of business combination accounting related to our obligation to serve a customer under a pre-existing unfavorable supply agreement. In December 2018, the customer who was party to the agreement closed its facility, and as a result, we were relieved from our obligation to continue to supply the customer on the below market contract. Because the fair value of the unfavorable contract liability was recognized as part of the application of business combination accounting, and since the write-off of the remaining liability was non-cash in nature, we believe this gain is a special item that is not representative of our ongoing business operations.

(j) Other costs consist of certain expenses that are not core to our ongoing business operations, including environmental remediation-related costs associated with the legacy operations of our business prior to a business combination consummated in a prior year period, capital and franchise taxes and the initial implementation of procedures to comply with Section 404 of the Sarbanes-Oxley Act. Included in this line-item are rounding discrepancies that may arise from rounding from dollars (in thousands) to dollars (in millions).

Adjusted Net Income

Summarized adjusted net income information is shown below in the following table:

	Years ended December 31,					
	2019			2018		
	Pre-tax	Tax expense (benefit)	After-tax	Pre-tax	Tax expense (benefit)	After-tax
	(in millions)					
Reconciliation of net income attributable to Ecovyst Inc. to Adjusted Net Income (1)(2)						
Net income attributable to Ecovyst Inc.	$43.4	$ 12.3	$ 31.1	$13.2	$ 8.0	$ 5.2
Amortization of investment in affiliate step-up[(b)]	7.5	1.8	5.7	6.6	1.7	4.9
Debt extinguishment costs	3.4	0.8	2.6	7.8	2.0	5.8
Net loss on asset disposals[(c)]	4.6	1.2	3.4	10.4	2.6	7.8
Foreign currency exchange loss[(d)]	1.2	(0.1)	1.3	13.9	1.4	12.5
LIFO expense[(e)]	6.5	1.7	4.8	0.8	0.2	0.6
Transaction and other related costs[(f)]	0.2	0.1	0.1	0.5	0.1	0.4
Equity-based compensation	13.3	3.1	10.2	16.9	3.9	13.0
Restructuring, integration and business optimization expenses[(g)]	2.6	0.7	1.9	6.8	1.7	5.1
Defined benefit plan pension cost (benefit)[(h)]	0.6	0.2	0.4	(0.2)	(0.1)	(0.1)
Gain on contract termination[(i)]	—	—	—	(20.6)	(5.1)	(15.5)
Other[(j)]	0.4	(0.1)	0.5	5.0	1.3	3.7
Adjusted Net Income, including non-cash GILTI tax and tax reform	83.7	21.7	62.0	61.1	17.7	43.4
Impact of non-cash GILTI tax[(3)]	—	(1.0)	1.0	—	(1.1)	1.1
Impact of tax reform[(4)]	—	(3.6)	3.6	—	2.6	(2.6)
Adjusted Net Income	$ 83.7	$ 17.1	$ 66.6	$ 61.1	$ 19.2	$ 41.9

(1) We define adjusted net income as net income attributable to Ecovyst Inc. adjusted fornon-operating income or expense and the impact of certain non-cash or other items that are included in net income that we do not consider indicative of our ongoing operating performance. Adjusted net income is presented as a key performance indicator as we believe it will enhance a prospective investor's understanding of our results of operations and financial condition. Adjusted net income may not be comparable with net income or adjusted net income as defined by other companies.

(2) Refer to the Adjusted EBITDA notes above for more information with respect to each adjustment.

(3) Amount represents the impact to tax expense in net income beforenon-controlling interest and the related adjustments to net income associated with the GILTI provisions of the TCJA. We were required to record incremental tax provision impact with respect to GILTI even though we had historical NOL amounts to offset the GILTI taxable income inclusion. This NOL utilization precluded us from recognizing GILTI credits which would otherwise help offset the tax impacts of GILTI. No GILTI credits will be recognized with respect to GILTI until the cumulative NOL balance had been exhausted. Because the GILTI provision did not impact our cash taxes (given available U.S. NOLs), we do not view this item as a component of core operations.

(4) Represents the rate change in the Netherlands related to the Dutch Tax Plan 2019 recorded in net income.

The adjustments to net income attributable to Ecovyst Inc. are shown net of applicable statutory tax rates.

Financial Condition, Liquidity and Capital Resources

Our primary sources of liquidity consist of cash flow from operations, existing cash balances as well as funds available under our asset based lending revolving credit facility. We expect that ongoing requirements for debt service and capital expenditures will be funded from these sources of funds. Our primary liquidity requirements include funding working capital requirements (primarily inventory and accounts receivable, net of accounts payable and other accrued liabilities), debt service requirements and capital expenditures. Our capital expenditures include both maintenance of business, which includes spending on maintenance and health, safety and environmental initiatives as well as growth, which includes spending to drive organic sales growth and cost savings initiatives.

We believe that our existing cash, cash equivalents and cash flows from operations, combined with availability under our asset based lending revolving credit facility, will be sufficient to meet our presently anticipated future cash needs for at least the next 12 months. We may also pursue strategic acquisition opportunities, which may impact our future cash requirements. We may, from time to time, increase borrowings under our asset based lending revolving credit facility to meet our future cash needs. As of December 31, 2020, we had cash and cash equivalents of $113.4 million and availability of $102.5 million under our asset based lending revolving credit facility, after giving effect to $18.2 million of outstanding letters of credit and no revolving credit facility borrowings, for a total available liquidity of $215.9 million. As of December 31, 2020, we were in compliance with all covenants under our debt agreements.

Included in our cash and cash equivalents balance as of December 31, 2020 was $12.0 million of cash and cash equivalents held in foreign jurisdictions. We repatriate cash held outside of the United States from certain foreign subsidiaries in order to meet domestic liquidity needs. Depending on domestic and foreign cash balances, we have certain flexibility to repatriate funds in order to meet domestic liquidity needs. In certain cases, the repatriation of foreign cash under previous U.S. tax law had generally been subject to U.S. income taxes at the time of cash distribution. Due to the enactment of the TCJA in December 2017, our overseas earnings repatriation will generally no longer be subject to U.S. federal income taxes at the time of cash distribution. However, future earnings may still be taxed for foreign and state income tax purposes.

Over the course of the next twelve months and beyond, we anticipate making significant cash payments for known contractual and other obligations, including:

Principal and interest on long-term debt

As of December 31, 2020, our total indebtedness was $1,426.4 million, with up to $102.5 million of available borrowings under our asset based lending revolving credit facility. Our liquidity requirements are significant, primarily due to debt service requirements. As reported, our cash interest expense for the years ended December 31, 2020, 2019 and 2018 was approximately $90.3 million, $117.8 million and $110.8 million, respectively. Before any impact of hedges, a one percent change in assumed interest rates for our variable interest credit facilities would have an annual impact of approximately $11.3 million on interest expense. None of the principal balances on our debt are due in the next twelve months.

Interest payments due within the next twelve months are $54.2 million using the interest rate effective as of December 31, 2020 on our variable interest credit facilities. Interest on long-term debt excludes amortization of deferred financing fees and original issue discount. The actual interest payments may differ materially based on actual amounts of long-term debt outstanding and actual interest rates in future periods.

Subject to approval by our board of directors, we may raise additional capital or borrowings from time to time or seek to refinance our existing debt. There can be no assurances that future capital or borrowings will be available to us, and the cost and availability of new capital or borrowings could be materially impacted by market conditions. Further, the decision to refinance our existing debt is based on a number of factors, including general market conditions and our ability to refinance on attractive terms at any given point in time. Any attempts to raise additional capital or borrowings or refinance our existing debt could cause us to incur significant charges. Such charges could have a material impact on our financial position, results of operations, or cash flows.

Cash Flow

	Years ended December 31,		
	2020	2019	2018
	(in millions)		
Continuing Operations			
Net cash provided by (used in)			
Operating activities	$ 140.1	$ 133.2	$ 112.0
Investing activities	575.0	(52.0)	(59.6)
Financing activities	(720.2)	(214.7)	(135.2)
Discontinued Operations			
Net cash provided by (used in)			
Operating activities	83.5	134.6	136.6
Investing activities	(23.6)	16.7	(59.7)
Financing activities	(2.6)	(1.4)	(2.1)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	11.1	(2.2)	0.6
Net change in cash, cash equivalents and restricted cash	63.3	14.2	(7.4)
Cash, cash equivalents and restricted cash at beginning of period	73.9	59.7	67.2
Cash, cash equivalents and restricted cash at end of period	$ 137.2	$ 73.9	$ 59.8

	Years ended December 31,		
	2020	2019	2018
	(in millions)		
Continuing Operations			
Net income	$ 54.3	$ 31.1	$ 5.3
Non-cash and non-operating activities[(1)]	74.6	94.6	104.6
Changes in working capital	14.5	10.6	0.9
Other operating activities	(3.3)	(3.1)	1.2
Net cash provided by operating activities, continuing operations	$140.1	$133.2	$112.0

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(1) Includes depreciation, amortization, amortization of deferred financing costs and original issue discount, debt extinguishment costs, foreign currency exchange gains and losses, pension and postretirement healthcare benefit expense and funding, deferred income tax benefit, net losses on asset disposals, stock compensation expense, equity in net income and dividends received from affiliated companies.

	Years ended December 31,		
	2020	2019	2018
	(in millions)		
Continuing Operations			
Working capital changes that provided (used) cash:			
Receivables	$ 7.0	$ 4.5	$ (3.2)
Inventories	(3.0)	(4.2)	(1.6)
Prepaids and other current assets	(1.4)	2.9	(1.7)
Accounts payable	6.9	0.5	(3.9)
Accrued liabilities	5.0	6.9	11.3
	$14.5	$10.6	$ 0.9

(2)

	Years ended December 31,		
	2020	2019	2018
	(in millions)		
Continuing Operations			
Purchases of property, plant and equipment	$(51.6)	$(52.5)	$(55.1)
Investment in affiliated companies	—	—	(5.0)
Proceeds from business divestiture, net of cash and indebtedness	624.3	—	—
Proceeds from sale of assets	2.4	—	—
Other, net	(0.1)	0.5	0.5
Net cash provided by (used in) investing activities, continuing operations	$ 575.0	$ (52.0)	$ (59.6)

(3)

	Years ended December 31,		
	2020	2019	2018
	(in millions)		
Continuing Operations			
Net revolver borrowings (repayments)	$ —	$ —	$ (25.0)
Net cash repayments on debt obligations	(470.3)	(215.0)	(107.5)
Dividends paid to stockholders	(243.7)	—	—
Other financing activities	(6.2)	0.3	(2.7)
Net cash used in financing activities, continuing operations	$(720.2)	$(214.7)	$(135.2)

The following discussions related to our cash flows are presented on a continuing operations basis, which excludes the cash flows from our former Performance Chemicals and Performance Materials businesses which are accounted for as discontinued operations.

Year Ended December 31, 2020 Compared to the Year Ended December 31, 2019

Net cash provided by operating activities was $140.1 million for the year ended December 31, 2020, compared to $133.2 million provided for the year ended December 31, 2019. Cash generated by net income and non-working capital related activities was higher during the year ended December 31, 2020 by $3.0 million compared to the prior year. Cash provided by working capital during the year ended December 31, 2020 was favorable compared to the year ended December 31, 2019. Working capital for the year ended December 31, 2020 provided cash of $14.5 million, compared to cash provided of $10.6 million for the year ended December 31, 2019.

The increase in cash generated by net income and non-working capital related activities of $3.0 million as compared to the prior year period was primarily due to a decrease in gross profit driven by lower sales volumes.

The $3.9 million increase in cash from working capital as compared to the prior year was primarily due to unfavorable changes in accrued liabilities and prepaid and other current assets, which were partially offset by favorable changes in accounts receivable, inventories and accounts payable.

The unfavorable change in accrued liabilities was primarily due to the timing of interest and employee-related payments. The increased cash flow contribution from accounts receivable was driven by the timing of collections on our receivable balances during the current year period versus prior year period. The favorable change in inventory balances is due to a reduction in inventory in 2020 compared to an inventory build in 2019. We increased inventory levels at the end of the 2019 period within our polyolefin catalyst product group to meet sales demand in the 2020 period. The favorable change in accounts payable is due to timing of capital expenditure payments.

Net cash provided by investing activities was $575.0 million for the year ended December 31, 2020, compared to net cash used of $52.0 million during the year ended December 31, 2019. Cash used in investing activities primarily consisted of $51.6 million and $52.5 million to fund capital expenditures during the years ended December 31, 2020 and 2019, respectively. During the year ended December 31, 2020, we sold our Performance Materials business for net cash proceeds of $624.3 million and sold additional assets which generated proceeds of $2.4 million.

Net cash used in financing activities was $720.2 million for the year ended December 31, 2020, compared to net cash used of $214.7 million during the year ended December 31, 2019. Net cash used in financing activities was primarily driven by $470.3 million and $215.0 million in net repayments of our debt and revolving credit facility made during the years ended December 31, 2020 and 2019, respectively. During the year ended December 31, 2020, we paid a dividend of $1.80 per common share, which resulted in a cash outflow of $243.7 million.

Year Ended December 31, 2019 Compared to the Year Ended December 31, 2018

Net cash provided by operating activities was $133.2 million for the year ended December 31, 2019, compared to $112.0 million provided for the year ended December 31, 2018. Cash generated by net income and non-working capital related activities was higher during the year ended December 31, 2019 by $11.5 million compared to the prior year. Cash provided by working capital during the year ended December 31, 2019 was favorable compared to the year ended December 31, 2018. Working capital for the year ended December 31, 2019 provided cash of $10.6 million, compared to cash provided of $0.9 million for the year ended December 31, 2018.

The increase in cash generated by net income and non-working capital related activities of $11.5 million as compared to the prior year period was primarily due to an increase in gross profit driven by favorable customer pricing.

The $9.7 million increase in cash from working capital as compared to the prior year was primarily due to favorable changes in accounts receivable and prepaid and other current assets, which were partially offset by unfavorable changes in accrued liabilities, inventory balances and accounts payable.

The increase in cash flow related to accounts receivable was due the timing of collections on our receivable balances during the current year period. We had higher receivables at the end of the 2018 period, of which those receivables were collected early in the 2019 period. The favorable change in prepaid and other current assets was due to lower receivable balances with our joint ventures and other related parties as well as the receipt of insurance proceeds during the year ended December 31, 2019. The unfavorable change in accrued liabilities was primarily due to the timing of wage and interest payments. The unfavorable change in accounts payable was due to timing of capital expenditure payments. The unfavorable change in inventory was due to higher inventory build to meet future sales commitments.

Net cash used in investing activities was $52.0 million for the year ended December 31, 2019, compared to net cash used of $59.6 million during the year ended December 31, 2018. Cash used in investing activities primarily consisted of $52.5 million and $55.1 million to fund capital expenditures during the years ended December 31, 2019 and 2018, respectively.

Net cash used in financing activities was $214.7 million for the year ended December 31, 2019, compared to net cash used of $135.2 million during the year ended December 31, 2018. Net cash used in financing activities was primarily driven by $215.0 million and $132.5 million in repayments of our term debt and revolving credit facility made during the years ended December 31, 2019 and 2018, respectively.

Debt

	December 31,	
	2020	2019
	(in millions)	
Senior Secured Term Loan Facility due February 2027	$ 671.7	$ 947.5
New Senior Secured Term Loan Facility due February 2027	459.7	—
6.75% Senior Secured Notes due 2022	—	625.0
5.75% Senior Unsecured Notes due 2025	295.0	295.0
ABL Facility	—	—
Total debt	1,426.4	1,867.5
Original issue discount	(15.6)	(13.4)
Deferred financing costs	(10.4)	(10.8)
Total debt, net of original issue discount and deferred financing costs	1,400.4	1,843.3
Less: current portion	—	—
Total long-term debt, excluding current portion	$1,400.4	$1,843.3

As of December 31, 2020 our total debt was $1,426.4 million excluding the original issue discount of $15.6 million and deferred financing fees of $10.4 million for our senior secured credit facilities and notes. Our net debt was $1,313.0 million, including cash of $113.4 million. Our total available liquidity as of December 31, 2020 was $215.9 million, which represents our cash on hand of $113.4 million plus our excess availability under our asset based lending revolving credit facility of $102.5 million, after giving effect to $18.2 million of outstanding letters of credit and no revolving credit facility borrowings. We may seek, subject to market conditions and other factors, opportunities to repurchase, refinance or otherwise reprice our debt.

Senior Secured Credit Facilities

On May 4, 2016, we entered into senior secured credit facilities (collectively, the “Senior Secured Credit Facilities”) that were comprised of a $1,200.0 million term loan facility consisting of a $900.0 million U.S. dollar-denominated tranche and a $300.0 million Euro-denominated (or €265.0 million) tranche (the “2016 Term Loan Facility”), and a $200.0 million asset-based revolving credit facility (the “ABL Facility”).

On February 8, 2018, we refinanced the 2016 Term Loan Facility with a new $1,267.0 million senior secured term loan facility (the “Term Loan Facility”) by entering into the Third Amendment Agreement to the 2016 Term Loan Facility, which amended and restated the 2016 Term Loan Facility. Pursuant to the Third Amendment Agreement, the Term Loan Facility accrued interest at a floating rate of LIBOR (with a zero percent minimum LIBOR floor) plus 2.50% per annum and was scheduled to mature in February 2025.

In February 2020, we re-priced the $459.7 million Term Loan Facility to reduce the applicable interest rate and extend the maturity of the facility to February 2027. The terms of the facility were substantially consistent following the re-pricing, except that borrowings under the term loan will bear interest at a rate equal to a floating rate of LIBOR plus 2.25% per annum.

The ABL Facility provides for up to $200.0 million in revolving credit borrowings consisting of up to $150.0 million in U.S. available borrowings, up to $10.0 million in Canadian available borrowings and up to $40.0 million of European available borrowings. Borrowings under the ABL Facility bear interest at a rate equal to the LIBOR rate or the base rate elected by us at the time of the borrowing plus a margin of between 1.50%-2.00% or 0.50%-1.00%, respectively, depending on availability under the ABL Facility. In addition, there is an annual commitment fee equal to 0.375%, with a step-down to 0.25% based on the average usage of the revolving credit borrowings available. As of December 31, 2020, there were no revolving credit borrowings under the ABL Facility. Revolving credit borrowings are payable at our option throughout the term of the ABL Facility with the balance due May 4, 2021. We were in compliance with all debt covenants as of December 31, 2020 and 2019, respectively. On March 20, 2020, we amended our existing ABL facility to increase the aggregate amount of the revolving loan commitments available by $50.0 million to $250.0 million, consisting of up to $195.0 million in U.S. commitments, up to $15.0 million in Canadian commitments and up to $40.0 million in European commitments. The maturity of the facility has been extended to March 20, 2025. Following the amendment, the borrowings under the amended ABL Facility bear interest at a rate equal to the LIBOR rate or the base rate plus a margin of between 1.25% and 1.75% or 0.25% to 0.75%, respectively.

The Company has the ability to request letters of credit under the ABL Facility. The Company had $18.2 million of letters of credit outstanding as of December 31, 2020, which reduce available borrowings under the ABL Facility by such amounts.

6.75% Senior Secured Notes due 2022 - Redeemed in 2020

Concurrent with the Business Combination, we issued $625.0 million of 6.750% Senior Secured Notes due November 2022 (the “6.75% Senior Secured Notes”) in transactions exempt from or not subject to registration under the Securities Act pursuant to Rule 144A and Regulation S under the Securities Act of 1933. Interest on the 6.75% Senior Secured Notes was payable on May 15 and November 15 of each year, commencing November 15, 2016. No principal payments were required with respect to the 6.75% Senior Secured Notes prior to their final maturity. The 6.75% Senior Secured Notes were to mature on November 15, 2022.

In July 2020, we entered into an agreement for a new senior secured term loan facility. The proceeds were used to redeem the 6.75% Senior Secured Notes. Refer to the New Senior Secured Term Loan Facility section of this note for further discussion.

New Senior Secured Term Loan Facility due February 2027

In July 2020, we entered into an agreement for a new senior secured term loan facility in an aggregate principal amount of $650.0 million with an original issue discount of 1.5% and interest at a floating rate of LIBOR (with a 1.0% minimum LIBOR floor) plus 3.0% per annum. The proceeds were used to redeem our existing $625.0 million of 6.75% Senior Secured Notes due 2022 and pay the associated early redemption premiums. The new senior secured term loan facility requires scheduled quarterly amortization payments, each equal to 0.25% of the original principal amount of the loans under the new senior secured term loan facility.

5.75% Senior Unsecured Notes due 2025

On December 11, 2017, we issued $300.0 million aggregate principal amount of 5.75% Senior Unsecured Notes due 2025 (the “5.75% Senior Unsecured Notes”) in a private placement exempt from the registration requirements of the Securities Act. The 5.75% Senior Unsecured Notes mature on December 15, 2025. Interest on the 5.75% Senior Unsecured Notes is to be paid semi-annually on February 15 and August 15, commencing August 15, 2018, at an annual rate of 5.75% per year.

Capital Expenditures

Maintenance capital expenditures include spending on maintenance of business, health, safety and environmental initiatives. Growth capital expenditures include spending to drive organic sales growth and cost savings initiatives. These capital expenditures represent our “book” capital expenditures for which the company has recorded, but not necessarily paid for the capital expenditures.

	Years ended December 31,		
	2020	**2019**	**2018**
		(in millions)	
Maintenance capital expenditures	$36.0	$41.3	$38.0
Growth capital expenditures	10.2	12.7	19.4
Total capital expenditures	$46.2	$54.0	$57.4

Capital expenditures remained at a level sufficient for required maintenance and certain expansion growth initiatives during these periods. Capital expenditures are lower in the year ended December 31, 2020 as compared to December 31, 2019 as both growth and maintenance expenditures were delayed to align with general market conditions. Maintenance capital expenditures are higher in the year ended December 31, 2019 as compared to December 31, 2018 due to the timing of turnaround projects.

Pension Funding

We paid $3.3 million, $5.0 million and $2.4 million in cash contributions into our defined benefit pension plans and other postretirement plans during the years ended December 31, 2020, 2019 and 2018, respectively. The net periodic pension and postretirement expense was $0.4 million, $1.5 million, and $0.7 million for those same periods, respectively.

As of December 31, 2020 and 2019, our pension plans and other post-retirement benefit plans were underfunded by $12.2 million and $15.1 million, respectively.

Off-Balance Sheet Arrangements

We had $18.2 million and $19.9 million of outstanding letters of credit on our revolver facility as of December 31, 2020 and 2019, respectively.

Critical Accounting Policies and Estimates

We prepare our consolidated financial statements in conformity with GAAP and our significant accounting policies are described in Note 2 to our consolidated financial statements. The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect reported amounts and related disclosures. We base our estimates and judgments on historical experience and other relevant factors 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 are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We review these matters and reflect changes in estimates as appropriate. We have identified below the accounting policies, estimates and critical judgment areas that we believe could have a material effect on our financial position, liquidity or results of operations.

Revenue Recognition

In determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our agreements, we perform the following steps: (i) identify the contract with the customer; (ii) determine whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measure the transaction price; (iv) allocate the transaction price to the performance obligations based on estimated selling prices; and (v) recognize revenue when (or as) we satisfy each performance obligation.

We identify a contract when an agreement with a customer creates legally enforceable rights and obligations, which occurs when a contract has been approved by both parties, the parties are committed to perform their respective obligations, each party's rights and payment terms are clearly identified, commercial substance exists and it is probable that we will collect the consideration to which we are entitled.

Evidence of a contract with a customer may take the form of a master service agreement ("MSA"), a MSA in combination with an underlying purchase order, a combination of a pricing quote with an underlying purchase order or an individual purchase order received from a customer. Certain of our customers enter into MSAs that establish the terms, including prices, under which orders to purchase goods may be placed. In cases where the MSA contains a distinct order for goods or contains an enforceable minimum quantity to be purchased by the customer, we consider the MSA to be evidence of a contract with a customer as the MSA creates enforceable rights and obligations. In cases where the MSA does not contain a distinct order for goods, evidence of a contract with a customer is the purchase order issued under the MSA. Our customers may also negotiate orders via pricing quotes, which typically detail product pricing, delivery terms and payment information. When a customer procures goods under this method, we consider the combination of the pricing quote and the purchase order to create enforceable rights and obligations. Absent either a MSA or pricing quote, we consider an individual purchase order to create enforceable rights and obligations.

We identify a performance obligation in a contract for each promised good that is separately identifiable from other promises in the contract and for which the customer can benefit from the good. The majority of our contracts have a single performance obligation, which is the promise to transfer individual goods to the customer. Certain of our contracts include multiple performance obligations under which the purchase price for each distinct performance obligation is defined in the contract. These distinct performance obligations may include stand-ready provisions, which are arrangements to provide a customer assurance that they will have access to output from our manufacturing facilities, or monthly reservations of capacity fees. We consider stand-ready provisions and reservation of capacity fees to be performance obligations satisfied over time. Revenues related to stand-ready provisions and reservation of capacity fees are recognized on a ratable basis throughout the contract term and billed to the customer on a monthly basis.

As described above, our MSAs with our customers may outline prices for individual products or contract provisions. MSAs in the our Ecoservices segment may contain provisions whereby raw materials costs are passed-through to the customer per the terms of their contract. Our exposure to fluctuations in raw materials prices is limited, as the majority of pass-through contract provisions reset based on fluctuations in the underlying raw material price. MSAs in our Ecoservices segment also contain take-or-pay arrangements, whereby the customer would incur a penalty in the form of a shortfall volume fee. Currently there is no history in which customers fail to meet the contractual minimum. Revenue from product sales are recorded at the sales price, which includes estimates of variable consideration for which reserves are established and which result from discounts, returns or other allowances that are offered within contracts with our customers.

We recognize revenues when performance obligations under the terms of a contract with our customer are satisfied, which generally occurs at a point in time by transferring control of a product to the customer. We determine the point in time when a customer obtains control of a product and we satisfy the performance obligation by considering factors including when we have a right to payment for the product, the customer has legal title to the product, we have transferred possession of the product, the customer has assumed the risks and rewards of ownership of the product and the customer has accepted the product. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods. We do not have any significant payment terms as payment is received at, or shortly after, the point of sale.

Goodwill and Intangible Assets

Assets and liabilities of acquired businesses are measured at their estimated fair values at the dates of acquisition. The excess of the purchase price over the estimated fair value of the net assets acquired, including identified intangibles, is recorded as goodwill. The determination and allocation of fair value to the assets acquired and liabilities assumed is based on various assumptions and valuation methodologies requiring considerable management judgment, including estimates based on historical information, current market data and future expectations.

Goodwill and intangible assets with indefinite lives are not amortized, but are tested for impairment annually or more frequently if events or circumstances exist that would more likely than not reduce the fair value of the reporting unit below its carrying amount.

Goodwill is tested for impairment at the reporting unit level. In performing tests for goodwill impairment, we are able to use our discretion to first perform an optional qualitative assessment about the likelihood of the carrying value of a reporting unit exceeding its fair value. The qualitative assessment need not be applied to all reporting units. If we determine that it is more likely than not that the fair value of a reporting unit is less than its carrying amount based on the qualitative assessment, we perform a quantitative goodwill impairment test to identify the potential goodwill impairment and measure the amount of the goodwill impairment loss, if any, to be recognized for that reporting unit. For the annual assessments in 2020 and 2019, we bypassed the option to perform the qualitative assessment and proceeded directly to performing the quantitative goodwill impairment test for each of our reporting units. The quantitative test identifies both the potential existence of impairment and the amount of impairment loss.

In applying the quantitative test, the Company calculates and compares the reporting unit’s estimated fair value to its carrying value, including goodwill. If the fair value of a reporting unit exceeds its carrying value, goodwill is not impaired. If the carrying value of a reporting unit exceeds its implied fair value, an impairment charge is recognized, requiring recognition of a goodwill impairment charge for the differential up to the carrying value of goodwill. An impairment loss cannot exceed the carrying value of goodwill assigned to a reporting unit and the loss establishes a new basis in the goodwill. Subsequent reversal of an impairment loss is not permitted.

For the purposes of the quantitative goodwill impairment test, we determine the fair value of our reporting units using a combination of a market approach and an income, or discounted cash flow, approach. Estimating the fair value of a reporting unit requires various assumptions including the use of projections of future cash flows and discount rates that reflect the risks associated with achieving those cash flows. The key assumptions used in estimating the fair value are operating margin growth rates, revenue growth rates, the weighted average cost of capital, the perpetual growth rate, and the estimated earnings market multiples of each reporting unit. The market value is estimated using publicly traded comparable company values by applying their most recent annual adjusted EBITDA multiples to the reporting unit’s adjusted EBITDA for the trailing twelve months. The income approach value is estimated using a discounted cash flow approach. The assumptions about future cash flows and growth rates are based on our assessment of a number of factors including the reporting unit’s recent performance against budget as well as management’s ability to execute planned future strategic initiatives. Discount rate assumptions are based on an assessment of the risk inherent in those future cash flows.

For intangible assets other than goodwill, definite-lived intangible assets are amortized over their respective estimated useful lives. Intangible assets with indefinite lives are not amortized, but rather are tested for impairment at least annually or more frequently if events occur or circumstances change that would more likely than not reduce the fair value of the intangible asset below its carrying amount. Our indefinite-lived intangible assets include trade names and certain trademarks. Similar to the goodwill impairment test, we may first assess qualitative factors to determine whether it is necessary to perform a quantitative impairment test. If we choose to bypass the qualitative assessment, or if the qualitative assessment indicates that the indefinite-lived intangible asset is more likely than not impaired, a quantitative impairment test must be performed. Unlike the goodwill impairment test, the quantitative test for indefinite-lived intangible assets is a one-step test comparing the fair value of the asset to its carrying amount. If the fair value of the indefinite-lived intangible asset is less than the carrying amount, an impairment loss is recognized in an amount equal to the difference.

The unit of accounting used to test our indefinite-lived intangible assets for impairment is at the reporting unit level. The fair values of our indefinite-lived trade names and trademarks are determined for impairment testing purposes based on an income approach using a discounted cash flow valuation model under a relief from royalty methodology. Significant assumptions under the relief from royalty method include the royalty rate a market participant may assume, projected sales and the discount rate applied to the estimated cash flows.

For definite-lived intangible assets, we amortize technical know-how over periods that range from fourteen to twenty years, customer relationships over periods that range from seven to fifteen years, trademarks over a fifteen year period, contracts over periods that range from two to sixteen years, and permits over five years. We perform an impairment review of definite-lived intangible assets when facts and circumstances indicate that the carrying value of an asset may not be recoverable from its undiscounted future cash flows. The impairment test for definite-lived intangible assets is consistent with the test applied to property, plant and equipment as described in our policy.

Assessment of the potential impairment of goodwill and intangible assets is an integral part of our normal ongoing review of operations. Testing for potential impairment of these assets is significantly dependent on numerous assumptions and reflects management's best estimates at a particular point in time. Estimates based on these assumptions may differ significantly from actual results. Changes in factors and assumptions used in assessing potential impairments can have a significant impact on the existence and magnitude of impairments, as well as the time in which such impairments are recognized.

In addition, we continually review our diverse portfolio of assets to ensure they are achieving their greatest potential and are aligned with our growth strategy. Strategic decisions involving a particular group of assets may trigger an assessment of the recoverability of the related assets. Such an assessment could result in impairment losses.

For further information see Note 15 Goodwill and Other Intangible Assets.

Income Taxes

We operate within multiple taxing jurisdictions and are subject to tax filing requirements and potential audits within these jurisdictions. Our operations and the global complexity of tax regulations require assessments of uncertainties and judgments in estimating taxes we will ultimately pay. The final taxes paid are dependent upon many factors, including negotiations with taxing authorities in various jurisdictions, outcomes of tax litigation and resolution of disputes arising from federal, state and international tax audits in the normal course of business. The resolution of these uncertainties may result in adjustments to our tax assets and tax liabilities. We use the asset and liability method in accounting for income taxes. Deferred tax assets and liabilities are recorded for temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, using statutory tax rates in effect for the year in which the differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the results of operations in the period that includes the enactment date. We evaluate our deferred tax assets each period to ensure that estimated future taxable income will be sufficient in character (e.g., capital gain versus ordinary income treatment), amount and timing, to result in their realizability. A valuation allowance is recorded to reduce the carrying amounts of deferred tax assets, unless it is more likely than not that those assets will be realized. Considerable judgments are required in establishing deferred tax valuation allowances. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences and carryforward deferred tax assets become deductible or utilized. We consider the scheduled reversal of taxable temporary differences, projected future taxable income and tax-planning strategies in making this assessment. As events and circumstances change, valuation allowances are adjusted within results from operations when applicable.

Generally, APB 23 of ASC Topic 740, Income Taxes ("ASC 740"), provides guidance with respect to establishing deferred income taxes on earnings from foreign subsidiaries, to the extent that these earnings are considered to be available for repatriation. Further, ASC 740-30 requires that deferred taxes be established with respect to the earnings of a foreign subsidiary, unless existing tax law provides a means by which the investment in a subsidiary can be recovered tax-free. We have determined that we are able repatriate thenon-permanently reinvested earnings of our foreign subsidiaries in a tax-free manner. As such, we are able to assert for purposes of ASC740-30 that no deferred income taxes are needed with respect to earnings from foreign subsidiaries.

We recognize net tax benefits under the recognition and measurement criteria of ASC 740, which prescribes requirements and other guidance for financial statement recognition and measurement of positions taken or expected to be taken on tax returns. We recognize a financial statement benefit for positions taken for tax return purposes when it will be more likely than not (i.e. greater than 50%) that the positions will be sustained upon tax examination, based solely on the technical merits of the tax positions. Otherwise, no tax benefit is recognized. The tax benefits recognized are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. We recognize potential accrued interest and penalties related to unrecognized tax benefits as a component of income tax expense. Tax examinations are often complex as tax authorities may disagree with the treatment of items reported by us and may require several years to resolve. These accrued liabilities represent a provision for taxes that are reasonably expected to be incurred on the basis of available information but which are not certain.

On December 22, 2017, the TCJA was enacted into law. The TCJA provided for several significant tax law changes and modifications, including the reduction of the U.S. federal corporate income tax rate from 35% to 21%, the requirement for companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, as well as the creation of new taxes on certain foreign-sourced earnings. At December 31, 2018 we had completed our accounting for the impacts of the enactment of the Act.

Based on FASB guidance, we are permitted to make an accounting policy election to either (1) treat the taxes incurred as a result of the GILTI provision as a current-period expense when incurred or (2) factor such amounts into our measurement of deferred taxes. We have elected to treat any expense incurred as a current-period expense.

Stock-Based Compensation

We grant stock-based compensation awards in connection with our stock incentive plans. Under the terms of the incentive plans, we are authorized to issue equity awards to our employees, directors and affiliates. The grants have taken the form of restricted stock awards, restricted stock units, performance stock units and stock options. Restricted stock awards provide the recipient with shares of our stock subject to certain vesting requirements. Restricted stock units and performance stock units provide the recipient with the right to receive shares of our stock at a future date if certain vesting conditions are met. Stock option awards provide the recipient the ability to purchase shares of our stock at a given strike price upon the satisfaction of certain vesting requirements.

The vesting requirements associated with the awards include a mix of both service and/or performance conditions. Depending on the award and recipient, the service condition may reflect a cliff vesting provision (e.g., 100% vested upon four years of service) or a graded vesting provision (e.g., 33.3% vested each year over a period of three years). Restricted stock awards and stock options issued with performance conditions vest based on the occurrence of a defined liquidity event upon which certain investment funds affiliated with CCMP receive proceeds exceeding certain thresholds. Although achievement of the performance condition is subject to continued service with us, the terms of awards issued with performance conditions stipulate that the performance vesting condition can be attained for a period of six months following separation from service under certain circumstances, depending on the means of separation from the Company and subject to other factors such as individual separation agreements. The same performance vesting condition for our restricted stock awards also governs the achievement of the performance vesting condition for our stock options. The value of the restricted stock awards granted was based on the average of the high and low trading prices of our common stock on the NYSE on the preceding trading day, in accordance with our policy for valuing such awards.

In addition to restricted stock awards, we have granted restricted stock units and performance stock units as part of our equity incentive compensation program. Each restricted stock unit provides the recipient with the right to receive a share of common stock subject to graded vesting terms based on service, which generally requires one year of service for members of our board of directors and three years of service for employees. Performance stock units vest upon the achievement of Company-specific financial performance targets and the provision of service through the vesting date.

We recognize compensation expense related to our equity awards with service conditions on a straight-line basis over the stated vesting period for each award. Expense related to our equity awards with performance conditions is recognized in the period in which it becomes probable that the performance target will be achieved. No compensation expense has been recognized to-date on any of our restricted stock awards and stock options subject to vesting based on performance conditions, since a liquidity event triggering vesting of the awards has not occurred, nor is it considered probable.

The grant date fair value of restricted stock awards, restricted stock units and performance stock units is based on the value of our common stock as traded on the New York Stock Exchange. The grant date fair value of stock option awards is estimated using a Black-Scholes option pricing model. Determining the fair value of stock option awards at the grant date requires judgment, including estimates of the average risk-free interest rate, dividend yield, volatility and expected term. Since we have limited experience with respect to historical exercise and forfeiture rates or patterns, we have estimated certain assumptions using acceptable simplified methods and through benchmarking to our peer group of companies.

Recently Issued Accounting Standards

See Note 3 to our consolidated financial statements for a discussion of recently issued accounting standards and their effect on us.

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ECOVYST INC. AND SUBSIDIARIES (formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Ecovyst Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Ecovyst Inc. (formerly known as PQ Group Holdings Inc.) and its subsidiaries (the "Company") as of December 31, 2020 and 2019, and the related consolidated statements of income, of comprehensive income (loss), of stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2020, including the related notes and schedule of condensed parent company information as of December 31, 2020 and 2019 and for each of the three years in the period ended December 31, 2020 listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Annual Report on Internal Control over Financial Reporting (not presented herein) appearing under Item 9A of the Company's 2020 Annual Report on Form 10-K. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill Impairment Assessment—Performance Chemicals Reporting Unit

As described in Notes 1, 2, and 5 to the consolidated financial statements, subsequent to the initial issuance of the December 31, 2020 consolidated financial statements, the Performance Chemicals business met the held for sale criteria and consequently the financial results of the Performance Chemicals business are reported in discontinued operations in the Company's consolidated financial statements. The goodwill associated with the Performance Chemicals reporting unit was $326.2 million as of December 31, 2020. Management is required to test goodwill associated with each of its reporting units for impairment at least annually and whenever events or circumstances indicate that it is more likely than not that goodwill may be impaired. Management performs its annual goodwill impairment test as of October 1. Goodwill is tested for impairment at the reporting unit level. If the carrying value of a reporting unit exceeds its implied fair value, an impairment charge is recognized. Management applied the market approach to estimate the fair value of the Performance Chemicals reporting unit. In applying the market approach, management estimates the reporting unit fair value using publicly traded comparable company values and applies the selected market multiples to each reporting unit's trailing twelve months adjusted EBITDA. The Company recorded a goodwill impairment charge of $260 million in the fourth quarter of 2020 related to the Performance Chemicals reporting unit.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the Performance Chemicals reporting unit is a critical audit matter are (i) the significant judgment by management when determining the fair value estimate of the reporting unit; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating the significant assumption related to market multiples; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of the Performance Chemicals reporting unit. These procedures also included, among others, (i) testing management's process for determining the fair value estimate of the Performance Chemicals reporting unit; (ii) evaluating the appropriateness of the market approach method; (iii) evaluating the reasonableness of the significant assumption used by management related to market multiples; and (iv) testing the completeness and accuracy of the underlying data used in the estimate. Evaluating management's assumption related to market multiples involved evaluating whether the assumption was reasonable considering (i) the current and past performance of the reporting unit; (ii) consistency with external industry data; and (iii) whether this assumption was consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating (i) the appropriateness of the market approach method and (ii) reasonableness of the significant assumption related to market multiples.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
March 17, 2021, except with respect to our opinion on the consolidated financial statements insofar as it relates to the effects of discontinued operations discussed in Note 5, as to which the date is November 16, 2021.

We have served as the Company's auditor since 2015.

ECOVYST INC. AND SUBSIDIARIES
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONSOLIDATED STATEMENTS OF INCOME
(in thousands, except share and per share amounts)

	Years ended December 31,		
	2020	2019	2018
Sales	$ 495,920	$ 532,747	$ 527,661
Cost of goods sold	344,967	365,537	369,649
Gross profit	150,953	167,210	158,012
Selling, general and administrative expenses	81,545	83,509	84,982
Other operating expense, net	17,842	17,734	3,223
Operating income	51,566	65,967	69,807
Equity in net income from affiliated companies	(21,065)	(45,808)	(37,318)
Interest expense, net	50,409	66,872	72,344
Debt extinguishment costs	25,028	3,400	7,751
Other (income) expense, net	(5,021)	(1,916)	13,800
Income from continuing operations before income taxes and noncontrolling interest	2,215	43,419	13,230
(Benefit) provision for income taxes	(52,065)	12,299	7,977
Net income from continuing operations	54,280	31,120	5,253
Net (loss) income from discontinued operations, net of tax	(335,984)	49,190	54,368
Net (loss) income	(281,704)	80,310	59,621
Less: Net (loss) income attributable to the noncontrolling interest—discontinued operations	(2,933)	771	1,321
Net (loss) income attributable to Ecovyst Inc.	$ (278,771)	$ 79,539	$ 58,300
Income from continuing operations	$ 54,280	$ 31,120	$ 5,253
(Loss) income from discontinued operations	(333,051)	48,419	53,047
Net (loss) income attributable to Ecovyst Inc.	$ (278,771)	$ 79,539	$ 58,300
Net (loss) income per share:			
Basic income per share - continuing operations:	$ 0.40	$ 0.23	$ 0.04
Diluted income per share - continuing operations:	$ 0.40	$ 0.23	$ 0.04
Basic (loss) income per share - discontinued operations	$ (2.46)	$ 0.36	$ 0.40
Diluted (loss) income per share - discontinued operations	$ (2.44)	$ 0.36	$ 0.39
Basic (loss) income per share	$ (2.06)	$ 0.59	$ 0.44
Diluted (loss) income per share	$ (2.04)	$ 0.59	$ 0.43
Weighted average shares outstanding:			
Basic	135,528,977	134,389,667	133,380,567
Diluted	136,450,953	135,548,694	134,684,931

See accompanying notes to consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Years ended December 31,		
	2020	**2019**	**2018**
Net (loss) income	$(281,704)	$ 80,310	$ 59,621
Other comprehensive income (loss), net of tax:			
Pension and postretirement benefits	1,938	2,430	(7,958)
Net gain (loss) from hedging activities	166	(2,665)	(330)
Foreign currency translation	(17,519)	22,889	(35,056)
Total other comprehensive (loss) income	(15,415)	22,654	(43,344)
Comprehensive (loss) income	(297,119)	102,964	16,277
Less: Comprehensive (loss) income attributable to noncontrolling interests	(3,856)	1,543	1,392
Comprehensive (loss) income attributable to Ecovyst Inc.	$(293,263)	$101,421	$ 14,885

See accompanying notes to consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share amounts)

	December 31, 2020	December 31, 2019
ASSETS		
Cash and cash equivalents	$ 113,377	$ 36,125
Accounts receivables, net	45,943	53,024
Inventories, net	52,789	50,890
Prepaid and other current assets	11,468	7,460
Current assets held for sale	205,090	421,596
Total current assets	428,667	569,095
Investments in affiliated companies	458,128	471,338
Property, plant and equipment, net	591,710	617,916
Goodwill	391,565	390,503
Other intangible assets, net	137,446	148,616
Right-of-use lease assets	28,943	24,324
Other long-term assets	12,446	9,685
Long-term assets held for sale	1,149,443	2,089,872
Total assets	$ 3,198,348	$ 4,321,349
LIABILITIES		
Current maturities of long-term debt	$ —	$ —
Accounts payable	38,131	38,120
Operating lease liabilities—current	6,715	5,515
Accrued liabilities	48,482	59,228
Current liabilities held for sale	108,537	167,109
Total current liabilities	201,865	269,972
Long-term debt, excluding current portion	1,400,369	1,843,224
Deferred income taxes	126,210	161,577
Operating lease liabilities—noncurrent	21,972	18,726
Other long-term liabilities	15,399	18,766
Long-term liabilities held for sale	155,354	223,766
Total liabilities	1,921,169	2,536,031
Commitments and contingencies (Note 24)		
EQUITY		
Common stock ($0.01 par); authorized shares 450,000,000; issued shares 137,102,143 and 136,861,382 on December 31, 2020 and 2019, respectively; outstanding shares 136,318,557 and 136,464,961 on December 31, 2020 and 2019, respectively	1,371	1,369
Preferred stock ($0.01 par); authorized shares 50,000,000; no shares issued or outstanding on December 31, 2020 and 2019, respectively	—	—
Additional paid-in capital	1,477,859	1,696,899
(Accumulated deficit) retained earnings	(175,758)	103,013
Treasury stock, at cost; shares 783,586 and 396,421 on December 31, 2020 and 2019, respectively	(11,081)	(6,483)
Accumulated other comprehensive loss	(15,265)	(15,348)
Total Ecovyst Inc. equity	1,277,126	1,779,450
Noncontrolling interest	53	5,868
Total equity	1,277,179	1,785,318
Total liabilities and equity	$ 3,198,348	$ 4,321,349

See accompanying notes to consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands, except share data)

	Shares of Common stock	Common stock	Additional paid-in capital	Retained earnings (accum. deficit)	Shares of Treasury stock	Treasury stock, at cost	Accum. other comp. income (loss)	Non-controlling interest	Total
December 31, 2017	135,244,379	$ 1,352	$1,655,114	$ (32,777)	—	$ —	$ 4,311	$ 3,919	$1,631,919
Net income	—	—	—	58,300	—	—	—	1,321	59,621
Other comprehensive income (loss)	—	—	—	—	—	—	(43,415)	71	(43,344)
Repurchases of common shares	—	—	—	—	(166,224)	(2,920)	—	—	(2,920)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(726)	(726)
Stock compensation expense	—	—	19,464	—	—	—	—	—	19,464
Shares issued under equity incentive plan, net of forfeitures	513,890	6	125	—	—	—	—	—	131
December 31, 2018	135,758,269	$ 1,358	$1,674,703	$ 25,523	(166,224)	$ (2,920)	$(39,104)	$ 4,585	$1,664,145
Cumulative effect adjustment from adoption of new accounting standards	—	—	—	(2,049)	—	—	1,874	—	(175)
December 31, 2018, as adjusted	135,758,269	$ 1,358	$1,674,703	$ 23,474	(166,224)	$ (2,920)	$(37,230)	$ 4,585	$1,663,970
Net income	—	—	—	79,539	—	—	—	771	80,310
Other comprehensive income (loss)	—	—	—	—	—	—	21,882	772	22,654
Repurchases of common shares	—	—	—	—	(230,197)	(3,563)	—	—	(3,563)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(260)	(260)
Stock compensation expense	—	—	18,225	—	—	—	—	—	18,225
Shares issued under equity incentive plan, net of forfeitures	1,103,113	11	3,971	—	—	—	—	—	3,982
December 31, 2019	136,861,382	$ 1,369	$1,696,899	$ 103,013	(396,421)	$ (6,483)	$(15,348)	$ 5,868	$1,785,318
Net loss	—	—	—	(278,771)	—	—	—	(2,933)	(281,704)
Other comprehensive income (loss)	—	—	—	—	—	—	(14,492)	(923)	(15,415)
Repurchases of common shares	—	—	—	—	(387,165)	(4,598)	—	—	(4,598)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(1,219)	(1,219)
Dividends paid on common stock ($1.80 per share)	—	—	(243,749)	—	—	—	—	—	(243,749)
Disposal of business	—	—	—	—	—	—	14,575	(740)	13,835
Stock compensation expense	—	—	24,366	—	—	—	—	—	24,366
Shares issued under equity incentive plan, net of forfeitures	240,761	2	343	—	—	—	—	—	345
December 31, 2020	137,102,143	$ 1,371	$1,477,859	$(175,758)	(783,586)	$(11,081)	$(15,265)	$ 53	$1,277,179

See accompanying notes to consolidated financial statements.

ECOVYST INC. AND SUBSIDIARIES
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Years ended December 31,		
	2020	**2019**	**2018**
Cash flows from operating activities:			
Net (loss) income	$ (281,704)	$ 80,310	$ 59,621
Net loss (income) from discontinued operations	335,984	(49,190)	(54,368)
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	65,333	61,244	58,585
Amortization	11,593	13,537	13,603
Amortization of deferred financing costs and original issue discount	2,515	2,799	3,252
Debt extinguishment costs	22,658	3,400	5,627
Foreign currency exchange (gain) loss	(5,264)	1,228	13,910
Pension and postretirement healthcare benefit expense	416	1,471	742
Pension and postretirement healthcare benefit funding	(3,264)	(4,955)	(2,412)
Deferred income tax (benefit) provision	(60,060)	3,898	1,863
Net loss on asset disposals	4,722	4,559	10,350
Stock compensation	17,194	13,281	16,899
Equity in net income from affiliated companies	(21,065)	(45,808)	(37,318)
Dividends received from affiliated companies	40,000	40,000	40,000
Gain on contract termination	—	—	(20,612)
Other, net	(3,478)	(3,185)	1,369
Working capital changes that provided (used) cash, excluding the effect of acquisitions and dispositions:			
Receivables	6,971	4,486	(3,154)
Inventories	(2,976)	(4,226)	(1,586)
Prepaids and other current assets	(1,359)	2,883	(1,703)
Accounts payable	6,868	541	(3,890)
Accrued liabilities	5,015	6,903	11,315
Net cash provided by operating activities, continuing operations	140,099	133,176	112,093
Net cash provided by operating activities, discontinued operations	83,499	134,587	136,551
Net cash provided by operating activities	223,598	267,763	248,644
Cash flows from investing activities:			
Purchases of property, plant and equipment	(51,598)	(52,537)	(55,128)
Investment in affiliated companies	—	—	(5,000)
Proceeds from business divestiture, net of cash and indebtedness	624,256	—	—
Proceeds from sale of assets	2,375	—	—
Other, net	—	469	557
Net cash provided by (used in) investing activities, continuing operations	575,033	(52,068)	(59,571)
Net cash (used in) provided by investing activities, discontinued operations	(23,561)	16,709	(59,719)
Net cash provided by (used in) investing activities	551,472	(35,359)	(119,290)
Cash flows from financing activities:			
Draw down of revolving credit facilities	126,500	175,500	108,500
Repayments of revolving credit facilities	(126,500)	(175,500)	(133,500)
Issuance of long-term debt, net of original issue discount and financing fees	640,340	—	1,267,000
Debt issuance costs	(8,987)	—	(6,395)
Repayments of long-term debt	(1,091,134)	(215,000)	(1,367,959)
Debt prepayment fees	(10,550)	—	—
Dividends paid to stockholders	(243,749)	—	—
Repurchases of common shares	(4,598)	(3,563)	(2,920)

	Years ended December 31,		
	2020	2019	2018
Proceeds from stock options exercised	373	3,975	—
Other, net	(1,875)	(155)	132
Net cash used in financing activities, continuing operations	(720,180)	(214,743)	(135,142)
Net cash used in financing activities, discontinued operations	(2,640)	(1,350)	(2,083)
Net cash used in financing activities	(722,820)	(216,093)	(137,225)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	11,052	(2,120)	354
Net change in cash, cash equivalents and restricted cash	63,302	14,191	(7,517)
Cash, cash equivalents and restricted cash at beginning of period	73,917	59,726	67,243
Cash, cash equivalents and restricted cash at end of period	$ 137,219	$ 73,917	$ 59,726
Less cash, cash equivalents and restricted cash of discontinued operations	$ (22,202)	$ (36,505)	$ (30,966)
Cash, cash equivalents and restricted cash at end of period of continuing operations	$ 115,017	$ 37,412	$ 28,760

For supplemental cash flow disclosures, see Note 28.

See accompanying notes to consolidated financial statements.

1. Background and Basis of Presentation:

Description of Business

Ecovyst Inc. and subsidiaries (the “Company” or “Ecovyst”), formerly known as PQ Group Holdings Inc. and subsidiaries (“PQ Group Holdings”), is a leading integrated and innovative global provider of specialty catalysts and services. The Company supports customers globally through its strategically located network of manufacturing facilities. The Company believes that its products, which are predominantly inorganic, and services contribute to improving the sustainability of the environment.

Basis of Presentation

On December 14, 2020, PQ Group Holdings completed the sale of its Performance Materials business for $650,000, and the financial results of this business have been presented as discontinued operations in the consolidated financial statements for all periods presented. See Note 4 for more information on the transaction.

Effective on August 1, 2021, PQ Group Holdings completed the sale of its Performance Chemicals business for $1,100,000, subject to certain purchase price adjustments as set forth in the agreement. Upon entering into the definitive agreement on February 28, 2021, the transaction met the held for sale criteria and consequently the financial results of the Performance Chemicals business are reported in discontinued operations in the consolidated financial statements for all periods presented. See Note 5 for more information on the transaction.

In connection with the closing of the sale of the Performance Chemicals business, PQ Group Holdings Inc. changed its name from “PQ Group Holdings Inc.” to “Ecovyst Inc.”, changed the ticker symbol of its common stock listed on the New York Stock Exchange from “PQG” to “ECVT” and rebranded PQ Group Holdings segments from “Refining Services” to “Ecoservices” and “Catalysts” to “Catalyst Technologies”. Financial information presented herein related to the Ecoservices and Catalyst Technologies segments remains unchanged from the Company’s previously issued financial statements filed on Form 10-K for the years ended December 31, 2020, 2019 and 2018, respectively.

The Company has two uniquely positioned specialty businesses: Ecoservices provides sulfuric acid recycling to the North American refining industry for the production of alkylate and provides on-purpose virgin sulfuric acid for water treatment, mining, and industrial applications; and Catalyst Technologies provides finished silica catalysts and catalyst supports necessary to produce high strength and high stiffness plastics and, through its Zeolyst joint venture, supplies zeolites used for catalysts that remove nitric oxide from diesel engine emissions as well as sulfur from fuels during the refining process.

The Company’s regeneration services product group, which is a part of the Company’s Ecoservices segment, typically experiences seasonal fluctuations as a result of higher demand for gasoline products in the summer months and lower demand in the winter months. These demand fluctuations result in higher sales and working capital requirements in the second and third quarters.

The notes to the consolidated financial statements, unless otherwise indicated, are on a continuing operations basis.

COVID-19

In March 2020, the outbreak of a novel coronavirus(“COVID-19”) was declared a national emergency in the United States. The spread of COVID-19 in the United States and other parts of the world has adversely impacted economic activity and contributed to volatility in financial markets. In response to the COVID-19 pandemic, the federal government and various state, local and foreign governments have issued decrees and orders that have disrupted many businesses and implemented social distancing, travel and other restrictions. In response to these restrictions, the Company has taken a variety of actions, including an international travel ban, distribution of personal protective equipment to employees and work-at-home requirements for many of the Company’s employees who are not an integral part of its manufacturing operations. The Company has also implemented and refined its existing business continuity plans in an effort to minimize operational disruptions. The Company’s manufacturing operations, as well as the operations of its key vendors and the majority of its key customers, have continued to operate with limited interruptions.

The extent and timing of the impact of the COVID-19 pandemic on the Company's business led to lower sales volume demand beginning in the second quarter of 2020. The Company is not aware of any specific event or circumstance that would require an update to our estimates or judgments or a revision of the carrying value of its assets or liabilities as of the date of the issuance of the consolidated financial statements. These estimates may change, as the pandemic continues to evolve and the duration remains uncertain, and may adversely impact the Company's results of operations, financial condition or cash flow.

2. Summary of Significant Accounting Policies:

Principles of Consolidation. The consolidated financial statements include the accounts of the Company and its controlled subsidiaries. Investments in affiliated companies are recorded at cost plus the Company's equity in their undistributed earnings. All intercompany transactions have been eliminated. Noncontrolling interests represent third-party equity ownership in certain of the Company's consolidated subsidiaries and are presented as a component of equity separate from the equity attributable to the Company's shareholders. The noncontrolling interests' share in the Company's net earnings are included in net income attributable to the noncontrolling interest in the Company's consolidated statements of income, and their portion of the Company's comprehensive income is included in comprehensive income (loss) attributable to noncontrolling interests in the Company's consolidated statements of comprehensive income (loss). The Company's noncontrolling interests relate to third-party minority ownership interests held in certain of the Company's foreign subsidiaries acquired as part of a former business combination.

Foreign Currency Translation. All assets and liabilities of foreign subsidiaries and affiliated companies are translated to U.S. dollars using exchange rates in effect at the balance sheet date. Adjustments resulting from translation of the balance sheets and intercompany loans, which are considered permanent, are included in stockholders' equity as part of accumulated other comprehensive income (loss). Adjustments resulting from translation of certain intercompany loans, which are not considered permanent and are denominated in foreign currencies, are included in other (income) expense, net in the consolidated statements of income. The Company considers intercompany loans to be of a permanent or long-term nature if management expects and intends that the loans will not be repaid. For the years ended December 31, 2020, 2019 and 2018, all intercompany loan arrangements were determined to be non-permanent based on management's intention as well as actual lending and repayment activity. Therefore, the foreign currency transaction gains or losses associated with the intercompany loans were recorded in the consolidated statements of income for the years ended December 31, 2020, 2019 and 2018.

Income and expense items are translated at average exchange rates during the year. Net foreign currency exchange (gains) and losses included in other (income) expense, net were $(5,264), $1,228 and $13,910 for the years ended December 31, 2020, December 31, 2019 and December 31, 2018, respectively. The net foreign currency losses realized in 2020 and 2019 were driven by the non-permanent intercompany debt denominated in local currency and translated to U.S. dollars. The net foreign currency losses realized in 2018 were primarily driven by the Euro-denominated term loan (which was settled as part of the February 2018 term loan refinancing, see Note 17 to these consolidated financial statements for further information) and the non-permanent intercompany debt denominated in local currency and translated to U.S. dollars.

Cash and Cash Equivalents. Cash and cash equivalents include highly liquid investments with original terms to maturity of 90 days or less from the time of purchase.

Restricted Cash. Restricted cash, which is restricted as to withdrawal or usage, is classified separately from cash and cash equivalents on the Company's consolidated balance sheets. The Company's total restricted cash balances were $1,640 and $1,287 as of December 31, 2020 and 2019, respectively, and are included on the Company's consolidated balance sheets as prepaid and other current assets.

Accounts Receivable and Allowance for Credit Losses. Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The allowance for credit losses is the Company's best estimate of the amount of probable credit losses in its existing accounts receivable and is reviewed during each reporting period over their contractual life. The Company recognizes an allowance for credit losses based on historical collection experience, current regional economic and market conditions, the aging of accounts receivable and assessments of current creditworthiness of customers. Account balances are charged against the allowance when the Company believes it is

probable that the associated receivables will not be recovered. If the financial condition of the Company's customers were to deteriorate resulting in an impairment of their ability to make payments, additional allowances may be required. The Company does not have any off-balance sheet credit exposure related to its customers. The Company's allowance for credit losses was not material as of December 31, 2020 and 2019.

Inventories. Certain domestic inventories are stated at the lower of cost or market and valued using thelast-in, first-out ("LIFO") method. All other inventories are stated at the lower of cost and net realizable value and valued using the weighted average cost or first-in, first-out ("FIFO") methods.

Property, Plant and Equipment. Property, plant and equipment are carried at cost and include expenditures for new facilities, major renewals and betterments. The Company capitalizes the cost of furnace rebuilds as part of property, plant and equipment. Maintenance, repairs and minor renewals are charged to expense as incurred. The Company capitalizes certain internal costs associated with the implementation of purchased software. When property, plant and equipment is retired or otherwise disposed of, the net carrying amount is eliminated with any gain or loss on disposition recognized in earnings at that time.

Depreciation is provided on the straight-line method based on the estimated useful lives of the assets, which generally range from15 to 33 years for buildings and improvements and 3 to 10 years for machinery and equipment. Leasehold improvements are depreciated using the straight-line method based on the shorter of the useful life of the improvement or remaining lease term.

The Company capitalizes the interest cost associated with the development and construction of significant new plant and equipment and depreciates that amount over the lives of the related assets. Capitalized interest recorded during the years ended December 31, 2020, 2019 and 2018 was $1,788, $1,941 and $3,542, respectively.

Leases. The Company has operating and finance lease agreements with remaining lease terms as of December 31, 2020 of up to23 years, including leases of land, buildings, railcars, vehicles, manufacturing equipment and general office equipment. Some leases include options to terminate or extend for one or more years. These options are incorporated in the Company's lease term when it is reasonably certain that the option will be exercised. Some leases include options to purchase, which the Company assesses under the guidance to determine if these leases should be classified as finance lease agreements.

When the Company enters into an arrangement, at inception, the Company determines if the arrangement contains a lease and whether that lease meets the classification criteria of a finance or operating lease. Some of the Company's lease arrangements contain lease components (e.g. minimum rent payments) and non-lease components (e.g. maintenance). The Company accounts for the lease andnon-lease components separately based on the estimated standalone price of each component. Certain of the Company's lease agreements include rental payments that are adjusted periodically for an index or rate and these are initially measured using the index or rate in effect at the commencement date. Variable lease expense is recognized in the period in which the obligation for those payments is incurred. The Company's lease agreements do not contain any material residual value guarantees or material restrictive covenants.

The Company recognizes a right-of-use lease asset and lease liability at the lease commencement date based on the present value of the remaining lease payments over the lease term. The Company assesses its leasing arrangements to determine the rate implicit in the lease arrangement. Historically, the Company's leasing arrangements do not contain the information necessary to determine the rate implicit in the lease. As such, the Company utilizes its incremental borrowing rate over the relevant lease term, which is the rate of interest that it would have to pay to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. The incremental borrowing rate is determined at the lease commencement date and is developed utilizing a readily available market interest rate curve adjusted for the Company's credit quality. The Company has elected to use a portfolio approach to apply its incremental borrowing rate to individual leases based on lease term and geographic jurisdiction. Short-term leases, which have an initial term of twelve months or less, are not recorded on the Company's balance sheet.

Lease expense for operating leases is recognized on a straight-line basis over the lease term. Lease expense for financing leases is bifurcated into two components, with the amortization expense component of the right-of-use asset recognized on a straight-line basis and the interest expense component recognized using the effective interest method over the lease term. The amortization expense component of the right-of-use lease asset is included in cost of goods sold and in selling, general and administrative expenses and the interest expense component is included in interest expense, net on the consolidated statements of income.

Spare Parts. Spare parts are maintained by the Company's facilities to keep machinery and equipment in working order. Spare parts are capitalized and included in other long-term assets. Spare parts are measured at cost and are not depreciated or expensed until utilized; however, reserves may be provided on aged spare parts. When a spare part is utilized as part of an improvement to property, plant and equipment, the carrying value is depreciated over the applicable life once placed in service. Otherwise, the spare part is expensed and charged as a cost of production when utilized.

Investments in Affiliated Companies. Investments in affiliated companies are accounted for using the equity method of accounting if the investment provides the Company with the ability to exercise significant influence, but not control, over the investee. Significant influence is generally deemed to exist if the Company's ownership interest in the voting stock of the investee ranges between 20% and 50%, although other factors, such as representation on the investee's board of directors and the impact of commercial arrangements, are considered in determining whether the equity method of accounting is appropriate. Under the equity method of accounting, the investments in equity-method investees are recorded in the consolidated balance sheets as investments in affiliated companies, and the Company's share of the investees' earnings or losses, together with other than temporary impairments in value, is recorded as equity in net income from affiliated companies in the consolidated statements of income. Any differences between the Company's cost of an equity method investment and the underlying equity in the net assets of the investment, such as fair value step-ups resulting from acquisitions, are accounted for according to their nature and impact the amounts recognized as equity in net income from affiliated companies in the consolidated statements of income.

The Company evaluates all distributions received from its equity method investments using the nature of distribution approach. Under this approach, the Company evaluates the nature of activities of the investee that generated the distribution. The distributions received are either classified as a return on investment, which is presented as a component of operating activities on the Company's consolidated statements of cash flows, or as a return of investment, which is presented as a component of investing activities on the Company's consolidated statements of cash flows.

The Company evaluates its equity method investments for impairment whenever events or changes in circumstances indicate that the carrying amounts of such investments may be impaired. If a decline in the value of an equity method investment is determined to be other than temporary, a loss is recorded in earnings in the current period.

Goodwill and Intangible Assets. Goodwill is an asset representing the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized. The Company is required to test goodwill associated with each of its reporting units for impairment at least annually and whenever events or circumstances indicate that it is more likely than not that goodwill may be impaired. The Company performs its annual goodwill impairment test as of October 1.

Goodwill is tested for impairment at the reporting unit level. In performing tests for goodwill impairment, the Company is able to use its discretion to first perform an optional qualitative assessment about the likelihood of the carrying value of a reporting unit exceeding its fair value. The qualitative assessment need not be applied to all reporting units. 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 based on the qualitative assessment, the Company will perform a quantitative goodwill impairment test to identify the potential goodwill impairment and measure the amount of the goodwill impairment loss, if any, to be recognized for that reporting unit. For the annual assessments in 2020 and 2019, the Company bypassed the option to perform the qualitative assessment and proceeded directly to performing the quantitative goodwill impairment test for each of its reporting units. The quantitative test identifies both the potential existence of impairment and the amount of impairment loss.

In applying the quantitative test, the Company calculates and compares the reporting unit's estimated fair value to its carrying value, including goodwill. If the fair value of a reporting unit exceeds its carrying value, goodwill is not impaired. If the carrying value of a reporting unit exceeds its implied fair value, an impairment charge is recognized, requiring recognition of a goodwill impairment charge for the differential up to the carrying value of goodwill. An impairment loss cannot exceed the carrying value of goodwill assigned to a reporting unit and the loss establishes a new basis in the goodwill. Subsequent reversal of an impairment loss is not permitted.

For intangible assets other than goodwill, definite-lived intangible assets are amortized over their respective estimated useful lives. Intangible assets with indefinite lives are not amortized, but rather are tested for impairment at least annually or more frequently if events occur or circumstances change that would more likely than not reduce the fair value of the intangible asset below its carrying amount. The Company tests its indefinite-lived intangible assets as of October 1 of each year in conjunction with its annual goodwill impairment test.

Impairment Assessment of Long-Lived Assets. The Company performs an impairment review of property, plant and equipment and definite-lived intangible assets when facts and circumstances indicate that the carrying value of an asset or asset group may not be recoverable from its undiscounted future cash flows. When evaluating long-lived assets for impairment, if the carrying amount of an asset or asset group is found not to be recoverable, a potential impairment loss may be recognized. An impairment loss is measured by comparing the carrying amount of the asset or asset group to its fair value. Fair value is determined using quoted market prices when available, or other techniques including discounted cash flows. The Company's estimates of future cash flows involve assumptions concerning future operating performance, economic conditions and technological changes that may affect the future useful lives of the assets.

Derivative Financial Instruments. The Company utilizes certain derivative financial instruments to enhance its ability to manage risk, including exposure to interest rate and foreign currency fluctuations that exist as part of ongoing business operations. Derivative instruments are entered into for periods consistent with the related underlying exposures and do not constitute positions independent of those exposures.

All derivatives designated as hedges are recognized on the consolidated balance sheets at fair value. The Company may designate a derivative as a hedge of the fair value of a recognized asset or liability or of an unrecognized firm commitment (fair value hedge), a hedge of a forecasted transaction or the variability of cash flows to be received or paid related to a recognized asset or liability (cash flow hedge), a foreign currency fair-value or cash-flow hedge (foreign currency hedge), or a hedge of a net investment in a foreign operation (net investment hedge). The Company's hedging strategies include derivatives designated as cash flow hedges and net investment hedges.

Changes in the fair value of a derivative that is highly effective and that is designated and qualifies as a cash flow hedge are recorded in other comprehensive income and subsequently reclassified into earnings in the same period(s) in which the hedged transaction affects earnings. Changes in the fair value of a derivative that is highly effective and that is designated and qualifies as a hedge of a net investment in a foreign operation are recorded in the foreign currency translation adjustment account within accumulated other comprehensive income, where the associated gains and losses will remain until such time that the hedged net investment (foreign subsidiary) is sold or liquidated.

Changes in the fair value of a derivative that is not designated or does not qualify as a hedge are recorded in the consolidated statements of income. Cash flows from derivative instruments are reported in the same cash flow category as the cash flows from the items being hedged.

The Company formally documents all relationships between hedging instruments and hedged items, as well as its risk-management objective and strategy for undertaking various hedge transactions. The Company also formally assesses whether each hedging relationship is highly effective in achieving offsetting changes in fair values or cash flows of the hedged item during the period, both at the inception of the hedge and on an ongoing basis. If it is determined that a derivative is not highly effective as a hedge, or if a derivative ceases to be a highly-effective hedge, hedge accounting is discontinued with respect to that derivative prospectively.

Fair Value Measurements. The Company measures fair value using the guidelines under U.S. generally accepted accounting principles ("GAAP"). An asset's fair value is defined as the price at which the asset could be exchanged in a current transaction between market participants. A liability's fair value is defined as the amount that would be paid to transfer the liability to a market participant, not the amount that would be paid to settle the liability with the creditor. See Note 7 to these consolidated financial statements regarding the application of fair value measurements.

The carrying values of cash, accounts receivable, accounts payable and accrued liabilities approximate fair value due to the short-term nature of these items. See Note 17 to these consolidated financial statements regarding the fair value of debt.

Revenue Recognition. In determining the appropriate amount of revenue to be recognized as the Company fulfills its obligations under its agreements, the Company performs the following steps: (i) identification of the contract with the customer; (ii) determination of whether the promised goods or services are performance obligations, including whether they are distinct in the context of the contract; (iii) measurement of the transaction price; (iv) allocation of the transaction price to the performance obligations based on estimated selling prices; and (v) recognition of revenue when (or as) the Company satisfies each performance obligation.

The Company identifies a contract when an agreement with a customer creates legally enforceable rights and obligations, which occurs when a contract has been approved by both parties, the parties are committed to perform their respective obligations, each party's rights and payment terms are clearly identified, commercial substance exists and it is probable that the Company will collect the consideration to which it is entitled.

The Company may offer rebates to customers who have reached a specified volume of optional purchases. The Company recognizes rebates given to customers as a reduction of revenue based on an allocation of the cost of honoring rebates earned and claimed to each of the underlying revenue transactions that result in progress by the customer toward earning the rebate. Rebates are recognized at the time revenue is recorded. The Company measures the rebate obligation based on the estimated amount of sales that will result in a rebate at the adjusted sales price per the respective sales agreement.

Shipping and Handling Costs. Amounts billed to a customer in a sale transaction related to shipping and handling, if any, represent revenues earned for the goods provided and are classified as revenue. Costs related to shipping and handling of products shipped to customers are classified as cost of goods sold. Refer to Note 6 for disclosures regarding the recognition of revenue for shipping and handling costs that are billed to customers.

Research and Development. Research and development costs of $7,137, $7,357 and $8,938 for the years ended December 31, 2020, 2019 and 2018, respectively, were expensed as incurred and reported in selling, general and administrative expenses in the consolidated statements of income.

Income Taxes. The Company operates within multiple taxing jurisdictions and is subject to tax filing requirements and potential audits within these jurisdictions. The Company uses the asset and liability method in accounting for income taxes. Deferred tax assets and liabilities are recorded for temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, using statutory tax rates in effect for the year in which the differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the results of operations in the period that includes the enactment date. The Company evaluates its deferred tax assets each period to ensure that estimated future taxable income will be sufficient in character (e.g., capital gain versus ordinary income treatment), amount and timing, to result in their realizability. A valuation allowance is recorded to reduce the carrying amounts of deferred tax assets, unless it is more likely than not that those assets will be realized.

Generally, APB 23 of ASC Topic 740, Income Taxes ("ASC 740"), provides guidance with respect to establishing deferred income taxes on earnings from foreign subsidiaries, to the extent that these earnings are considered to be available for repatriation. Further, ASC 740-30 requires that deferred taxes be established with respect to the earnings of a foreign subsidiary, unless existing tax law provides a means by which the investment in a subsidiary can be recovered tax-free. The Company has determined that it is able to repatriate thenon-permanently reinvested earnings of its foreign subsidiaries in a tax-free manner. As such, the Company is able to asset, for purposes of ASC740-30, that no deferred income taxes are needed with respect to earnings from foreign subsidiaries.

The Company recognizes a financial statement benefit for positions taken for tax return purposes when it will be more likely than not (i.e. greater than 50%) that the positions will be sustained upon tax examination, based solely on the technical merits of the tax positions. Otherwise, no tax benefit is recognized. The tax benefits recognized are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. The Company recognizes potential accrued interest and penalties related to unrecognized tax benefits as a component of income tax expense. Tax examinations are often complex as tax authorities may disagree with the treatment of items reported by the Company and may require several years to resolve. These accrued liabilities represent a provision for taxes that are reasonably expected to be incurred on the basis of available information but which are not certain.

Pursuant to the Securities and Exchange Commission ("SEC") Staff Accounting Bulletin No. 118 ("SAB 118"), the Company was allowed a measurement period of up to one year after the enactment date of the Tax Cuts and Jobs Act ("TCJA") to finalize the recording of any related tax impacts with respect to its transition tax liability. In accordance with SAB 118, the Company finalized the impacts of the transition tax as of December 31, 2018 and recorded an immaterial measurement period adjustment as a benefit to tax expense. There was no cash tax outlay associated with the final transition tax amount, as the Company elected to utilize net operating loss ("NOL") carryforwards to offset the associated taxable income.

Based on FASB guidance, the Company is permitted to make an accounting policy election to either (1) treat the taxes incurred as a result of the Global Intangible Low Taxed Income ("GILTI") provision as a current-period expense when incurred or (2) factor such amounts into its measurement of deferred taxes. The Company has elected to treat any expense incurred as a current-period expense.

Environmental Expenditures. Environmental expenditures that pertain to current operations or to future revenues are expensed or capitalized consistent with the Company's capitalization policy for property, plant and equipment. Expenditures that result from the remediation of an existing condition caused by past operations and that do not contribute to current or future revenues are expensed. Liabilities are recognized for remedial activities when the remediation is probable and the cost can be reasonably estimated. Recoveries of expenditures for environmental remediation are recognized as assets only when recovery is deemed probable. See Note 24 to these consolidated financial statements regarding commitments and contingencies and Note 16 regarding the accrued environmental reserve.

Deferred Financing Costs. Financing costs incurred in connection with the issuance of long-term debt are deferred and presented as a direct reduction from the related debt instruments on the Company's consolidated balance sheets. Deferred financing costs are amortized as interest expense using the effective interest method over the respective terms of the associated debt instruments.

Stock-Based Compensation. The Company applies the fair value based method to account for stock options, restricted stock awards, restricted stock units and performance stock units issued in connection with its equity incentive plans. Stock-based compensation expense is recognized on a straight-line basis over the vesting periods of the respective awards, and the Company accounts for forfeitures of equity incentive awards as they occur. In connection with the vesting of restricted stock awards, restricted stock units and performance stock units, shares of common stock may be delivered to the Company by employees to satisfy withholding tax obligations at the instruction of the employee award holders. These transactions when they occur are accounted for as stock repurchases by the Company, with the shares returned to treasury stock at a cost representing the payment by the Company of the tax obligations on behalf of the employees in lieu of shares for the vesting event. See Note 22 to these consolidated financial statements regarding compensation expense associated with the Company's equity incentive awards.

Pensions and Postretirement Benefits. The Company maintains qualified and non-qualified defined benefit pension plans that cover employees in the United States as well as certain employees in other international locations. Benefits for a majority of the plans are based on average final pay and years of service. Our funding policy, consistent with statutory requirements, is based on actuarial computations utilizing the projected unit credit method of calculation. Not all defined benefit pension plans are funded. In the United States the pension plans' assets include equity and fixed income securities. In our other international locations, the pension plans' assets include insurance contracts. Certain assumptions are made regarding the occurrence of future events affecting pension costs, such as mortality, withdrawal, disablement and retirement, changes in compensation and benefits, and discount rates to reflect the time value of money.

The major elements in determining pension income and expense are pension liability discount rates and the expected return on plan assets. The Company references rates of return on high-quality, fixed income investments when estimating the discount rate, and the expected period over which payments will be made based upon historical experience. The long-term rate of return used to calculate the expected return on plan assets is the average rate of return estimated to be earned on invested funds for providing pension benefits.

In addition to pension benefits, the Company provides certain health care benefits for employees who meet age, participation and length of service requirements at retirement. The Company uses explicit assumptions using the best estimates available of the plan's future experience. Principal actuarial assumptions include: discount rates, present value factors, retirement age, participation rates, mortality rates, cost trend rates, Medicare reimbursement rates and per capita claims cost by age. Current interest rates as of the measurement date are used for discount rates in present value calculations.

The Company also has defined contribution plans covering domestic employees of the Company and certain subsidiaries.

Contingencies. Certain conditions may exist as of the date the financial statements are issued, which may result in a loss to the Company but which will only be resolved when one or more future events occur or fail to occur. The Company's management and its legal counsel assess such contingent liabilities, and such assessment inherently involves an exercise of judgment. In assessing loss contingencies related to legal proceedings that are pending against the Company or unasserted claims that may result in such proceedings, the Company and legal counsel evaluate the perceived merits of any legal proceedings or unasserted claims as well as the perceived merits of the amount of relief sought or expected to be sought therein. If the assessment of a contingency indicates that it is probable that a loss has been incurred and the amount of the liability can be estimated, then the estimated liability is accrued in the Company's financial statements. If the assessment indicates that a loss contingency is not probable, but is reasonably possible, or is probable but cannot be estimated, then the nature of the contingent liability, together with an estimate of the range of possible loss if determinable and material, would be disclosed. Loss contingencies considered remote are generally not disclosed unless they involve guarantees, in which case the nature of the guarantee would be disclosed, including the approximate term, how the guarantee arose, and the events or circumstances that would require the guarantor to perform under the guarantee.

Use of Estimates. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

3. New Accounting Standards:

Recently Adopted Accounting Standards

In June 2016, the Financial Accounting Standards Board ("FASB") issued guidance that affects loans, trade receivables and any other financial assets that have the contractual right to receive cash. Under the new guidance, an entity is required to recognize expected credit losses rather than incurred losses for financial assets. The new guidance is effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. The Company adopted the new guidance effective January 1, 2020, with no material impact to the Company's consolidated financial position, results of operations or cash flows.

In August 2018, the FASB issued guidance which modifies certain disclosure requirements over fair value measurements. The guidance is effective for fiscal years beginning after December 15, 2019, including all interim periods within that fiscal year. The Company adopted the new guidance effective January 1, 2020. The Company does not currently classify any of its derivative contracts or restoration plan assets as Level 3 assets or liabilities, nor did the Company have any transfers amongst fair value levels during the year ended December 31, 2020. As a result, the guidance did not have an impact on Company's the fair value measurement disclosures upon adoption.

In January 2017, the FASB issued guidance which eliminates the second step from the traditional two-step goodwill impairment test. Under current guidance, an entity performed the first step of the goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount; if an impairment loss was indicated, the entity computed the implied fair value of goodwill to determine whether an impairment loss existed, and if so, the amount to recognize. Under the new guidance, an impairment loss is recognized for the amount by which the carrying amount exceeds the reporting unit's fair value (the Step 1 test), with no further testing required. Any impairment loss recognized is limited to the amount of goodwill allocated to the reporting unit. The new guidance is effective for public companies that are Securities and Exchange Commission ("SEC") registrants for fiscal years beginning after December 15, 2019. The Company adopted the new guidance on January 1, 2020, and applied the guidance prospectively to its goodwill impairment tests.

Accounting Standards Not Yet Adopted as of December 31, 2020

In December 2019, the FASB issued new guidance to simplify the accounting for income taxes by removing certain exceptions to the general principles and also simplification of areas such as franchise taxes, step-up in tax basis goodwill, separate entity financial statements and interim recognition of enactment of tax laws or rate changes. The new guidance is effective for fiscal years beginning after December 15, 2020 and interim periods within those fiscal years, with early adoption permitted. The Company is currently evaluating the impact of this new guidance on its consolidated financial statements.

In March 2020, the FASB issued guidance to address certain accounting consequences from the anticipated transition from the use of the London Interbank Offered Rate ("LIBOR") and other interbank offered rates to alternative reference rates. The new guidance contains practical expedients for reference rate reform related activities that impact debt, leases, derivatives and other contracts. The guidance is optional and may be elected over time as reference rate reform activities occur. During the year ended December 31, 2020, the Company elected to apply the hedge accounting expedients related to probability and the assessments of effectiveness for future LIBOR-indexed cash flows to assume that the index upon which future hedged transactions will be based on matches the index of the corresponding derivatives. Application of these expedients preserves the presentation of derivatives consistent with past presentation. The Company continues to evaluate the impact of the guidance and may apply other elections as applicable as additional changes in the market occur.

4. Performance Materials Divestiture:

On December 14, 2020, the Company completed the sale of its Performance Materials business to Potters Buyer, LLC (the "Purchaser"), an affiliate of The Jordan Company, L.P., for a purchase price of $650,000. The net cash proceeds to the Company from the sale were $624,256 after certain customary adjustments for indebtedness, working capital and cash at the closing of the transaction. The Company classified the proceeds within net cash provided by (used in) investing activities – continuing operations in the consolidated statements of cash flows and used the net proceeds from the sale as well as cash on hand to pay down debt and issue a special cash dividend of $1.80/share to stockholders.

In the fourth quarter of 2020, the Performance Materials business met the criteria set forth in Accounting Standards Codification 205-20, Presentation of Financial Statements – Discontinued Operations ("ASC 205-20"), as the sale represents a strategic shift that will have a major effect on the Company's operations and financial results. As a result, the Company's consolidated financial statements for all periods presented reflect the Performance Materials business as a discontinued operation. The divested business was historically reported in the Performance Materials reportable segment, with the exception of certain Australian operations that were historically reported in the Performance Chemicals reportable segment.

The total transaction costs incurred in connection with the sale were approximately $13,161 for the year ended December 31, 2020. The Company recorded a pre-tax loss on sale of $70,878, which is included in net (loss) income from discontinued operations, net of tax in the Company's consolidated statements of income for the year ended December 31, 2020. The following is a reconciliation of the loss recorded on the sale:

Net proceeds received from the sale of Performance Materials	$624,256
Transaction costs	(13,161)
Net assets derecognized	(681,973)
Loss on sale of Performance Materials	$ (70,878)

In connection with the sale of Performance Materials and the related loss, as noted above, the Company has recognized a tax expense of $58,008 within discontinued operations for the year ended December 31, 2020.

The following table summarizes the results of discontinued operations for the periods presented:

	Years ended December 31,		
	2020	2019	2018
Sales	$ 342,738	$373,686	$386,921
Cost of goods sold	251,917	281,566	308,679
Selling, general and administrative expenses	33,195	37,364	37,226
Other operating expense, net	18,289	14,462	13,023
Operating income	39,337	40,294	27,993
Equity in net income from affiliated companies	(37)	(12)	(42)
Interest expense, net[1]	16,210	24,453	22,965
Other (income) expense, net	(3,481)	274	474
Loss on sale of Performance Materials	70,878	—	—
(Loss) income from discontinued operations before income tax	(44,233)	15,579	4,596
Provision (benefit) for income taxes	58,008	1,022	(4,646)
(Loss) income from discontinued operations, net of tax	$(102,241)	$ 14,557	$ 9,242

(1) The closing of the transaction triggered the Company's obligation to provide partial repayment under both its Amended and Restated Term Loan Credit Agreement, dated May 4, 2016, and its New Term Loan Credit Agreement, dated as of July 22, 2020. As such, interest expense has been allocated to discontinued operations on the basis of the Company's mandatory repayment of $275,787 of the Senior Secured Term Loan Facility due February 2027 and its mandatory payment of $188,722 of the New Senior Secured Term Loan Facility due February 2027.

Net income attributable to the noncontrolling interest related to the Performance Materials business, net of tax was $265, $154, and $213 for the years ended December 31, 2020, 2019, and 2018, respectively.

The following table summarizes the assets and liabilities of discontinued operations at December 31, 2019:

	December 31, 2019
ASSETS	
Cash and cash equivalents	$ 18,423
Accounts receivables, net	40,484
Inventories, net	143,323
Prepaid and other current assets	4,139
Current assets held for sale	$ 206,369
Investments in affiliated companies	$ 115
Property, plant and equipment, net	175,614
Goodwill	286,227
Other intangible assets, net	121,113
Right-of-use lease assets	8,878
Other long-term assets	71,697
Long-term assets held for sale	$ 663,644
LIABILITIES	
Notes payable and current maturities of long-term debt	$ 7,766
Accounts payable	30,267
Operating lease liabilities—current	3,326
Accrued liabilities	16,744
Current liabilities held for sale	$ 58,103
Long-term debt, excluding current portion	$ 55,972
Deferred income taxes	8,612
Operating lease liabilities—noncurrent	5,248
Other long-term liabilities	17,366
Long-term liabilities held for sale	$ 87,198

In connection with the transaction, the Company entered into a Transition Services Agreement with the Purchaser pursuant to which the Purchaser is receiving certain services to provide for the orderly transition of various functions and processes after the closing of the transaction. The services under the Transition Services Agreement include information technology, accounting, tax, financial services, human resources, facilities, and other administrative support services. These services are being provided at cost for a period of 9 months, with three 30-day extensions available.

Additionally, in connection with the transaction, the Company entered into various supply agreements with the Purchaser. Cash flows associated with these transition services and supply agreements are not expected to be material to the Company's results of operations.

5. Performance Chemicals Divestiture:

On February 28, 2021, the Company entered into a definitive agreement to sell its Performance Chemicals business to Sparta Aggregator L.P. (the "Buyer"), a partnership established by Koch Minerals & Trading, LLC and Cerberus Capital Management, L.P. for a purchase price of $1,100,000 subject to certain adjustments including indebtedness, cash, working capital and transaction expenses. The Company completed the sale of its Performance Chemicals business effective on August 1, 2021.

In the first quarter of 2021, the Performance Chemicals business met the criteria set forth in ASC 205-20, as the sale represents a strategic shift that will have a major effect on the Company's operations and financial results. As a result, the Company's consolidated financial statements for all periods presented reflect the Performance Chemicals business as a discontinued operation. The Performance Chemicals business historically represented a reportable segment of the Company.

The total transaction costs incurred in connection with the sale were approximately $6,279 for the year ended December 31, 2020.

The following table summarizes the results of discontinued operations related to Performance Chemicals for the periods presented:

	Years ended December 31,		
	2020	2019	2018
Sales	$ 614,704	$670,563	$704,503
Cost of goods sold	492,302	539,371	559,123
Selling, general and administrative expenses	43,749	46,007	46,421
Goodwill impairment charge	260,000	—	—
Other operating expense, net	33,144	3,644	13,203
Operating (loss) income	(214,491)	81,541	85,756
Equity in net income from affiliated companies	(172)	(213)	(251)
Interest expense, net[1]	16,570	20,199	18,414
Other income, net	(1,089)	(455)	(3,198)
(Loss) income from discontinued operations before income tax	(229,800)	62,010	70,791
Provision for income taxes	3,943	27,379	25,664
(Loss) income from discontinued operations, net of tax	$(233,743)	$ 34,631	$ 45,127

(1) At December 31, 2020, the Company's outstanding term loans had mandatory repayment provisions, and as a result, interest expense was allocated to discontinued operations for all periods presented on the basis of the Company's estimated debt reduction of $500,000. See Note 29 to these consolidated financial statements for additional information regarding the Company's sale of the Performance Chemicals business.

Net (loss) income attributable to the noncontrolling interest related to the Performance Chemicals business, net of tax was $(3,198), $616 and $1,108 for the years ended December 31, 2020, 2019 and 2018, respectively. Net (loss) income attributable to Ecovyst Inc., related to the Performance Chemicals business, net of tax was $(230,545), $34,015 and $44,019 for the years ended December 31, 2020, 2019 and 2018, respectively.

The following table summarizes the assets and liabilities of discontinued operations at December 31, 2020 and 2019, respectively:

	December 31, 2020	December 31, 2019
ASSETS		
Cash and cash equivalents	$ 22,153	$ 17,736
Accounts receivables, net	87,202	86,627
Inventories, net	74,647	86,732
Prepaid and other current assets	21,088	24,131
Current assets held for sale	$ 205,090	$ 215,226
Investments in affiliated companies	$ 324	$ 1,476
Property, plant and equipment, net	391,524	401,595
Goodwill[(1)]	326,173	583,075
Other intangible assets, net	388,857	406,656
Right-of-use lease assets	19,296	24,093
Other long-term assets	23,269	17,688
Long-term assets held for sale	$ 1,149,443	$ 1,434,583
LIABILITIES		
Notes payable and current maturities of long-term debt	$ —	$ —
Accounts payable	74,728	76,482
Operating lease liabilities—current	8,479	6,341
Accrued liabilities	25,330	26,182
Current liabilities held for sale	$ 108,537	$ 109,005
Deferred income taxes	$ 49,690	$ 47,848
Operating lease liabilities—noncurrent	10,047	16,182
Other long-term liabilities	95,617	72,538
Long-term liabilities held for sale	$ 155,354	$ 136,568

(1) The Company applied the market approach to estimate the fair value of the Performance Chemicals business, which is consistent with the accounting policies described in Note 2 and the valuation techniques described in Note 15. In applying the market approach, the Company estimated the fair value using publicly traded comparable company values and applied the selected market multiples to a trailing twelve months adjusted EBITDA. As a result, the Company recorded a goodwill impairment charge of $260,000 in the fourth quarter of 2020 related to the Performance Chemicals business.

In connection with the divestiture of the Performance Chemicals business the Company entered into a Transition Services Agreement, pursuant to which the Buyer is receiving and performing certain services to provide for the orderly transition of various functions and processes after the closing of the transaction. The services under the Transition Services Agreement include information technology, accounting, tax, financial services, human resources, facilities, and other administrative support services. These services are provided for a period of six months.

6. Revenue from Contracts with Customers:

Revenue Recognition Model

As described in Note 2, the Company applies the five-step revenue recognition model to each contract with its customers.

Evidence of a contract between the Company and its customers may take the form of a master service agreement ("MSA"), a MSA in combination with an underlying purchase order, a combination of a pricing quote with an underlying purchase order or an individual purchase order received from a customer. The Company and certain of its customers enter into MSAs that establish the terms, including prices, under which orders to purchase goods may be placed. In cases where the MSA contains a distinct order for goods or contains an enforceable minimum quantity to be purchased by the customer, the Company considers the MSA to be evidence of a contract between the Company and its customer as the MSA creates enforceable rights and obligations. In cases where the MSA does not contain a distinct order for goods, the Company's contract with a customer is the purchase order issued under the MSA. Customers of the Company may also negotiate orders via pricing quotes, which typically detail product pricing, delivery terms and payment information. When a customer procures goods under this method, the Company considers the combination of the pricing quote and the purchase order to create enforceable rights and obligations. Absent either a MSA or pricing quote, the Company considers an individual purchase order remitted by a customer to create enforceable rights and obligations.

The Company identifies a performance obligation in a contract for each promised good that is separately identifiable from other promises in the contract and for which the customer can benefit from the good. The majority of the Company's contracts have a single performance obligation, which is the promise to transfer individual goods to the customer. Single performance obligations are satisfied according to the shipping terms noted within the MSA or purchase order. The Company has certain contracts that include multiple performance obligations under which the purchase price for each distinct performance obligation is defined in the contract. These distinct performance obligations may include stand-ready provisions, which are arrangements to provide a customer assurance that they will have access to output from the Company's manufacturing facilities, or monthly reservations of capacity fees. The Company considers stand-ready provisions and reservation of capacity fees to be performance obligations satisfied over time. Revenues related to stand-ready provisions and reservation of capacity fees are recognized on a ratable basis throughout the contract term and billed to the customer on a monthly basis.

Revenue from product sales are recorded at the sales price, which includes estimates of variable consideration for which reserves are established and which result from discounts, returns or other allowances that are offered within contracts between the Company and its customers.

The Company recognizes revenues when performance obligations under the terms of a contract with its customer are satisfied, which generally occurs at a point in time by transferring control of a product to the customer. The Company determines the point in time when a customer obtains control of a product and the Company satisfies the performance obligation by considering factors including when the Company has a right to payment for the product, the customer has legal title to the product, the Company has transferred possession of the product, the customer has assumed the risks and rewards of ownership of the product and the customer has accepted the product. Revenue is measured as the amount of consideration the Company expects to receive in exchange for transferring goods. The Company does not have any significant payment terms as payment is received at, or shortly after, the point of sale.

Ecoservices

Contracts between the Company's Ecoservices segment and its customers are typically evidenced by entering into a MSA which generally has a term in excess of one year. Though each MSA is unique, the terms may include performance obligations such as stand-ready provisions and minimum purchase requirements.

MSAs within the Ecoservices segment may contain raw material pricing adjustments which are typically based on a commodity index or Ecoservices' cost to acquire the commodity. The Company's exposure to fluctuations in raw material prices is limited, as the majority of pass-through contract provisions reset based on fluctuations in the underlying raw material price. These raw material pass-through provisions reset on a periodic basis and prospectively adjust the raw material cost component of the goods sold to the customer. The Company accounts for the raw material costs on a prospective basis, as the price changes affect the future consideration of the sale of goods.

Stand-ready provisions within these contracts are billed on a monthly basis, as the performance obligation resets on a monthly basis and does not carry-over to the following month. Certain of the Company's Ecoservices MSAs contain minimum purchase requirements that expire within the calendar year. The Company reviews each contract with minimum purchase requirements to determine if the customer will meet the provisions within the current calendar year. During the year ended December 31, 2020, some customers fell short of monthly orders due to the pandemic and take-or-pay provisions within contracts were acted upon. In 2019, there have been no issues in which Ecoservices customers failed to meet their contractual obligations.

Catalyst Technologies

The Company's Catalyst Technologies segment sells customized products to its customers through its Silica Catalyst product group. These customized products are reformulations of existing Catalyst Technologies products, tailored to meet individual customer specifications. Prior to entering into an arrangement, the Company will allow a customer to obtain a sample of goods to ensure that it meets their needs. The customer will enter into a long-term supply arrangement that outlines the specification of the products to be sold and contains terms and conditions under which purchase orders are issued. These supply arrangements typically have a duration from one to ten years. Although the duration of these supply arrangements are in excess of one year, a contract is formed between the Company and its customer upon receipt of a purchase order.

Contract Assets and Liabilities

A contract asset is a right to consideration in exchange for goods that the Company has transferred to a customer when that right is conditional on something other than the passage of time. A contract liability exists when the Company receives consideration in advance of the fulfillment of its performance obligations. The Company has no contract assets or liabilities recorded on its consolidated balance sheets as of December 31, 2020 and 2019, respectively.

Practical Expedients and Accounting Policy Elections

The Company has elected to use certain practical expedients and has made certain accounting policy elections as permitted under the new revenue recognition guidance. The majority of the Company's contracts with customers are based on an individual purchase order; thus, the duration of these contracts are for one year or less. As described above, the Company's performance obligations reset either monthly or at the end of the calendar year. The Company has made an accounting policy election to omit certain disclosures related to these performance obligations, as the initial term of the Company's performance obligations are for a term of one year or less.

The Company uses an output method to recognize revenues related to performance obligations satisfied over time. These performance obligations, as described above, are satisfied within a calendar year. As such, the Company has elected to utilize the "as-invoiced" practical expedient, which permits the Company to recognize revenue in the amount to which it has a right to invoice the customer, provided that the amount corresponds directly with the value provided by the performance obligation as completed to date.

When the Company performs shipping and handling activities after the transfer of control to the customer (e.g. when control transfers prior to delivery), they are considered fulfillment activities as opposed to separate performance obligations, and the Company recognizes revenue upon the transfer of control to the customer. Accordingly, the costs associated with these shipping and handling activities are accrued when the related revenue is recognized under the Company's policy election. The Company does not utilize sales-based commissions plans, and as a result, the Company does not capitalize any costs which could be considered incremental costs of obtaining a contract. Sales, value added and other taxes the Company collects concurrent with revenue producing activities are excluded from revenues.

Disaggregated Revenue

The Company’s primary means of disaggregating revenues is by reportable segment, which can be found in Note 14 to these consolidated financial statements.

The Company’s portfolio of products are integrated into a variety of end uses, which are described in the table below:

Key End Uses	Key Products
Industrial & process chemicals	• Sulfur derivatives for industrial production
	• Treatment services
Fuels & emission control	• Refining catalysts
	• Emission control catalysts
	• Catalyst recycling services
Packaging & engineered plastics	• Catalysts for high-density polyethlene and chemicals syntheses
	• Antiblocks for film packaging
	• Sulfur derivatives for nylon production
Natural resources	• Sulfur derivatives for mining

The following table disaggregates the Company's sales, by segment and end use, for the years ended December 31, 2020, 2019 and 2018:

	Year ended December 31, 2020		
	Ecoservices	Catalyst Technologies	Total
Industrial & process chemicals	$ 70,648	$ 125	$ 70,773
Fuels & emission control[1]	225,042	—	225,042
Packaging & engineered plastics	38,772	93,882	132,654
Natural resources	67,451	—	67,451
Total	$ 401,913	$ 94,007	$495,920

	Year ended December 31, 2019		
	Ecoservices	Catalyst Technologies	Total
Industrial & process chemicals	$ 80,661	$ 109	$ 80,770
Fuels & emission control[1]	252,293	—	252,293
Packaging & engineered plastics	48,056	85,558	133,614
Natural resources	66,070	—	66,070
Total	$ 447,080	$ 85,667	$532,747

	Year ended December 31, 2018		
	Ecoservices	Catalyst Technologies	Total
Industrial & process chemicals	$ 77,866	$ 86	$ 77,952
Fuels & emission control[1]	246,452	—	246,452
Packaging & engineered plastics	59,168	72,013	131,181
Natural resources	72,076	—	72,076
Total	$ 455,562	$ 72,099	$527,661

(1) As described in Note 1, the Company experiences seasonal sales fluctuations to customers in the fuels & emission control end use.

7. Fair Value Measurements:

Fair values are based on quoted market prices when available. When market prices are not available, fair values are generally estimated using discounted cash flow analyses, incorporating current market inputs for similar financial instruments with comparable terms and credit quality. In instances where there is little or no market activity for the same or similar instruments, the Company estimates fair values using methods, models and assumptions that management believes a hypothetical market participant would use to determine a current transaction price. These valuation techniques involve some level of management estimation and judgment that becomes significant with increasingly complex instruments or pricing models. Where appropriate, adjustments are included to reflect the risk inherent in a particular methodology, model or input used.

The Company's financial assets and liabilities carried at fair value have been classified based upon a fair value hierarchy. The hierarchy gives the highest ranking to fair values determined using unadjusted quoted prices in active markets for identical assets and liabilities (Level 1) and the lowest ranking to fair values determined using methodologies and models with unobservable inputs (Level 3). The classification of an asset or a liability is based on the lowest level input that is significant to its measurement. For example, a Level 3 fair value measurement may include inputs that are both observable (Levels 1 and 2) and unobservable (Level 3). The levels of the fair value hierarchy are as follows:

- Level 1—Values are unadjusted quoted prices for identical assets and liabilities in active markets accessible at the measurement date. Active markets provide pricing data for trades occurring at least weekly and include exchanges and dealer markets.
- Level 2—Inputs include quoted prices for similar assets or liabilities in active markets, quoted prices from those willing to trade in markets that are not active, or other inputs that are observable or can be corroborated by market data for the term of the instrument. Such inputs include market interest rates and volatilities, spreads and yield curves.
- Level 3—Certain inputs are unobservable (supported by little or no market activity) and significant to the fair value measurement. Unobservable inputs reflect the Company's best estimate of what hypothetical market participants would use to determine a transaction price for the asset or liability at the reporting date.

The following table presents information about the Company's assets and liabilities that were measured at fair value on a recurring basis as of December 31, 2020 and 2019, and indicates the fair value hierarchy of the valuation techniques the Company utilized to determine such fair value.

	December 31, 2020	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Liabilities:				
Derivative contracts (Note 19)	$ 3,704	$ —	$ 3,704	$ —

	December 31, 2019	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Liabilities:				
Derivative contracts (Note 19)	$ 3,242	$ —	$ 3,242	$ —

Derivative contracts

Derivative assets and liabilities can be exchange-traded or tradedover-the-counter ("OTC"). The Company generally values exchange-traded derivatives using models that calibrate to market transactions and eliminate timing differences between the closing price of the exchange-traded derivatives and their underlying instruments. OTC derivatives are valued using market transactions and other market evidence whenever possible, including market-based inputs to models, model calibration to market transactions, broker or dealer quotations or alternative pricing sources with reasonable levels of price transparency. When models are used, the selection of a particular model to value an OTC derivative depends on the contractual terms of, and specific risks inherent in, the instrument as well as the availability of pricing information in the market. The Company generally uses similar models to value similar instruments. Valuation models require a variety of inputs, including contractual terms, market prices and rates, forward curves, measures of volatility, and correlations of such inputs. For OTC derivatives that trade in liquid markets, such as forward contracts, swaps and options, model inputs can generally be corroborated by observable market data by correlation or other means, and model selection does not involve significant management judgment.

The Company has interest rate caps that are fair valued using Level 2 inputs. In addition, the Company applies a credit valuation adjustment to reflect credit risk which is calculated based on credit default swaps. To the extent that the Company's net exposure under a specific master agreement is an asset, the Company utilizes the counterparty's default swap rate. If the net exposure under a specific master agreement is a liability, the Company utilizes a default swap rate comparable to Ecovyst. The credit valuation adjustment is added to the discounted fair value to reflect the exit price that a market participant would be willing to receive to assume the Company's liabilities or that a market participant would be willing to pay for the Company's assets.

8. Stockholders' Equity:

Accumulated Other Comprehensive Income (Loss)

The following table presents the components of accumulated other comprehensive income (loss), net of tax, as of December 31, 2020 and 2019:

	December 31, 2020	December 31, 2019
Amortization and unrealized gains (losses) on pension and postretirement plans, net of tax of $(1,649) and $(994)	$ 5,278	$ 3,568
Net changes in fair values of derivatives, net of tax of $549 and $604	(660)	(1,838)
Foreign currency translation adjustments, net of tax of $1,223 and $7,474	(19,883)	(17,078)
Accumulated other comprehensive loss	$(15,265)	$(15,348)

The following table presents the tax effects of each component of other comprehensive income (loss) for the years ended December 31, 2020, 2019 and 2018:

	2020 Pre-tax amount	2020 Tax benefit/ (expense)	2020 After-tax amount	2019 Pre-tax amount	2019 Tax benefit/ (expense)	2019 After-tax amount	2018 Pre-tax amount	2018 Tax benefit/ (expense)	2018 After-tax amount
Defined benefit and other postretirement plans:									
Amortization of net gains and (losses)	$ 2,824	$ (712)	$ 2,112	$ 2,970	$ (423)	$ 2,547	$(10,279)	$ 2,380	$ (7,899)
Amortization of prior service cost	(232)	58	(174)	(156)	39	(117)	(78)	19	(59)
Benefit plans, net	2,592	(654)	1,938	2,814	(384)	2,430	(10,357)	2,399	(7,958)
Net (loss) gain from hedging activities	221	(55)	166	(3,553)	888	(2,665)	(441)	110	(331)
Foreign currency translation[(1)]	(11,268)	(6,251)	(17,519)	20,539	2,350	22,889	(39,419)	4,364	(35,055)
Other comprehensive income (loss)	$ (8,455)	$ (6,960)	$(15,415)	$19,800	$ 2,854	$22,654	$(50,217)	$ 6,873	$(43,344)

(1) The income tax benefit or expense included in other comprehensive income is attributed to the portion of foreign currency translation associated with the Company's cross-currency interest rate swaps, for which the tax effect is based on the applicable U.S. deferred income tax rate. See Note 19 to these consolidated financial statements for information regarding the Company's cross currency interest rate swaps.

The following table presents the change in accumulated other comprehensive income (loss), net of tax, by component for the years ended December 31, 2020 and 2019:

	Defined benefit and other postretirement plans	Net gain (loss) from hedging activities	Foreign currency translation	Total
December 31, 2018	$ (546)	$ 637	$(39,195)	$(39,104)
Other comprehensive income (loss) before reclassifications	2,497	(3,388)	22,117	21,226
Amounts reclassified from accumulated other comprehensive income[1]	(67)	723	—	656
Net current period other comprehensive loss	2,430	(2,665)	22,117	21,882
Tax Cuts and Jobs Act, reclassification from AOCI to retained earnings	1,684	190	—	1,874
December 31, 2019	3,568	(1,838)	(17,078)	(15,348)
Other comprehensive income (loss) before reclassifications	1,850	125	(16,596)	(14,621)
Amounts reclassified from accumulated other comprehensive income[1]	88	41	—	129
Disposal of business	(228)	1,012	13,791	14,575
Net current period other comprehensive income (loss)	1,710	1,178	(2,805)	83
December 31, 2020	$ 5,278	$ (660)	$(19,883)	$(15,265)

(1) See the following table for details about these reclassifications. Amounts in parentheses indicate debits.

The following table presents the reclassifications out of accumulated other comprehensive income for the years ended December 31, 2020 and 2019.

Details about Accumulated Other Comprehensive Income Components	Amount Reclassified from Accumulated Other Comprehensive Income[1] — Years ended December 31, 2020	2019	Affected Line Item in the Statements of Income
Amortization of defined benefit and other postretirement plans:			
Prior service credit (cost)	$ 119	$ 133	Other income (expense)[2]
Actuarial gains (losses)	(232)	(21)	Other income (expense)[2]
	(113)	112	Total before tax
	25	(45)	Tax benefit (expense)
	$ (88)	$ 67	Net of tax
Gains and losses on cash flow hedges:			
Interest rate caps	$ (54)	$ (625)	Interest expense
Natural gas swaps	—	(335)	Cost of goods sold
	(54)	(960)	Total before tax
	13	237	Tax benefit
	$ (41)	$ (723)	Net of tax
Total reclassifications for the period	$ (129)	$ (656)	Net of tax

(1) Amounts in parentheses indicate debits to profit/loss.
(2) These accumulated other comprehensive income (loss) components are components of net periodic pension and other postretirement cost (see Note 21 to these consolidated financial statements for additional details).

Stock Repurchase Program

The Company records repurchases of its common stock for treasury at cost. Upon the reissuance of the Company's common stock from treasury, differences between the proceeds from reissuance and the average cost of the treasury stock are credited or charged to capital in excess of par value to the extent of prior credits related to the reissuance of treasury stock. If no such credits exist, the differences are charged to retained earnings.

On March 12, 2020, the Company announced plans to purchase up to $50,000 of Ecovyst Inc. common stock under a stock repurchase program approved by the Company's Board of Directors. The Company may repurchase shares from time to time for cash in open market transactions or in privately negotiated transactions in accordance with applicable federal securities laws. The Company will determine the timing and the amount of any repurchases based on its evaluation of market conditions, share price and other factors. The stock repurchase program is valid until March 2022.

From the announcement date of the program through December 31, 2020, the Company repurchased 211,700 shares on the open market at an average price of $9.73 for a total of $2,059. As of December 31, 2020, $47,941 was available for additional share repurchases under the program.

Dividends Paid

On December 14, 2020, the Company's Board of Directors declared a special cash dividend of $1.80 per share, using after tax cash proceeds and cash on hand from the sale of the Performance Materials business. The dividend was paid to our stockholders of record at the close of business on December 21, 2020. Refer to Note 4 of these consolidated financial statements for additional details.

9. Other Operating Expense, Net:

A summary of other operating expense, net is as follows:

	Years ended December 31,		
	2020	**2019**	**2018**
Amortization expense	$ 8,689	$ 8,755	$ 8,718
Transaction and other related costs	1,033	170	491
Restructuring, integration and business optimization costs[1]	1,994	2,135	5,465
Net loss on asset disposals	4,722	4,559	10,350
Insurance recoveries[2]	—	—	(5,480)
Write-off of long-term supply contract obligation (Note 25)	—	—	(20,612)
Other, net	1,404	2,115	4,291
	$17,842	$17,734	$ 3,223

(1) During the year ended December 31, 2020, the Company's results were impacted by costs associated with the execution of the Company's strategic initiatives and severance charges for certain executives and employees. The costs incurred during the years ended December 31, 2019 and 2018 relate to severance charges for certain executives and employees and other expenses related to the Company's organization changes.

(2) During the year ended December 31, 2018, the Company recognized $6,450 of insurance recoveries in its consolidated statement of income related to the Company's claim for losses sustained during Hurricane Harvey in August 2017. For the year ended December 31, 2018, $5,480 was recorded as a gain in other operating expense, net, as reimbursement of expenses, $207 was recorded as a gain in net loss on asset disposals within other operating expense, net, for the Company's previously recognized property losses, and $763 represented recoveries in excess of the Company's property losses which was recorded as a non-operating gain in other expense, net, in the Company's consolidated statement of income.

10. Inventories, Net:

Inventories, net are classified and valued as follows:

	December 31, 2020	December 31, 2019
Finished products and work in process	$48,500	$46,269
Raw materials	4,289	4,621
	$52,789	$50,890
Valued at lower of cost or market:		
LIFO basis	$31,072	$39,555
Valued at lower of cost and net realizable value:		
FIFO or average cost basis	21,717	11,335
	$52,789	$50,890

The domestic inventory acquired as part of a previous business combination is valued based on the LIFO method. Therefore, the fair value allocated to the acquired LIFO inventory was treated as the new base inventory value. If inventories valued under the LIFO basis had been valued using the FIFO method, inventories would have been $4,907 and $336 lower than reported as of December 31, 2020 and 2019, respectively, driven primarily by the purchase accounting fair value step-up of the LIFO inventory base value associated with the business combination.

11. Investments in Affiliated Companies:

The Company accounts for investments in affiliated companies under the equity method.Affiliated companies accounted for on the equity method as of December 31, 2020 are as follows:

Company	Country	Percent Ownership
Zeolyst International	USA	50%
Zeolyst C.V.	Netherlands	50%

Following is summarized information of the combined investments[1]:

	December 31, 2020	December 31, 2019
Current assets	$217,836	$244,778
Noncurrent assets	254,397	256,084
Current liabilities	65,958	51,703
Noncurrent liabilities	36,323	5,968

	Years ended December 31,		
	2020	2019	2018
Sales	$275,621	$376,372	$346,975
Gross profit	88,616	143,668	125,109
Operating income	53,500	105,614	87,591
Net income	55,328	106,683	87,903

(1) Summarized information of the combined investments is presented at 100%; the Company's share of the net assets and net income of affiliates is calculated based on the percent ownership specified in the table above.

The Company's investments in affiliated companies balance as of December 31, 2020 and 2019 includes net purchase accounting fair value adjustments of $243,899 and $250,532, respectively, related to a prior business combination, consisting primarily of goodwill and intangible assets such as customer relationships, technical know-how and trade names. Consolidated equity in net income from affiliates is net of $6,634, $7,534 and $6,634 of amortization expense related to purchase accounting fair value adjustments for the years ended December 31, 2020, 2019 and 2018, respectively.

The following table summarizes the activity related to the Company's investments in affiliated companies balance on the consolidated balance sheets:

	Years ended December 31,	
	2020	2019
Balance at beginning of period	$471,338	$466,746
Equity in net income of affiliated companies	27,699	53,342
Charges related to purchase accounting fair value adjustments	(6,634)	(7,534)
Dividends received	(40,000)	(40,000)
Foreign currency translation adjustments	5,725	(1,216)
Balance at end of period	$458,128	$471,338

The Company had net receivables due from affiliates of $3,376 and $3,209 as of December 31, 2020 and 2019, respectively, which are included in prepaid and other current assets. Net receivables due from affiliates are generally non-trade receivables. Sales to affiliates were $7,042, $0 and $0 for the years ended December 31, 2020, 2019 and 2018, respectively. The Company did not purchase goods from affiliates during the years ended December 31, 2020, 2019 and 2018.

On December 18, 2013, PQ Holdings and its joint venture, Zeolyst International, entered into a ten year real estate tax abatement agreement with the Unified Government of Wyandotte County, Kansas. The agreement utilizes an Industrial Revenue Bond ("IRB") financing structure to achieve a 75% real estate tax abatement on the value of the improvements that were constructed during the expansion of PQ Holdings and Zeolyst International's facilities at the jointly-operated Kansas City, Kansas plant. A similar tax abatement agreement has been executed on an annual basis since December 18, 2013 with respect to additional plant expansions during those years.

During the year ended December 31, 2019, the original IRB financing structure from December 2013 was exhausted. In order to fund future plant expansions, the Company entered into an additional IRB financing structure on December 19, 2019 with similar terms and conditions, which also provides for 75% real estate tax abatement on the value of future improvements. The financing obligations and the industrial bonds receivable have been presented net, as the financing obligations and the industrial bonds meet the criteria for right of set off conditions under GAAP.

12. Property, Plant and Equipment:

A summary of property, plant and equipment, at cost, and related accumulated depreciation is as follows:

	December 31,	
	2020	2019
Land	$ 93,650	$ 95,830
Buildings	76,010	74,104
Machinery and equipment	656,502	631,993
Construction in progress	42,447	38,806
	868,609	840,733
Less: accumulated depreciation	(276,899)	(222,817)
	$ 591,710	$ 617,916

Depreciation expense was $65,333, $61,244 and $58,585 for the years ended December 31, 2020, 2019 and 2018, respectively.

13. Leases:

Operating lease costs of $8,183 and $7,943 are included in cost of goods sold and in selling, general and administrative expenses on the consolidated statement of income for the year ended December 31, 2020 and 2019, respectively. Finance lease, short-term lease and variable lease costs for the years ended December 31, 2020 and 2019 were not material. Lease income is not material to the results of operations for the years ended December 31, 2020 and 2019.

The table below presents the operating and finance right-of-use lease assets and lease liabilities recognized on the consolidated balance sheet as of December 31, 2020 and 2019:

	Classification	December 31, 2020	December 31, 2019
Assets			
Operating lease assets	Right-of-use lease assets	$ 28,943	$ 24,324
Finance lease assets	Property, plant and equipment, net	1,727	1,509
Total leased assets		$ 30,670	$ 25,833
Liabilities			
Current:			
Operating lease liabilities	Operating lease liabilities—current	$ 6,715	$ 5,515
Finance lease liabilities	Accrued liabilities	245	169
Noncurrent:			
Operating lease liabilities	Operating lease liabilities—noncurrent	21,972	18,726
Finance lease liabilities	Other long-term liabilities	349	285
Total lease liabilities		$ 29,281	$ 24,695

The Company's weighted average remaining lease term and weighted average discount rate for operating and financing leases as of December 31, 2020 are as follows:

	December 31, 2020	December 31, 2019
Weighted average remaining lease term (in years):		
Operating leases	5.51	5.96
Finance leases	2.46	2.58
Weighted average discount rate:		
Operating leases	6.06%	6.20%
Finance leases	4.70%	4.70%

Maturities of lease liabilities as of December 31, 2020 are as follows:

Year	Operating Leases	Finance Leases
2021	$ 8,197	$ 392
2022	7,064	144
2023	5,771	35
2024	4,342	35
2025	2,994	8
Thereafter	5,317	—
Total lease payments	33,685	614
Less: Interest	(4,998)	(20)
Total lease liabilities	$ 28,687	$ 594

(1) Refer to the above table regarding the Company's right-of-use lease assets and lease liabilities for the presentation of the lease liabilities in the Company's consolidated balance sheet at December 31, 2020.

The following table presents other information related to the Company's operating and finance leases and the impact on the Company's consolidated statement of cash flows:

	Years ended December 31, 2020	2019
Cash paid for amounts included in the measurement of lease liabilities:		
Payments on operating leases included in operating cash flows	$ 8,322	$7,375
Interest payments under finance lease obligations included in operating cash flows	20	25
Principal payments under finance lease obligations included in financing cash flows	209	162
Right-of-use assets obtained in exchange for new lease liabilities(non-cash):		
Operating leases	10,633	625
Finance leases	353	—

Under prior lease guidance, total rent expense related to the Company's various leasing arrangements was $9,031 for the year ended December 31, 2018. Rent expense for the year ended December 31, 2018 included both lease and non-lease costs related to leasing arrangements in place during those years.

14. Reportable Segments:

The Company has organized its business around two operating segments based on the review of discrete financial results for each of the operating segments by the Company's chief operating decision maker (the Company's Chairman of the Board, President and Chief Executive Officer), or CODM, for performance assessment and resource allocation purposes. Each of the Company's operating segments represents a reportable segment under GAAP. The Company's reportable segments are organized based on the nature and economic characteristics of the Company's products. The Company's two reportable segments are as follows: (1) Ecoservices provides sulfuric acid recycling to the North American refining industry; and (2) Catalyst Technologies serves the packaging and engineered plastics and the global refining, petrochemical and emissions control industries.

The Catalyst Technologies segment includes equity in net income from Zeolyst International and Zeolyst C.V. (collectively, the "Zeolyst Joint Venture"), each of which are 50/50 joint ventures with CRI Zeolites Inc. (a wholly-owned subsidiary of Royal Dutch Shell). The Zeolyst Joint Venture is accounted for using the equity method in the Company's consolidated financial statements (see Note 11 to these consolidated financial statements for further information). Company management evaluates the Catalyst Technologies segment's performance, including the Zeolyst Joint Venture, on a proportionate consolidation basis. Accordingly, the revenues and expenses used to compute the Catalyst Technologies segment's adjusted earnings before interest, income taxes, depreciation and amortization ("Adjusted EBITDA") include the Zeolyst Joint Venture's results of operations on a proportionate basis based on the Company's 50% ownership level. Since the Company uses the equity method of accounting for the Zeolyst Joint Venture, these items are eliminated when reconciling to the Company's consolidated results of operations.

The Company's management evaluates the operating results of each reportable segment based upon Adjusted EBITDA. Adjusted EBITDA consists of EBITDA, which is a measure defined as net income before interest, income taxes, depreciation and amortization (each of which is included in the Company's consolidated statements of income), and adjusted for certain items as discussed below.

Summarized financial information for the Company's reportable segments is shown in the following table:

	Years ended December 31,		
	2020	2019	2018
Sales:			
Ecoservices	$401,913	$447,080	$455,562
Catalyst Technologies[1]	94,007	85,667	72,099
Total	$495,920	$532,747	$527,661
Segment Adjusted EBITDA:[2]			
Ecoservices	$157,198	$175,640	$176,499
Catalyst Technologies[3]	74,504	107,808	81,067
Total Segment Adjusted EBITDA[4]	$231,702	$283,448	$257,566

(1) Excludes the Company's proportionate share of sales from the Zeolyst Joint Venture accounted for using the equity method. The proportionate share of sales is $128,623, $170,338 and $156,687 for the years ended December 31, 2020, 2019 and 2018, respectively.

(2) The Company defines Adjusted EBITDA as EBITDA adjusted for certain items as noted in the reconciliation below. Management evaluates the performance of its segments and allocates resources based on several factors, of which the primary measure is Adjusted EBITDA. Adjusted EBITDA should not be considered as an alternative to net income as an indicator of the Company's operating performance. Adjusted EBITDA as defined by the Company may not be comparable with EBITDA or Adjusted EBITDA as defined by other companies.

(3) The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $42,515 for the year ended December 31, 2020, which includes $21,157 of equity in net income plus $6,634 of amortization of investment in affiliate step-up plus $14,724 of joint venture depreciation, amortization and interest.
The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $68,138 for the year ended December 31, 2019, which includes $45,899 of equity in net income plus $7,534 of amortization of investment in affiliate step-up plus $14,705 of joint venture depreciation, amortization and interest.
The Adjusted EBITDA from the Zeolyst Joint Venture included in the Catalyst Technologies segment is $56,663 for the year ended December 31, 2018, which includes $37,437 of equity in net income plus $6,634 of amortization of investment in affiliate step-up plus $12,592 of joint venture depreciation, amortization and interest.

(4) Total Segment Adjusted EBITDA differs from the Company's consolidated Adjusted EBITDA due to unallocated corporate expenses.

A reconciliation of net income attributable to Ecovyst to Segment Adjusted EBITDA is as follows:

	Years ended December 31,		
	2020	**2019**	**2018**
Reconciliation of net income attributable to Ecovyst Inc. to Segment Adjusted EBITDA			
Net income from continuing operations	$ 54,280	$ 31,120	$ 5,253
(Benefit) provision for income taxes	(52,065)	12,299	7,977
Interest expense, net	50,409	66,872	72,344
Depreciation and amortization	76,926	74,781	72,188
Segment EBITDA	129,550	185,072	157,762
Joint venture depreciation, amortization and interest	14,724	14,705	12,592
Amortization of investment in affiliate step-up	6,634	7,534	6,634
Debt extinguishment costs	25,028	3,400	7,751
Net loss on asset disposals	4,722	4,559	10,350
Foreign currency exchange (gain) loss	(5,264)	1,228	13,910
LIFO (benefit) expense	(5,262)	6,458	799
Transaction and other related costs	1,118	186	491
Equity-based compensation	17,194	13,281	16,899
Restructuring, integration and business optimization expenses	1,994	2,571	6,822
Defined benefit pension plan (benefit) cost	(598)	553	(223)
Gain on contract termination[1]	—	—	(20,612)
Other	2,775	638	4,955
Adjusted EBITDA	192,615	240,185	218,130
Unallocated corporate expenses	39,087	43,263	39,436
Segment Adjusted EBITDA	$ 231,702	$ 283,448	$ 257,566

(1) Includes the non-cash write-off of a long-term supply contract obligation (see Note 25), which was recorded as a reduction in other operating expense, net in the consolidated statement of income for the year ended December 31, 2018.

The Company's consolidated results include equity in net income from affiliated companies of $21,065, $45,808 and $37,318 for the years ended December 31, 2020, 2019, and 2018, respectively. This is primarily comprised of equity in net income of $21,157, $45,899 and $37,437 in the Catalyst Technologies segment from the Zeolyst Joint Venture for the years ended December 31, 2020, 2019 and 2018, respectively. The Company's equity in net income from affiliated companies in the consolidated results includes amortization expense related to purchase accounting fair value adjustments associated with the Zeolyst Joint Venture as a result of a prior business combination.

Capital expenditures for the Company's reportable segments are shown in the following table:

	Years ended December 31,		
	2020	2019	2018
Capital expenditures:			
Ecoservices	$31,799	$42,310	$46,617
Catalyst Technologies[1]	11,177	8,984	8,390
Corporate[2]	8,622	1,243	121
Capital expenditures per the consolidated statements of cash flows	$51,598	$52,537	$55,128

(1) Excludes the Company's proportionate share of capital expenditures from the Zeolyst Joint Venture.
(2) Includes corporate capital expenditures, the cash impact from changes in capital expenditures in accounts payable and capitalized interest.

Total assets by segment are not disclosed by the Company because the information is not prepared or used by the CODM to assess performance and to allocate resources.

Sales and long-lived assets by geographic area are presented in the following tables. Sales are attributed to countries based upon location of products shipped.

	Years ended December 31,		
	2020	2019	2018
Sales[1]:			
United States	$443,682	$492,146	$488,414
Other foreign countries	52,238	40,601	39,247
Total	$495,920	$532,747	$527,661

(1) Except for the United States, no sales in an individual country exceeded 10% of the Company's total sales.

The Company sold products through its Ecoservices and Catalyst Technologies segments to customer A, which accounted for10.4%, 11.7% and 12.2% of the Company's total revenues as of December 31, 2020, 2019, and 2018 respectively. The Company sold products through its Ecoservices segment to customer B, which accounted for 10.8% of the Company's total revenues as of December 31, 2018.

	December 31,	
	2020	2019
Long-lived assets[1]:		
United States	$555,558	$583,700
Other foreign countries	65,095	58,540
Total	$620,653	$642,240

(1) Long-lived assets includes property, plant and equipment, net andright-of-use lease assets.

15. Goodwill and Other Intangible Assets:

The changes in the carrying amount of goodwill for the years ended December 31, 2020 and 2019 is summarized as follows:

	Ecoservices	Catalyst Technologies	Total
Balance as of December 31, 2018	$311,892	$ 77,759	$389,651
Foreign exchange impact	—	852	852
Balance as of December 31, 2019	311,892	78,611	390,503
Foreign exchange impact	—	1,062	1,062
Balance as of December 31, 2020	$311,892	$ 79,673	$391,565

The Company completed its annual goodwill impairment assessments as of October 1, 2020 and 2019. For the annual assessments, the Company bypassed the option to perform the qualitative assessment and proceeded directly to performing the quantitative goodwill impairment test for each of its reporting units. The quantitative test identifies both the potential existence of impairment and the amount of impairment loss. For each of the October 1, 2020 and 2019 assessments, the Company identified two reporting units, which align with the Company's operating segments.

The Company determined the fair value of its reporting units using a split between a market approach and an income, or discounted cash flow, approach. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The Company estimates reporting unit market approach fair value using publicly traded comparable company values and applies the selected market multiples to each reporting unit's trailing twelve months adjusted EBITDA. The Company estimates reporting unit income-based fair value using the discounted cash flow approach. This approach requires use of significant assumptions about future cash flows and based on management's assessment of a number of factors. Such factors include reporting unit revenue growth rates from implementation of strategic plans, operating margin growth rates, the perpetual growth rate, and the weighted average cost of capital, as well as the reporting unit's recent performance and management's ability to execute on planned future strategic initiatives. Discount rate assumptions are based on an assessment of the risk inherent in those future cash flows.

As of October 1, 2019, the fair values of each of the Company's reporting units exceeded their respective carrying values and therefore, no goodwill impairment exists for the year ended December 31, 2019.

In addition to the annual goodwill impairment assessment, the Company also performed the annual impairment test over its other indefinite-lived intangible assets as of October 1, 2020 and 2019. The fair values of the Company's indefinite-lived trade names and trademarks were in excess of their carrying amounts as of the respective testing dates, and as such, there was no further impairment of the Company's indefinite-lived intangible assets for the years ended December 31, 2020 and 2019.

Gross carrying amounts and accumulated amortization for intangible assets other than goodwill are as follows:

	December 31, 2020			December 31, 2019		
	Gross Carrying Amount	Accumulated Amortization	Net Balance	Gross Carrying Amount	Accumulated Amortization	Net Balance
Technical know-how	$ 52,214	$ (17,211)	$ 35,003	$ 51,832	$ (13,995)	$ 37,837
Customer relationships	115,303	(47,740)	67,563	115,078	(39,437)	75,641
Trademarks	7,709	(2,399)	5,310	7,600	(1,858)	5,742
Permits	9,100	(9,100)	—	9,100	(9,100)	—
Total definite-lived intangible assets	184,326	(76,450)	107,876	183,610	(64,390)	119,220
Indefinite-lived trade names	25,670	—	25,670	25,496	—	25,496
In-process research and development	3,900	—	3,900	3,900	—	3,900
Total intangible assets	$213,896	$ (76,450)	$137,446	$213,006	$ (64,390)	$148,616

The Company amortizes technical know-how over periods that range fromeleven years to twenty years, customer relationships over periods that range from seven years to fifteen years, trademarks over periods that range fromeleven years to fifteen years, and permits over five years. In-process research and development intangible assets are considered indefinite-lived until such time as the associated projects are completed, at which time amortization commences on the assets, or abandoned, which results in the impairment of the assets.

Amortization expense related to technical know-how, contracts and permits is included in cost of goods sold in the consolidated statements of income and was $3,111, $3,111 and $4,779 for the years ended December 31, 2020, 2019 and 2018, respectively. Amortization expense related to customer relationships and trademarks is included in other operating expense, net in the consolidated statements of income and was $8,678, $8,678 and $8,678 for the years ended December 31, 2020, 2019 and 2018, respectively.

Estimated future aggregate amortization expense of intangible assets is as follows:

Year	Amount
2021	$ 11,789
2022	11,789
2023	11,789
2024	11,789
2025	11,789
Thereafter	48,931
Total estimated future aggregate amortization expense	$107,876

16. Accrued Liabilities:

The following table summarizes the components of accrued liabilities as follows:

	December 31,	
	2020	2019
Compensation and bonus	$20,395	$27,112
Interest	11,383	18,918
Property tax	2,379	1,906
Environmental reserves (Note 24)	936	1,497
Income taxes	2,897	1,669
Other	10,492	8,126
	$48,482	$59,228

17. Long-term Debt:

The summary of long-term debt is as follows:

	December 31,	
	2020	2019
Senior Secured Term Loan Facility due February 2027	$ 671,710	$ 947,497
New Senior Secured Term Loan Facility due February 2027	459,653	—
6.75% Senior Secured Notes due 2022	—	625,000
5.75% Senior Unsecured Notes due 2025	295,000	295,000
ABL Facility	—	—
Total debt	1,426,363	1,867,497
Original issue discount	(15,641)	(13,434)
Deferred financing costs	(10,353)	(10,839)
Total debt, net of original issue discount and deferred financing costs	1,400,369	1,843,224
Less: current portion	—	—
Total long-term debt, excluding current portion	$ 1,400,369	$ 1,843,224

Senior Secured Credit Facilities

On May 4, 2016, the Company entered into senior secured credit facilities (collectively, the "2016 Senior Secured Credit Facilities") comprised of a $1,200,000 term loan facility, which consisted of a $900,000 U.S. dollar-denominated tranche and a $300,000 Euro-denominated (or €265,000) tranche (the "2016 Term Loan Facility"), and a $200,000 asset-based revolving credit facility (the "ABL Facility").

On February 8, 2018 (the "Third Amendment Closing Date"), PQ Corporation (the "Borrower"), an indirect, wholly owned subsidiary of the Company, refinanced its existing U.S. Dollar and Euro denominated senior secured term loan facilities with a new $1,267,000 senior secured term loan facility (the " Senior Secured Term Loan Facility") by entering into the Third Amendment Agreement to the 2016 Term Loan Facility (the "Third Amendment"), which amended and restated the Term Loan Credit Agreement dated as of May 4, 2016, among the Borrower, CPQ Midco I Corporation, Credit Suisse AG, Cayman Island Branch, as administrative agent and collateral agent, and the lenders and the other parties party thereto from time to time (as amended prior to the Third Amendment, the "Existing Credit Agreement" and as amended and restated by the Amendment, the "New Credit Agreement").

On February 7, 2020, the Company amended its Senior Secured Term Loan Facility to, among other things, (a) reduce the interest rate applicable to all LIBOR rate tranche B-1 term loans to LIBOR plus 2.25% per annum, (b) reduce the interest rate applicable to all base rate tranche B-1 term loans to the alternate base rate plus 1.25% per annum and (c) extend the maturity date of all tranche B-1 term loans to February 7, 2027.

On July 22, 2020, the Company entered into an agreement for a new senior secured term loan facility (the "New Senior Secured Term Loan Facility", collectively with the Senior Secured Term Loan Facility, the "Term Loan Facilities") in an aggregate principal amount of $650,000 with an original issue discount of 1.5% and interest at a floating rate of LIBOR (with a 1.0% minimum LIBOR floor) plus 3.0% per annum. The proceeds were used to redeem its existing $625,000 of 6.75% Senior Secured Notes due 2022 and pay the associated early redemption premiums. The New Senior Secured Term Loan Facility requires scheduled quarterly amortization payments, each equal to 0.25% of the original principal amount of the loans under the New Senior Secured Term Loan Facility.

As of December 31, 2020, the Senior Secured Term Loan Facility accrued interest at a floating rate of LIBOR plus 2.50% per annum and is scheduled to mature in February 2027. The Term Loan Facility requires scheduled quarterly amortization payments, each equal to 0.25% of the original principal amount of the loans under the Term Loan Facility.

On the Third Amendment Closing Date, the Company also entered into multiple cross currency swap arrangements to hedge foreign currency risk. The swaps were designed to enable the Company to effectively convert a portion of its fixed-rate U.S. dollar denominated debt obligations into approximately €280,000. The swaps were to mature in February 2023. In October 2019, the Company settled all of its cross-currency interest rate swap arrangements (the "February 2018 swaps") and concurrently entered into new cross-currency interest rate swap arrangements (the "October 2019 swaps") with the same notional amount of €280,000 equivalent ($344,403 as of December 31, 2020) and same maturity of February 2023. Consistent with the February 2018 swaps, the October 2019 swaps are designed to enable the Company to effectively convert a portion of its fixed-rate U.S. dollar-denominated debt obligations under the Term Loan Facility into a Euro-denominated equivalent. The October 2019 swaps have been designated and qualify as net investment hedges of the Company's foreign currency exchange rate exposure on the net investments of certain of its Euro-denominated subsidiaries. The settlement of the February 2018 swaps resulted in cash proceeds to the Company of $38,070, which the Company used for additional debt repayment on the Company's Senior Secured Term Loan Facility.

The Company may at any time or from time to time voluntarily prepay loans under the Term Loan Facilities in whole or in part without premium or penalty.

The Term Loan Facilities requires mandatory prepayments from (i) 50% of "Excess Cash Flow" (as defined in the New Credit Agreement) on an annual basis with step downs to lower percentages based on the Borrower's leverage ratio, if applicable, (ii) net cash proceeds from the issuance or incurrence of certain indebtedness and (iii) net cash proceeds received from certain non-ordinary course disposition of assets and casualty events to the extent such net cash proceeds were not reinvested in the Company's business within a certain specified time period. Prepayments are applied to remaining amortization installments in direct order of maturity. The remaining principal balance of the term loans are due upon maturity.

In addition, the New Credit Agreement contains customary affirmative and negative covenants and events of default, all of which are substantially the same as under the Existing Credit Agreement.

The Borrower and certain Canadian and European subsidiaries of the Borrower also have a $200,000 asset-based revolving credit facility (the "ABL Facility") which provides for $150,000 in U.S. available borrowings, up to $10,000 in Canadian available borrowings and up to $40,000 of European available borrowings. Borrowings under the ABL Facility bear interest at a rate equal to the LIBOR rate or the base rate elected by the Company at the time of the borrowing plus a margin of between 1.50%-2.00% or 0.50%-1.00%, respectively, depending on availability under the ABL Facility. In addition, there is an annual commitment fee equal to 0.375%, with a step-down to 0.25% based on the average usage of the revolving credit borrowings available. As of December 31, 2020, there were no revolving credit borrowings under the ABL Facility. Revolving credit borrowings are payable at the option of the Company throughout the term of the ABL Facility with the balance due May 4, 2021.

On March 20, 2020, the Company amended its existing ABL Facility to increase the aggregate amount of the revolving loan commitments available by $50,000 to $250,000, consisting of up to $195,000 in U.S. commitments, up to $15,000 in Canadian commitments and up to $40,000 in European commitments. The maturity of the facility has been extended to March 20, 2025. Following the amendment, the borrowings under the amended ABL Facility bear interest at a rate equal to the LIBOR rate or the base rate plus a margin of between 1.25% to 1.75% or 0.25% to 0.75% respectively.

The Company has the ability to request letters of credit under the ABL Facility. The Company had $18,190 of letters of credit outstanding as of December 31, 2020, which reduce available borrowings under the ABL Facility by such amounts.

The Term Loan Facilities are guaranteed by CPQ Midco I Corporation, a subsidiary of the Company and the direct parent of the Borrower (“Holdings”) and substantially all of the Borrower’s wholly owned U.S. subsidiaries. The obligations under the Term Facility are secured (i) by a first-priority security interest in, among other things, a pledge of substantially all of the Borrower’s and the guarantors’ assets (other than collateral securing the ABL Facility on a first-priority basis) and (ii) by a second-priority security interest in receivables, inventory, deposit accounts and other collateral of the Borrower and the U.S. subsidiary guarantors securing the ABL Facility. The liens securing the Term Loan Facilities and the guarantees are pari passu with the liens securing the Senior Secured Notes subject to the pari passu intercreditor agreement.

The obligations of the Borrower under the ABL Facility are guaranteed by Holdings and the same U.S. subsidiary guarantors that guarantee the Term Loan Facilities, the obligations of the Canadian Borrowers under the ABL Facility are guaranteed by a Canadian subsidiary of the Borrower and the obligations of the European Borrowers under the ABL Facility are guaranteed by certain other European subsidiaries of the Borrower. The obligations of the borrowers and guarantors under the ABL Facility are secured (i) by a first-priority security interest in, among other things, substantially all of their receivables, inventory, deposit accounts and other collateral securing the ABL Facility on a first-priority basis and (ii) by a second-priority security interest in the property and assets of Holdings, the Borrower and the U.S. subsidiary guarantors that secure the Term Loan Facilities. In addition, the ABL Facility is secured by the equity interests in, and substantially all of the assets of, certain foreign guarantors in connection with the Canadian dollar-denominated and Euro-denominated availability.

The Term Loan Facilities and the ABL Facility contain various non-financial restrictive covenants. Each limits the ability of PQ Corporation and its restricted subsidiaries to incur certain indebtedness or liens, merge, consolidate or liquidate, dispose of certain property, make investments or declare or pay dividends, make optional payments, modify certain debt instruments, enter into certain transactions with affiliates, enter into certain sales and leasebacks, and certain other non-financial restrictive covenants. The ABL Facility also contains one financial covenant which applies when minimum availability under the ABL Facility exceeds a certain threshold. During such time, the Company is required to maintain a fixed-charge coverage ratio of at least 1.0 to 1.0. The Company is in compliance with all debt covenants as of December 31, 2020 and 2019, respectively.

During the year ended December 31, 2020, the Company prepaid $466,134 of outstanding principal balance on its Term Loan Facilities. The Company wrote off $162 of previously unamortized deferred financing costs and original issue discount of $12,781 as debt extinguishment costs. The prepayments were applied against the remaining scheduled installments of principal due in respect of the loans under the Term Loan Facilities in direct order of maturity.

During the year ended December 31, 2019, the Company prepaid $210,000 of outstanding principal balance on the Senior Secured Term Loan Facility. The Company wrote off $1,027 of previously unamortized deferred financing costs and original issue discount of $2,414 as debt extinguishment costs. The prepayments were applied against the remaining scheduled installments of principal due in respect of the loans under the Senior Secured Term Loan Facility in direct order of maturity.

Debt extinguishment costs resulting from Term Loan amendments

As a result of amending the Term Loan Facilities during the year ended December 31, 2020, the Company recorded $2,188 of new creditor and third-party financing costs as debt extinguishment costs. In addition, previous unamortized deferred financing costs of $97 and original issue discount of $228 associated with the previously outstanding debt were written off as debt extinguishment costs.

As a result of amending the Term Loan Facilities during the year ended December 31, 2018, the Company recorded $2,124 of new creditor and third-party financing costs as debt extinguishment costs. In addition, previous unamortized deferred financing costs of $1,403 and original issue discount of $2,352 associated with the previously outstanding debt were written off as debt extinguishment costs.

6.75% Senior Secured Notes - Redeemed in 2020

On May 4, 2016, the Borrower issued $625,000 of 6.750% Senior Secured Notes due November 2022 (the "6.75% Senior Secured Notes") in transactions exempt from or not subject to registration under the Securities Act pursuant to Rule 144A and Regulation S under the Securities Act of 1933. The 6.75% Senior Secured Notes were guaranteed by guaranteed by PQ Holdings Inc. and by the U.S. subsidiary guarantors that guarantee the Term Loan Facility and were secured by liens on the assets of the Borrower and the U.S. subsidiary guarantors on a *pari passu* with the liens securing the Term Loan Facility subject to the *pari passu* intercreditor agreement. The guarantee by PQ Holdings Inc. was unsecured. The indenture relating to the 6.75% Senior Secured Notes contains various limitations on the Company's and its restricted subsidiaries' ability to incur additional indebtedness, pay dividends or repay certain debt, make loans and investments, sell assets, create liens, enter into transactions with affiliates, enter into agreements restricting the Borrower's subsidiaries ability to pay dividends, and merge and consolidate with other companies, among other things. Interest on the 6.75% Senior Secured Notes was payable on May 15 and November 15 of each year, commencing November 15, 2016. No principal payments were required with respect to the 6.75% Senior Secured Notes prior to their final maturity. Prior to redeeming the notes, the 6.75% Senior Secured Notes had mature on date of November 15, 2022.

The 6.75% Senior Secured Notes were redeemable, in whole or in part, at the redemption prices (expressed as percentages of principal amount of the 6.75% Senior Secured Notes to be redeemed) set forth below, plus accrued and unpaid interest, if any, to, but not including, the redemption date, if redeemed on or after any of the dates below until the subsequent date below:

Year	Percentage
May 15, 2020	101.688%
May 15, 2021 and thereafter	100.000%

As a result of redeeming the 6.75% Senior Secured Notes due 2022, the Company paid a redemption premium of $10,550 which was recorded as debt extinguishment costs during the year ended December 31, 2020. In addition, previous unamortized deferred financing costs of $2,085 and original issue discount of $1,186 associated with the previously outstanding debt were written off as debt extinguishment costs for the year ended December 31, 2020.

New Senior Secured Term Loan Facility due February 2027

In July 2020, the Company entered into an agreement for a new senior secured term loan facility in an aggregate principal amount of $650,000 with an original issue discount of 1.5% and interest at a floating rate of LIBOR (with a 1.0% minimum LIBOR floor) plus 3.0% per annum. The proceeds were used to redeem its existing $625,000 of 6.75% Senior Secured Notes due 2022 and pay the associated early redemption premiums. The new senior secured term loan facility requires scheduled quarterly amortization payments, each equal to 0.25% of the original principal amount of the loans under the new senior secured term loan facility.

5.75% Senior Unsecured Notes due 2025

On December 11, 2017, the Borrower issued $300,000 aggregate principal amount of 5.75% Senior Unsecured Notes due 2025 (the "5.75% Senior Unsecured Notes") in a private placement exempt from the registration requirements of the Securities Act. The 5.75% Senior Unsecured Notes mature on December 15, 2025. Interest on the 5.75% Senior Unsecured Notes is to be paid semi-annually on February 15 and August 15, commencing August 15, 2018, at an annual rate of 5.75%. The indenture relating to the 5.75% Senior Unsecured Notes contained various limitations on the Borrower's and its restricted subsidiaries' ability to incur additional indebtedness, pay dividends or repay certain debt, make loans and investments, sell assets, create liens, enter into transactions with affiliates, enter into agreements restricting the Borrower's subsidiaries ability to pay dividends, and merge and consolidate with other companies, among other things. No principal payments are required with respect to the Senior Secured Notes prior to their final maturity.

The obligations of the Borrower under the 5.75% Senior Unsecured Notes and the related indenture are guaranteed by its U.S. subsidiary guarantors that guarantee the Term Loan Facility. The obligations of the Company under the 5.75% Senior Unsecured Notes and the indenture are unsecured.

If any Event of Default (other than a default relating to certain events of bankruptcy or insolvency of PQ Corporation or certain of its subsidiaries) occurs and is continuing under the Indenture, the Trustee or the Holders of at least 30% in principal amount of the then total outstanding notes by notice to the Company may declare the principal, premium, if any, interest and any other monetary obligations on all the then outstanding notes to be due and payable immediately. If an event of default arising from certain events of bankruptcy or insolvency of the Company occurs, the principal of, premium, if any, and interest on all the Senior Secured Notes shall become immediately due and payable without any declaration or other act on the part of the trustee or any holders.

At any time prior to December 15, 2020, the Borrower may, at its option and on one more occasions, redeem (a) up to40% of the aggregate principal amount of the 5.75% Senior Unsecured Notes with the cash proceeds from certain equity offerings at a redemption price equal to the sum of 105.75% of the aggregate principal amount thereof plus accrued and unpaid interest thereon, and (b) all or part of the5.75% Senior Unsecured Notes at 100.00% of the aggregate principal amount redeemed plus accrued and unpaid interest thereon and a make-whole premium (the "Applicable Premium"). The Applicable Premium is equal to the greater of: (a) 1% of the principal amount of notes redeemed, or (b) the excess, if any, of: (1) the present value at the redemption date of (i) the redemption price of such notes at December 15, 2020 (as set forth in the table below), plus (ii) all required remaining scheduled interest payments due on such notes through December 15, 2020 (excluding accrued but unpaid interest to, but excluding, the redemption date), computed using a discount rate equal to the applicable United States Treasury rate as of such redemption date plus 50 basis points; over (2) the outstanding principal amount of such notes on the redemption date.

On or after December 15, 2020, the 5.75% Senior Unsecured Notes are redeemable, in whole or in part, at the redemption prices (expressed as percentages of principal amount of the 5.75% Senior Unsecured Notes to be redeemed) set forth below, plus accrued and unpaid interest, if any, to, but not including, the redemption date, if redeemed on or after any of the dates below until the subsequent date below:

Year	Percentage
December 15, 2020	102.875%
December 15, 2021	101.438%
December 15, 2022 and thereafter	100.000%

Upon the occurrence of a change of control, as defined, each holder will have the right to require the Company to purchase all or any part of such holder's Senior Secured Notes at a purchase price in cash equal to 101% of the principal amount, plus accrued and unpaid interest.

Fair Value of Debt

The fair value of a financial instrument is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. As of December 31, 2020 and 2019, the fair value of the senior secured term loans and senior secured and unsecured notes was $1,427,123 and $1,905,822, respectively. The fair value is classified as Level 2 based upon the fair value hierarchy (see Note 7 to these consolidated financial statements for further information on fair value measurements).

Aggregate Long-term Debt Maturities

The aggregate long-term debt maturities are:

Year	Amount
2021	$ —
2022	—
2023	—
2024	—
2025	295,000
Thereafter	1,131,363
	$1,426,363

18. Other Long-term Liabilities:

The following table summarizes the components of other long-term liabilities as follows:

	December 31,	
	2020	2019
Pension benefits	$11,542	$14,584
Other postretirement benefits	634	539
Reserve for uncertain tax positions	—	494
Other	3,223	3,149
	$15,399	$18,766

19. Financial Instruments:

The Company uses interest rate related derivative instruments to manage its exposure to changes in interest rates on its variable-rate debt instruments. The Company does not speculate using derivative instruments.

By using derivative financial instruments to hedge exposures to changes in interest rates, the Company exposes itself to credit risk and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is an asset, the counterparty owes the Company, which creates credit risk for the Company. When the fair value of a derivative contract is a liability, the Company owes the counterparty and therefore, the Company is not exposed to the counterparty's credit risk in those circumstances. The Company minimizes counterparty credit risk in derivative instruments by entering into transactions with high quality counterparties. The derivative instruments entered into by the Company do not contain credit-risk-related contingent features.

Market risk is the adverse effect on the value of a derivative instrument that results from a change in interest rates. The market risk associated with the Company's derivative instruments is managed by establishing and monitoring parameters that limit the types and degree of market risk that may be undertaken.

Use of Derivative Financial Instruments to Manage Interest Rate Risk. The Company is exposed to fluctuations in interest rates on its senior secured credit facilities. Changes in interest rates will not affect the market value of such debt but will affect the Company's interest payments over the term of the loans. Likewise, an increase in interest rates could have a material impact on the Company's cash flow. The Company hedges the interest rate fluctuations on debt obligations through interest rate cap agreements. The Company records these agreements at fair value as assets or liabilities in its consolidated balance sheet. As the derivatives are designated and qualify as cash flow hedges, the gains

or losses on the interest rate cap agreements are recorded in stockholders' equity as a component of OCI, net of tax. Reclassifications of the gains and losses on the interest rate cap agreements into earnings are recorded as part of interest expense in the consolidated statements of income as the Company makes its interest payments on the hedged portion of its senior secured credit facilities. Fair value is determined based on estimated amounts that would be received or paid to terminate the contracts at the reporting date based on quoted market prices.

In July 2016, the Company entered into interest rate cap agreements, paying a premium of $1,551 to mitigate interest rate volatility from July 2016 through July 2020 by employing varying cap rates, ranging from 1.50% to 3.00% on $1,000,000 of notional variable-rate debt.

In November 2018, the Company entered into additional interest rate cap agreements to mitigate interest rate volatility from July 2020 through July 2022, with a cap rate of 3.50% on $500,000 of notional variable-rate debt and a $3,380 premium annuitized during the effective period. In February 2020, the Company restructured its $500,000 of notional variable-rate debt interest rate cap agreements from July 2020 through July 2022, to lower the interest cap rate to 2.50% with an incremental $130 premium annuitized during the effective period. In March 2020, the Company again amended such interest rate cap agreements to lower the cap rate to 0.84% from 2.50% on $500,000 of notional variable-rate debt and paid an additional $900 premium annuitized during the effective period. The term remains unchanged from July 2020 through July 2022. The total cumulative annuitized premium on the $500,000 of notional variable-rate debt is $4,410.

In July 2020, the Company entered into additional interest rate cap agreements to mitigate interest rate volatility from August 2020 to August 2023, with a cap rate of 1.00% on $400,000 of notional variable-rate debt.

With the Company's prepayments on its Senior Secured Term Loan Facility during 2019 (see Note 17 to these consolidated financial statements for additional information), the original forecasted interest rate payments associated with a portion of the $1,000,000 notional of interest rate cap agreements were no longer probable of occurring, which the Company dedesignated from the hedging relationship. As a result of the discontinuance of cash flow hedge accounting on this portion of the interest rate cap agreements, the Company immediately reclassified into earnings the loss deferred in AOCI related to the dedesignated portion of the hedge, which was not material. Gains and losses associated with the dedesignated portion of the interest rate cap agreements through their maturity in July 2020 were recognized in earnings and were not material.

Use of Derivative Financial Instruments to Manage Foreign Currency Risk. The Company is exposed to risks related to its net investments in foreign operations due to fluctuations in foreign currency exchange rates, particularly between the United States dollar and the Euro. In connection with the February 2018 term loan refinancing (see Note 17 to these consolidated financial statements), the Company entered into multiple cross-currency interest rate swap arrangements with an aggregate notional amount of €280,000 to hedge this exposure on the net investments of certain of its Euro-denominated subsidiaries in its Performance Materials and Performance Chemicals businesses. The Company records these swap agreements at fair value as assets or liabilities in its consolidated balance sheet.

In October 2019, the Company settled all of its February 2018 swaps and concurrently entered into the October 2019 swaps with the same notional amount of €280,000 ($344,403 as of December 31, 2020) and same maturity date of February 2023, which resulted in cash proceeds to the Company of $38,070. Consistent with the February 2018 swaps, the October 2019 swaps were designed to enable the Company to effectively convert a portion of its fixed-rate U.S. dollar-denominated debt obligations under the Senior Secured Term Loan Facility into a Euro-denominated equivalent. The October 2019 swaps were designated and qualify as net investment hedges of the Company's foreign currency exchange rate exposure on the net investments of certain of its Euro-denominated subsidiaries in its Performance Materials and Performance Chemicals businesses.

As the derivatives were designated and qualify as net investment hedges, changes in the fair value of the swaps attributable to changes in the spot exchange rates are recognized in cumulative translation adjustment ("CTA") within OCI and are held there until the hedged net investments are sold or substantially liquidated. Changes in the fair value of the swaps attributable to the cross currency basis spread are excluded from the assessment of hedge effectiveness and are recorded in current period earnings. Upon such sale or liquidation, the amount recognized in CTA is reclassified to earnings and reported in the same line item as the gain or loss on the liquidation of the net investments. In connection

with the sale of the Performance Materials business in December 2020, a portion of the amount deferred in CTA related to the cross-currency swaps was reclassified from accumulated other comprehensive income and recognized as part of the loss on sale.

The fair values of derivative instruments held as of December 31, 2020 and 2019 are shown below:

	Balance sheet location	December 31, 2020	December 31, 2019
Derivative liabilities:			
Derivatives designated as cash flow hedges:			
Interest rate caps	Accrued liabilities	1,954	420
Interest rate caps	Other long-term liabilities	1,750	2,822
Total derivative liabilities		$3,704	$3,242

The following table shows the effect of the Company's derivative instruments designated as hedges on accumulated other comprehensive income (loss) ("AOCI") and the statements of income for the years ended December 31, 2020, 2019 and 2018:

	Location of gain (loss) reclassified from AOCI into income	2020 Amount of gain (loss) recognized in OCI on derivatives	2020 Amount of gain (loss) reclassified from AOCI into income	2019 Amount of gain (loss) recognized in OCI on derivatives	2019 Amount of gain (loss) reclassified from AOCI into income	2018 Amount of gain (loss) recognized in OCI on derivatives	2018 Amount of gain (loss) reclassified from AOCI into income
Interest rate caps	Interest(expense) income	$ (167)	$ (54)	$ (3,304)	$ (625)	$ (981)	$ (256)

The following table shows the effect of the Company's cash flow hedge accounting on the consolidated statements of income for the years ended December 31, 2020, 2019 and 2018:

	2020 Cost of goods sold	2020 Interest (expense) income	2019 Cost of goods sold	2019 Interest (expense) income	2018 Cost of goods sold	2018 Interest (expense) income
	Location and amount of gain (loss) recognized in income on cash flow hedging relationships — Years ended December 31,					
Total amounts of income and expense line items presented in the statement of income in which the effects of cash flow hedges are recorded	$ (344,967)	$(50,409)	$(365,537)	$(66,872)	$ (369,649)	$(72,344)
The effects of cash flow hedging:						
Gain (loss) on cash flow hedging relationships:						
Interest contracts:						
Amount of gain (loss) reclassified from AOCI into income	—	(54)	—	(625)	—	(256)

The amount of unrealized losses in AOCI related to the Company's cash flow hedges that is expected to be reclassified to the consolidated statement of income over the next twelve months is $281 as of December 31, 2020.

The following table shows the effect of the Company's net investment hedges on AOCI and the consolidated statements of income for the years ended December 31, 2020, 2019 and 2018:

	Amount of gain (loss) recognized in OCI on derivative Years ended December 31,			Location of gain (loss) reclassified from AOCI into income	Amount of gain (loss) reclassified from AOCI into income Years ended December 31,			Location of gain (loss) recognized in income on derivative (amount excluded from effectiveness testing)	Amount of gain (loss) recognized in income on derivative (amount excluded from effectiveness testing) Years ended December 31,		
	2020	2019	2018		2020	2019	2018		2020	2019	2018
Cross currency swaps	$(23,622)	$17,077	$18,843	Net (loss) income from discontinued operations, net of tax[1]	$1,967	$—	$ —	Interest (expense) income	$5,090	$7,320	$6,752

(1) Includes the gain (loss) on the sale of the underlying subsidiary.

20. Income Taxes:

Income (loss) before income taxes and noncontrolling interest within or outside the United States are shown below:

	Years ended December 31,		
	2020	2019	2018
Domestic	$(10,454)	$32,760	$ 4,384
Foreign	12,669	10,659	8,846
Total	$ 2,215	$43,419	$13,230

The provision (benefit) for income taxes as shown in the accompanying consolidated statements of income consists of the following:

	Years ended December 31,		
	2020	2019	2018
Current:			
Federal	$ —	$ (3)	$ —
State	1,982	2,141	2,784
Foreign	6,013	6,263	3,330
	7,995	8,401	6,114
Deferred:			
Federal	(58,125)	1,320	2,575
State	(2,596)	2,244	(768)
Foreign	661	334	56
	(60,060)	3,898	1,863
(Benefit) provision for income taxes	$(52,065)	$12,299	$7,977

A reconciliation of income tax expense (benefit) at the U.S. federal statutory income tax rate to actual income tax expense is as follows:

	Years ended December 31,		
	2020	2019	2018
Tax at statutory rate	$ 466	$ 9,118	$2,778
State income taxes, net of federal income tax benefit	(401)	6,725	2,002
Impact of US Tax Reform	(105)	1,003	1,129
Change in valuation allowances	135	1,415	5,070
Rate changes	4,274	1,054	(4,016)
Foreign withholding taxes	—	(6,651)	—
Foreign tax rate differential	165	217	(36)
Foreign tax credits	(56,359)	—	—
Other, net	(240)	(582)	1,050
Provision (benefit) for income taxes	$(52,065)	$12,299	$7,977

Deferred tax assets (liabilities) are comprised of the following:

	December 31,	
	2020	2019
Deferred tax assets:		
Net operating loss carryforwards	$ 24,467	$ 73,936
Section 163(j) interest disallowance carryforward	266	16,535
Pension	9,149	11,384
Operating lease liability	10,816	10,657
Other	18,997	18,334
State credits	12,733	12,280
Foreign tax credit	62,752	—
Valuation allowance	(25,106)	(27,040)
	$ 114,074	$ 116,086
Deferred tax liabilities:		
Depreciation	$ (92,922)	$ (91,272)
Inventory	(4,946)	(11,481)
Intangible assets	(117,063)	(143,387)
Operating lease right-of-use assets	(11,250)	(10,877)
Other	(13,743)	(20,067)
	$(239,924)	$(277,084)
Net deferred tax liabilities	$(125,850)	$(160,998)

The change in net deferred tax liabilities for the years ended December 31, 2020 and 2019 was primarily related to the usage of U.S. federal and state net operating losses reducing those deferred tax assets, activity related to book amortization of intangible assets with no corresponding tax basis reducing those deferred tax liabilities, activity with respect to tax deductible goodwill, as well as the election for full expensing on certain assets creating additional deferred tax liabilities for depreciable property. Further, the increase of the foreign tax credits on the deferred tax assets and the decrease of the Section 163(j) interest disallowance carryforward accounted for the change in net deferred tax liabilities for year ended December 31, 2020.

The net change in the total valuation allowance was a decrease of $l,934 in 2020. The valuation allowance at December 31, 2020 was related to state net operating loss carryforwards and tax credits that, in the judgment of management, are not more likely than not to be realized. In assessing the ability to realize deferred tax assets, management considered whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considered the scheduled reversal of deferred tax liabilities (including the impact of available carryback and carryforward periods), projected future taxable income, and tax-planning strategies that are prudent in making this assessment. In order to fully realize deferred tax assets, the Company will need to generate future taxable income prior to the expiration of the net operating loss and credit carryforwards. The amount of the deferred tax assets considered realizable, however, could be reduced in the near term if estimates of future taxable income during the carryforward period are reduced.

The cumulative unremitted earnings of foreign subsidiaries outside the United States are considered permanently reinvested, for which no withholding taxes have been provided. Such earnings are expected to be reinvested indefinitely and, as a result, no deferred tax liability has been recognized with regard to such earnings. Determination of the deferred withholding tax liability on these unremitted earnings is not practicable.

The following table summarizes the activity related to the Company's gross unrecognized tax benefits:

	Years ended December 31,	
	2020	2019
Balance at beginning of period	$8,080	$8,926
Increases related to prior year tax positions	—	15
Decreases related to prior year tax positions	—	(861)
Increases related to current year tax positions	164	—
Decreases related to settlements with taxing authorities	(457)	—
Balance at end of period	$7,787	$8,080

The total unrecognized tax benefits of $7,787 and $8,080 as of December 31, 2020 and 2019, respectively. If these amounts are recognized in future periods, it would affect the effective tax rate on income from continuing operations for the years in which they are recognized.

Interest and penalties released related to uncertain tax positions amounted to $37 and $111 for the years ended December 31, 2020 and 2019, respectively. To the extent interest and penalties are not assessed with respect to uncertain tax positions, amounts accrued will be reduced and reflected as a reduction of the overall income tax provision in the period for which the event occurs requiring the adjustment. The Company recorded $0 and $38 in accrued interest and penalties as of December 31, 2020 and 2019, respectively, in other long-term liabilities on its consolidated balance sheets.

The Company files numerous consolidated and separate income tax returns in the U.S. federal jurisdiction and in many state and foreign jurisdictions. The following describes the open tax years, by significant tax jurisdiction, as of December 31, 2020:

Jurisdiction	Period
United States-Federal	2007-Present
United States-State	2007-Present
United Kingdom	2014-Present
Brazil	2016-Present

(1) Includes federal as well as local jurisdictions

Given that the Company has utilized U.S. and state net operating loss in the current and prior years, the statute for examination by the U.S. and state taxing authorities will typically remain open for a period following the use of such net operating loss carryforwards, extending the period for examination beyond the years indicated above.

The Company has subsidiaries in various states, provinces and countries that are currently under audit for years ranging from 2014 through 2018. To date, no material adjustments have been proposed as a result of these audits. As of December 31, 2020, the Company does not believe that there are any positions for which it is reasonably possible that the total amount of unrecognized tax benefits will significantly increase or decrease within the next 12 months.

As of December 31, 2020, the Company no longer has a federal NOL carryforward. As of December 31, 2020, the Company has foreign tax credit carryforwards of $62,752, which are net of $7,658 of uncertain tax position balances, which is permissible per ASU 2013-11. These carryforwards have a ten year carryforward, of which $13,241 are set to expire in 2021.

Cumulative state net operating losses carrying forward into December 31, 2020 are $24,467. A valuation allowance of $14,344 has been applied against the total state net operating loss deferred tax assets, leaving losses of $10,123 that have been recognized for financial accounting purposes for the portion of those losses that the Company believes, on a more likely than not basis, will be realized.

There were no foreign net operating losses as of December 31, 2020.

Cash payments for income taxes, net of refunds, are as follows:

	Years ended December 31,		
	2020	2019	2018
Domestic	$ 1,894	$ 1,879	$ 1,311
Foreign	29	(29)	192
	$1,923	$1,850	$1,503

21. Benefit Plans:

The Company sponsors defined benefit pension plans covering certain of its employees. Benefits under the plans are generally based on average final pay and years of service. The Company's funding policy is to fund the minimum required contribution under local statutory requirements.

The Company sponsors an unfunded plan to provide health care benefits to certain retired employees in the United States. The plan pays a stated percentage of medical expenses reduced by deductibles and other coverage. The plan is unfunded and obligations are paid out of the Company's operations.

The Company uses a December 31 measurement date for all of its defined benefit pension and postretirement medical plans. Of the Company's two defined benefit pension plans covering employees in the U.S., only the Eco Services Hourly Pension Plan continues to accrue benefits for certain participants; however, this plan was frozen to future accruals as of December 31, 2020. All future accruals were frozen for the Eco Services Pension Equity Plan as of December 31, 2016. The retiree healthcare plan was closed to new retirees effective July 1, 2017. The Company's remaining defined benefit pension plan covering its employees at a foreign subsidiary remains active.

Defined Benefit Pension Plans

The following tables summarize changes in the benefit obligation, plan assets and funded status of the Company's defined benefit pension plans as well as the components of net periodic benefit cost, including key assumptions:

	U.S.		Foreign	
	December 31,		December 31,	
	2020	2019	2020	2019
Change in benefit obligation:				
Benefit obligation at beginning of period	$ 82,726	$ 74,445	$19,673	$15,877
Service cost	769	978	1,080	977
Interest cost	2,665	3,099	299	355
Participant contributions	—	—	112	110
Plan curtailments	—	(2,795)	(1,603)	—
Plan settlements	(1,455)	(1,669)	—	—
Benefits paid	(1,511)	(1,350)	(213)	(198)
Expenses paid	—	—	(60)	(67)
Actuarial (gains) losses	8,743	10,018	949	2,951
Translation adjustment	—	—	1,973	(332)
Benefit obligation at end of the period	$ 91,937	$ 82,726	$22,210	$19,673
Change in plan assets:				
Fair value of plan assets at beginning of period	$ 69,450	$ 55,905	$18,365	$17,079
Actual return on plan assets	11,539	12,464	1,238	874
Employer contributions	2,372	4,100	820	926
Employee contributions	—	—	112	110
Plan settlements	(1,455)	(1,669)	—	—
Benefits paid	(1,511)	(1,350)	(213)	(198)
Expenses paid	—	—	(60)	(67)
Translation adjustment	—	—	1,948	(359)
Fair value of plan assets at end of the period	$ 80,395	$ 69,450	$22,210	$18,365
Funded status of the plans (underfunded)	$(11,542)	$(13,276)	$ —	$ (1,308)

The total actuarial losses for the year ended December 31, 2020 across the Company's U.S. plans was $8,743, which was driven by declines in the discount rates of $8,938 and declines in general demographic experience of $343, which was offset by favorable changes in mortality assumptions of $538. The total actuarial losses for the year ended December 31, 2020 across the Company's foreign plans was $949, which was driven by declines in the discount rates of $1,440, offset by favorable changes in general demographic experience of $70 and favorable changes in mortality assumptions of $421.

The total actuarial losses for the year ended December 31, 2019 across the Company's U.S. was $10,018, which was driven by declines in the discount rates of $8,978 and declines in general demographic experience of $2,017, which was offset by favorable changes in mortality assumptions of $977. The total actuarial losses for the year ended December 31, 2019 across the Company's foreign plans was $2,951, which was driven by declines in the discount rates of $3,134, which was offset by favorable changes in general demographic experience of $161 and favorable changes in mortality assumptions of $22.

Amounts recognized in the consolidated balance sheets consist of:

	U.S. December 31,		Foreign December 31,	
	2020	2019	2020	2019
Noncurrent liability	(11,542)	(13,276)	—	(1,308)
Accumulated other comprehensive income (loss)	371	(3,145)	(1,198)	(610)
Net amount recognized	$(11,171)	$(16,421)	$(1,198)	$(1,918)

Amounts recognized in accumulated other comprehensive income (loss) consist of:

	U.S. December 31,		Foreign December 31,	
	2020	2019	2020	2019
Net gain (loss)	(3,328)	(2,305)	(2,166)	(3,641)
Gross amount recognized	(3,328)	(2,305)	(2,166)	(3,641)
Deferred income taxes	3,699	(840)	968	3,031
Net amount recognized	$ 371	$(3,145)	$(1,198)	$ (610)

Components of net periodic benefit cost consist of:

	U.S. Years ended December 31,			Foreign Years ended December 31,		
	2020	2019	2018	2020	2019	2018
Service cost	$ 769	$ 978	$ 1,019	$1,080	$ 977	$ 712
Interest cost	2,665	3,099	2,943	299	355	365
Expected return on plan assets	(3,898)	(3,444)	(3,546)	(287)	(275)	(254)
Amortization of net (gain) loss	—	—	—	95	—	49
Curtailment gain recognized	—	—	(576)	—	—	—
Settlement (gain) loss recognized	78	49	—	—	—	—
Net periodic expense (benefit)	$ (386)	$ 682	$ (160)	$1,187	$1,057	$ 872

All components of net periodic benefit cost other than service cost are presented within other expense (income), net in the Company's consolidated statements of income.

The net amount of projected benefit obligation and plan assets for all underfunded and unfunded plans was $11,542 and $13,276 as of December 31, 2020 and 2019, respectively, and was classified as noncurrent liabilities. The total accumulated benefit obligation as of December 31, 2020 and 2019 for the Company's U.S. pension plans was $91,937 and $82,326, respectively. The total accumulated benefit obligation as of December 31, 2020 and 2019 for the Company's foreign pension plans was $0 and $19,335, respectively.

The following table presents selected information about the Company’s pension plans with accumulated benefit obligations in excess of plan assets:

	U.S.		Foreign	
	December 31,		December 31,	
	2020	2019	2020	2019
Projected benefit obligation	$ 91,937	$ 82,726	$ —	19,673
Accumulated benefit obligation	91,937	82,326	—	19,335
Fair value of plan assets	80,395	69,450	—	18,365

The following table presents selected information about the Company’s pension plans with projected benefit obligations in excess of plan assets:

	U.S.		Foreign	
	December 31,		December 31,	
	2020	2019	2020	2019
Projected benefit obligation	$ 91,937	$ 82,726	$ —	19,673
Fair value of plan assets	80,395	69,450	—	18,365

Significant weighted average assumptions used in determining the pension obligations include the following:

	U.S.		Foreign	
	December 31,		December 31,	
	2020	2019	2020	2019
Discount rate	2.50%	3.37%	1.20%	1.50%
Rate of compensation increase[(1)]	N/A	3.00%	1.75%	1.75%

Significant weighted average assumptions used in determining net periodic benefit cost include the following:

	U.S.			Foreign		
	Years ended December 31,			Years ended December 31,		
	2020	2019	2018	2020	2019	2018
Discount rate	3.40%	4.37%	3.83%	1.50%	2.30%	2.20%
Rate of compensation increase[(1)]	3.00%	3.00%	3.00%	1.75%	1.75%	1.75%
Expected return on assets	5.70%	6.00%	6.00%	1.50%	1.60%	1.50%

(1) Includes only plans not frozen to benefit accruals for the respective periods.

The discount rate for each of the U.S. plans was determined by utilizing a yield curve model. The model develops a spot rate curve based on the yields available from a broad-based universe of high quality corporate bonds. The discount rate is then set as the weighted average spot rate, using the respective plan’s expected benefit cash flows as the weights.

The investment objective for the U.S. plans is to generate returns sufficient to meet future obligations. The strategy to meet the objective includes generating attractive returns using higher returning assets such as equity securities and balancing risk using less volatile assets such as fixed income securities. The U.S. plans invest in an allocation of assets across the two broadly-defined financial asset categories of equity and fixed income securities. The target allocations for the plan assets across the three U.S. plans are as follows: 45% equity securities and 55% fixed income investments for the PQ Corporation Retirement Plan; 40% equity securities and 60% fixed income investments for the Eco Services Pension Equity Plan; and 60% equity securities and 40% fixed income investments for the Eco Services Hourly Pension Plan.

Similar considerations are applied to the investment objectives of the non-U.S. plans as well as the asset classes available in each location and any legal restrictions on plan investments.

The Company classifies plan assets based upon a fair value hierarchy (see Note 7 to these consolidated financial statements for further information). The classification of each asset within the hierarchy is based on the lowest level input that is significant to its measurement. The fair value hierarchy consists of three levels as follows:

- Level 1—Values are unadjusted quoted prices for identical assets and liabilities in active markets accessible at the measurement date. Active markets provide pricing data for trades occurring at least weekly and include exchanges and dealer markets. Level 1 assets primarily include investments in publicly traded equity securities and mutual funds. These securities (or the underlying investments of the funds) are actively traded and valued using quoted prices for identical securities from the market exchanges.
- Level 2—Inputs include quoted prices for similar assets or liabilities in active markets, quoted prices from those willing to trade in markets that are not active, or other inputs that are observable or can be corroborated by market data for the term of the instrument. Such inputs include market interest rates and volatilities, spreads and yield curves. Level 2 assets primarily consist of fixed-income securities and commingled funds that are not actively traded or whose underlying investments are valued using observable marketplace inputs. The fair value of plan assets invested in fixed-income securities is generally determined using valuation models that use observable inputs such as interest rates, bond yields, low-volume market quotes and quoted prices for similar assets. Plan assets that are invested in commingled funds are valued using a unit price or net asset value (“NAV”) that is based on the underlying investments of the fund.
- Level 3—Certain inputs are unobservable (supported by little or no market activity) and significant to the fair value measurement. Unobservable inputs reflect the Company’s best estimate of what hypothetical market participants would use to determine a transaction price for the asset or liability at the reporting date. Level 3 assets include investments covered by insurance contracts and real estate funds valued using significant unobservable inputs.

The following tables set forth by level, within the fair value hierarchy, plan assets at fair value:

	December 31, 2020			
	Total	Level 1	Level 2	Level 3
Cash and cash equivalents	$ 151	$ 151	$ —	$ —
Equity securities:				
U.S. investment funds	28,040	28,040	—	—
International investment funds	18,770	18,770	—	—
Fixed income securities:				
Government securities	16,766	16,766	—	—
Corporate bonds	16,668	16,668	—	—
Other:				
Insurance contracts	22,210	—	22,210	—
Total	$ 102,605	$ 80,395	$ 22,210	$ —

	December 31, 2019			
	Total	Level 1	Level 2	Level 3
Cash and cash equivalents	$ 289	$ 289	$ —	$ —
Equity securities:				
U.S. investment funds	23,344	23,344	—	—
International investment funds	15,485	15,485	—	—
Fixed income securities:				
Government securities	14,379	14,379	—	—
Corporate bonds	14,782	14,782	—	—
Investment fund bonds	1,171	1,171	—	—
Other:				
Insurance contracts	18,365	—	18,365	—
Total	$ 87,815	$ 69,450	$ 18,365	$ —

The Company does not expect to contribute to the U.S. pension plans or to the foreign pension plan in 2021.

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

Year	U.S.	Foreign
2021	$ 5,440	$ 272
2022	4,437	287
2023	4,374	322
2024	4,293	351
2025	4,197	393
Years 2026-2030	22,407	2,369

Other Postretirement Benefit Plan

The following tables summarize changes in the benefit obligation, plan assets and funded status of the Company's other postretirement benefit plan as well as the components of net periodic benefit cost, including key assumptions:

	December 31,	
	2020	2019
Change in benefit obligation:		
Benefit obligation at beginning of period	$ 554	$ 780
Service cost	—	10
Interest cost	19	29
Plan amendments	—	(460)
Benefits paid	(2)	(3)
Premiums paid	(3)	(3)
Actuarial (gains) losses	82	201
Benefit obligation at end of period	$ 650	$ 554
Change in plan assets:		
Employer contributions	5	6
Benefits paid	(2)	(3)
Premiums paid	(3)	(3)
Fair value of plan assets at end of period	$ —	$ —
Funded status of the plan (underfunded)	$ (650)	$ (554)

The total actuarial losses for the year ended December 31, 2020 was $82, which was driven by declines in the discount rates of $83, and offset by favorable changes in general demographic experience of $4, which was offset by declines in mortality assumptions of $3.

The total actuarial losses for the year ended December 31, 2019 was $201, which was driven by declines in the discount rates of $148, declines in general demographic experience of $51, and declines in mortality assumptions of $2.

Amounts recognized in the consolidated balance sheets consist of:

	December 31,	
	2020	2019
Current liability	$ (16)	$ (15)
Noncurrent liability	(634)	(539)
Accumulated other comprehensive income	238	109
Net amount recognized	$ (412)	$ (445)

Amounts recognized in accumulated other comprehensive income consist of:

	December 31,	
	2020	2019
Prior service credit	$ 596	$ 828
Net gain	(159)	(78)
Gross amount recognized	437	750
Deferred income taxes	(199)	(641)
Net amount recognized	$ 238	$ 109

Components of net periodic benefit cost consist of:

	Years ended December 31,		
	2020	2019	2018
Service cost	$ —	$ 10	$ 16
Interest cost	19	29	37
Amortization of prior service credit	(232)	(157)	(112)
Amortization of net loss (gain)	1	(11)	(3)
Net periodic benefit	$ (212)	$ (129)	$ (62)

All components of net periodic benefit cost other than service cost are presented within other expense (income), net in the Company's consolidated statements of income.

The discount rate used in determining the other postretirement benefit plan obligation was2.60% and 3.50% as of December 31, 2020 and 2019, respectively. The discount rate used in determining net periodic benefit cost was 3.50%, 4.50% and 4.00% for the years ended December 31, 2020, 2019 and 2018, respectively. There was no rate of interest crediting rate, as there are no cash balance accounts associated with this plan.

Assumed health care cost trend rates were as follows:

	December 31,	
	2020	2019
Immediate trend rate	NA	NA
Ultimate trend rate	NA	NA
Year that the rate reaches ultimatetrend rate	NA	NA

The Company expects to contribute $16 to the retiree health plan in 2021.

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

Year	Amount
2021	$ 16
2022	17
2023	18
2024	19
2025	20
Years 2025-2029	122

There are no expected Medicare subsidy receipts expected in future periods.

Defined Contribution Plans

The Company also has defined contribution plans covering domestic employees of the Company and a foreign subsidiary. The Company recorded expenses of $1,696, $2,930 and $1,484 related to these plans for the years ended December 31, 2020, 2019 and 2018, respectively.

22. Stock-Based Compensation:

In May 2016, the Company adopted an equity incentive plan, namely the PQ Group Holdings Inc. Stock Incentive Plan ("2016 Plan"). Under the terms of the 2016 Plan, the Company was authorized to issue a total of 8,017,038 shares for common stock awards to employees, directors and affiliates of the Company. Immediately preceding the Company's initial public offering ("IPO") as of September 30, 2017, awards with respect to 7,644,518 shares of common stock had been issued under the 2016 Plan.

In connection with the IPO, the Company's board of directors adopted the PQ Group Holdings Inc. 2017 Omnibus Incentive Plan (the "2017 Plan"). Subsequent to the IPO, all equity incentive awards have been granted under the 2017 Plan. The number of shares of common stock reserved for issuance under the 2017 Plan is 7,344,000 shares, which amount was increased by the 372,520 shares remaining available for grant under the 2016 Plan as of the 2017 Plan adoption. Shares that become available for issuance pursuant to the 2016 Plan as a result of forfeiture, cancellation or termination for no consideration will be available for future awards under the 2017 Plan. Shares underlying awards granted under the 2017 Plan that are forfeited, canceled, terminated for no consideration, settled in cash or are withheld for exercise, taxes, etc. will not be deemed as delivered and will also be available for future issuance under the 2017 Plan.

On April 30, 2020, the Company's stockholders approved an amendment and restatement of the 2017 Plan to increase the number of shares available under it by an additional 9,000,000 shares and include more limited share recycling provisions, resulting in fewer shares recycled subsequent to the change. At December 31, 2020, 12,405,315 shares of common stock were available for issuance under the 2017 Plan, after giving effect to the new grants, forfeitures and other activity during the year ended December 31, 2020.

2020 Modifications

As more fully described in Note 8 to these consolidated financial statements, the Company's Board of Directors declared a special cash dividend of $1.80 per share to stockholders of record as of the close of business on December 21, 2020. The dividend declaration also included a dividend equivalent for all unvested restricted stock units, performance stock units and restricted stock awards (collectively, the "awards") as of December 21, 2020 equal to $1.80 per award. Additionally, the Company's Board of Directors approved a reduction in the strike price on all outstanding vested and unvested stock options by the amount of the dividend payment.

Further, with respect to stock options and awards held by employees of Performance Materials at the time of the sale (see Note 4 to these consolidated financial statements), the Company's Board of Directors approved modifications to the post-termination stock option exercise, and stock option and award vesting periods. The modifications provide that all stock options held by Performance Materials employees that were vested as of the date of the sale are eligible to be exercised for a period of one year from the date of the sale, through December 14, 2021. Additionally, modifications to unvested stock options and awards allow holders to continue to vest in those instruments under the original terms of the instruments for a period of one year from the date of sale, through December 14, 2021. The terms of the modifications to the Performance Materials awards are contingent upon the employee providing continued service to the Purchaser.

The modifications impacted all holders of the Company's stock option and awards and resulted in additional stock-based compensation expense of $2,144 for the year ended December 31, 2020. Of this amount, $654 was included in loss from discontinued operations, net of tax on the Company's consolidated statements of income.

Stock Options

Under both the 2016 and 2017 Plans, the Company has issued stock options to purchase PQ Group Holdings common stock as part of its equity incentive compensation program. There are various vesting conditions associated with the stock options issued under the 2016 Plan, including satisfaction of certain service and/or performance based conditions. Under the 2017 Plan, the Company's stock option grants have been subject to graded vesting conditions based on service. The maximum contractual term of the Company's stock options is ten years.

The following table summarizes the activity of common stock options for the period from December 31, 2017 through the year ended December 31, 2020:

	Number of Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2017	2,715,170	$ 10.18		
Granted	241,316	$ 17.50		
Exercised	(15,332)	$ 8.51		
Outstanding at December 31, 2018	2,941,154	$ 10.79		
Exercised	(492,498)	$ 8.07		
Forfeited	(74,299)	$ 8.16		
Outstanding at December 31, 2019	2,374,357	$ 11.44		
Exercised	(43,250)	$ 8.64		
Forfeited	(157,776)	$ 9.23		
Outstanding at December 31, 2020	2,173,331	$ 9.84 (1)	5.94	$ 10,452
Exercisable at December 31, 2020	1,796,519	$ 10.50 (1)	6.00	$ 7,611

(1) Reflects the impact of the reduction in the strike price on all outstanding vested and unvested stock options by $1.80 per share as described above.

The aggregate intrinsic value per the above table represents the difference between the fair value the Company's common stock on the last trading day of the reporting period (determined in accordance with the plan terms) and the exercise price of in-the-money stock options multiplied by the respective number of stock options as of that date. The total intrinsic value of stock options exercised during the year ended December 31, 2019 and the resulting tax benefits recognized by the Company were $3,615; the total intrinsic value of stock options exercised during the years ended December 31, 2020 and 2018 was not material for either year. Additionally, cash proceeds received by the Company from the exercise of stock options were $3,975 during the year ended December 31, 2019 and were not material for the years ended December 31, 2020 and 2018.

There were no stock option awards granted during the years ended December 31, 2020 and 2019.The fair values of PQ Group Holdings common stock options granted during the year ended December 31, 2018 were determined on the respective grant dates using a Black-Scholes option pricing model with the following weighted-average assumptions:

	2018
Expected term (in years)	5.75
Expected volatility	26.38%
Risk-free interest rate	2.86%
Expected dividend yield	0.00%
Weighted average grant date fair value of options granted	$ 5.47

With respect to the stock option awards granted during the year ended December 31, 2018, the Company used the simplified method for plain vanilla stock options to estimate the expected term assumption, since the Company lacked sufficient historical exercise data to provide a reasonable basis upon which to estimate the expected term due to the limited period of time its common stock has been publicly traded. The application of the simplified method involves calculating the average of the time-to-vesting period and the total contractual life of the options. The expected volatility assumption was compared to a range of the actual stock price volatility of a peer group of companies. The risk-free interest rate was based on U.S. Treasury rates in effect at the time of the grant commensurate with the expected term.

Restricted Stock Awards, Restricted Stock Units and Performance Stock Units

The Company has granted restricted stock awards subject to vesting conditions based on (1) service only, (2) performance only, or (3) a combination of service and performance conditions, dependent on which event occurs first. The vesting requirements for the majority of these awards were based upon the achievement of a performance condition. As defined in the award agreements, each award subject to the performance condition fully vests upon the occurrence of a defined liquidity event upon which certain investment funds affiliated with CCMP receive proceeds exceeding certain thresholds. Although achievement of the performance condition is subject to continued service with the Company, the terms of awards issued with performance conditions stipulate that the performance vesting condition can be attained for a period of six months following separation from service under certain circumstances, depending on the means of separation from the Company and subject to other factors such as individual separation agreements. The same performance vesting condition for the Company's restricted stock awards also governs the achievement of the performance vesting condition for the Company's stock options. As of December 31, 2020, all of the Company's outstanding unvested restricted stock awards were subject to the performance vesting condition.

In addition to restricted stock awards, the Company has granted restricted stock units and performance stock units as part of its equity incentive compensation program. Each restricted stock unit provides the recipient with the right to receive a share of common stock subject to graded vesting terms based on service, which generally requires one year of service for members of the Company's board of directors and three years of service for employees. The value of the restricted stock units granted by the Company is based on the average of the high and low trading prices of the Company's common stock on the NYSE on the preceding trading day, in accordance with the Company's policy for valuing such awards. Compensation expense related to the restricted stock units is recognized on a straight-line basis over the respective vesting period.

The Company granted performance stock units during the year ended December 31, 2019, which provide the recipients with the right to receive shares of common stock dependent on the achievement of two Company-specific financial performance targets and the provision of service through the vesting date. Attainment of the metrics is measured based on the average levels of achievement across the three-year period from January 1, 2019 through December 31, 2021. Depending on the Company's performance against the pre-determined thresholds for achievement, each performance stock unit award holder is eligible to earn a percentage of the target number of shares granted to the holder, ranging from zero to 200%. The performance stock units, to the extent earned, will vest on the date the Company's compensation and governance committee certifies the achievement of the performance metrics for the three-year period ending December 31, 2021, which will occur subsequent to the end of the performance period but before the Company files its annual consolidated financial statements for the year then ended.

The Company also granted performance stock units during the year ended December 31, 2020. The performance stock units granted in 2020 provide the recipients with the right to receive shares of common stock dependent 50% on the achievement of a Company-specific financial performance target and 50% on a total shareholder return ("TSR") goal, and are generally subject to the provision of service through the vesting date of the award. The Company-specific financial performance target and the TSR goal are measured independently of each other, but achievement of both of the metrics is measured based on the same three-year performance period from January 1, 2020 through December 31, 2022. The TSR goal is based on the Company's relative TSR performance against the companies included in the Russell 2000 Index over the performance period. Achievement of the Company-specific financial performance target is measured based on the average levels of achievement across the performance period. Depending on the Company's performance against the predetermined thresholds for achievement, each performance stock unit award recipient is eligible to earn a percentage of the target number of shares granted to the recipient, ranging from zero to 200%. The performance stock units, to the extent earned, will vest on the date the Company's compensation and governance committee certifies the achievement of the performance metrics for the three-year period ending December 31, 2022, which will occur subsequent to the end of the performance period but before the Company files its annual consolidated financial statements for the year then ended.

The value of the portions of the performance stock units granted during the years ended December 31, 2020 and 2019 eligible to be earned based on the achievement of the Company-specific financial performance targets was measured on the same basis as that of the restricted stock units, and based on the target number of shares granted; because the performance vesting conditions affect the ability of the recipients to vest in the awards, they are not factored into the fair value measure of the award. Compensation expense related to such performance stock units is recognized ratably over the requisite service period, and the Company must assess the probability that the performance conditions will be met each reporting period and the level at which they are estimated to be attained. Should the probability assessment change during a given reporting period, the total compensation cost (both recognized and unrecognized) will be adjusted to reflect the revised assessment.

The TSR goal, which determines how much of the 50% of the performance stock units granted during 2020 may be earned, is considered a market condition as opposed to a vesting condition. Because a market condition is not considered a vesting condition, it is reflected in the grant date fair value of an award and the associated compensation cost based on the fair value of the award is recognized over the performance period, regardless of whether the Company actually achieves the market condition or the level of achievement, as long as service is provided by the recipient. The Company used a Monte Carlo simulation to estimate the fair value of the portion of the awards subject to the TSR goal. The following table provides the assumptions used to determine the grant date fair value of the market condition-dependent / TSR goal-based portion of the Company's performance stock units granted during 2020 using a Monte Carlo simulation:

Expected dividend yield	— %
Risk-free interest rate	1.56%
Expected volatility	28.57%
Expected term (in years)	2.95
Grant date fair value	$24.11

The following table summarizes the activity of restricted stock awards, restricted stock units and performance stock units for the period from December 31, 2017 through the year ended December 31, 2020:

	Restricted Stock Awards		Restricted Stock Units		Performance Stock Units	
	Number of Shares	Weighted Average Grant Date Fair Value (per share)	Number of Units	Weighted Average Grant Date Fair Value (per share)	Number of Units	Weighted Average Grant Date Fair Value (per share)
Nonvested as of December 31, 2017	2,096,637	$ 8.87	1,654,690	$ 16.97	—	$ —
Granted	14,498	$ 13.80	161,598	$ 16.12	—	$ —
Vested	(223,298)	$ 12.18	(797,859)	$ 16.97	—	$ —
Forfeited	(117,177)	$ 8.04	(19,643)	$ 16.97	—	$ —
Nonvested as of December 31, 2018	1,770,660	$ 8.39	998,786	$ 16.83	—	$ —
Granted	—	$ —	1,245,628	$ 15.42	550,676	$ 15.41
Vested	(97,140)	$ 12.32	(541,383)	$ 16.68	—	$ —
Forfeited	(127,390)	$ 8.04	(74,595)	$ 16.09	—	$ —
Nonvested as of December 31, 2019	1,546,130	$ 8.17	1,628,436	$ 15.83	550,676	$ 15.41
Granted	—	$ —	1,158,605	$ 16.60	456,311	$ 20.29
Vested	(29,760)	$ 12.32	(816,866)	$ 16.17	—	$ —
Forfeited	(619,355)	$ 8.04	(129,036)	$ 16.28	(41,251)	$ 15.95
Nonvested as of December 31, 2020	897,015	$ 13.80 (1)	1,841,139	$ 16.14	965,736	$ 17.69

(1) Reflects the impact of the modification on all unvested restricted stock awards as described above.

The total fair value of restricted stock awards that vested during the years ended December 31, 2020, 2019 and 2018 was $10, $1,543 and $3,493, respectively. The total fair value of restricted stock units that vested during the years ended December 31, 2020, 2019 and 2018 was $11,269, $8,493 and $13,628, respectively. None of the Company's performance stock units vested during the years ended December 31, 2020, 2019 and 2018.

Total Stock-Based Compensation Expense

For the years ended December 31, 2020, 2019 and 2018, total stock-based compensation expense for the Company on a continuing operations basis was $17,194, $13,281 and $16,899, respectively. The associated income tax benefit recognized in the statements of income for the years ended December 31, 2020, 2019 and 2018 was $3,933, $3,182 and $4,349, respectively.

As of December 31, 2020, there was no unrecognized compensation cost related to nonvested stock options or nonvested restricted stock awards subject to service vesting conditions. As of December 31, 2020, there was $20,511 of total unrecognized compensation cost related to nonvested restricted stock units and $10,982 of total unrecognized compensation cost related to nonvested performance stock units considered probable of vesting, which include costs for both continuing and discontinued operations. The weighted-average period over which these costs are expected to be recognized at December 31, 2020 is 1.59 years for the restricted stock units and1.63 years for the performance stock units. No expense has been recognized for any restricted stock awards or stock options subject to the performance condition for the years ended December 31, 2020, 2019 and 2018, as the performance-based criteria was not achieved nor considered probable of achievement.

Restricted stock awards and stock options issued with performance conditions vest based on the occurrence of a defined liquidity event upon which certain investment funds affiliated with CCMP receive proceeds exceeding certain thresholds. All of the Company's equity incentive awards with performance-based vesting, whether in the form of stock options or restricted stock awards, are subject to achievement of the same performance condition. If an exit event occurs that exceeds the defined threshold, then all performance-based awards of the Company vest 100%, with no potential for partial vesting or excess achievement. If an exit event or events occur with no further possibility of meeting the defined threshold, then all of the Company's awards subject to the performance vesting condition will be forfeited. In addition to the defined liquidity event, subsequent to the Company's IPO, the performance vesting condition can also be achieved if the average closing trading price of the Company's common stock on the NYSE over any consecutive ten-day trading period equals or exceeds a price that would be equivalent to the achievement of the threshold proceeds to CCMP. See Note 23 to these consolidated financial statements for further information on the number of awards outstanding subject to performance-based vesting.

23. Earnings per Share:

Basic earnings per share is calculated as income (loss) available to common stockholders, divided by the weighted average number of common shares outstanding during the period. The weighted average number of common shares outstanding during the period for the computation of basic earnings per share excludes restricted stock awards that have legally been issued but are nonvested during the period, as the sale of these shares is prohibited pending satisfaction of certain vesting conditions by the award recipients in order to earn the rights to the shares (see Note 22 to these consolidated financial statements for further information regarding outstanding nonvested restricted stock awards).

Diluted earnings per share is calculated as income (loss) available to common stockholders, divided by the weighted average number of common and potential common shares outstanding during the period, if dilutive. Potential common shares reflect (1) unvested restricted stock awards and restricted stock units with service vesting conditions, (2) performance stock units with vesting conditions considered probable of achievement and (3) options to purchase common stock, all of which have been included in the diluted earnings per share calculation using the treasury stock method.

The reconciliation from basic to diluted weighted average shares outstanding is as follows:

	Years ended December 31,		
	2020	2019	2018
Weighted average shares outstanding – Basic	135,528,977	134,389,667	133,380,567
Dilutive effect of unvested common shares and restricted stock units with service conditions, performance stock units considered probable of vesting and assumed stock option exercises and conversions	921,976	1,159,027	1,304,364
Weighted average shares outstanding – Diluted	136,450,953	135,548,694	134,684,931

Basic and diluted earnings per share are calculated as follows:

	Years ended December 31,		
	2020	2019	2018
Numerator:			
Net (loss) income attributable to Ecovyst Inc.	$ (278,771)	$ 79,539	$ 58,300
Denominator:			
Weighted average shares outstanding – Basic	135,528,977	134,389,667	133,380,567
Weighted average shares outstanding – Diluted	136,450,953	135,548,694	134,684,931
Net (loss) income per share:			
Basic (loss) income per share	$ (2.06)	$ 0.59	$ 0.44
Diluted (loss) income per share	$ (2.04)	$ 0.59	$ 0.43

The table below presents the details of the Company's weighted average equity-based awards outstanding during each respective year that were excluded from the calculation of diluted earnings per share:

	Years ended December 31,		
	2020	2019	2018
Restricted stock awards with performance only targets not yet achieved	1,225,855	1,584,980	1,643,760
Stock options with performance only targets not yet achieved	507,461	558,283	586,253
Anti-dilutive restricted stock awards, restricted stock units and performance stock units	1,453,120	—	5,162
Anti-dilutive stock options	846,049	863,063	717,612

Restricted stock awards and stock options with performance only vesting conditions are not included in the dilution calculation, as the performance targets have not been achieved nor were probable of achievement as of the end of the respective periods. Certain stock options to purchase shares of common stock were excluded from the computation of diluted earnings per share for the respective periods, because the combination of the options' exercise price and remaining unamortized stock-based compensation expense was greater than the average market price of the common shares. Anti-dilutive awards are not included in the dilution calculation, as their inclusion would have the effect of increasing diluted income per share.

24. Commitments and Contingent Liabilities:

Environmental Contingencies

There is a risk of environmental impact in chemical manufacturing operations. The Company's environmental policies and practices are designed to comply with existing laws and regulations and to minimize the possibility of significant environmental impact. The Company is also subject to various other lawsuits and claims with respect to matters such as governmental regulations, labor and other actions arising out of the normal course of business. All claims that are probable and reasonably estimable have been accrued for in the Company's consolidated financial statements, some of which are described in detail within this note. When these matters are ultimately concluded and determined, the Company believes that there will be no material adverse effect on its consolidated financial position, results of operations or liquidity.

The Company has recorded a reserve of $510 and $770 as of December 31, 2020 and 2019, respectively, to address remaining subsurface remedial and wetlands/marsh management activities at the Company's Martinez, CA site. Although currently a sulfuric acid regeneration plant, the site originally was operated by Mountain Copper Company ("Mococo") as a copper smelter. Also, the site sold iron pyrite to various customers and allowed their customers to deposit waste iron pyrite cinder and slag on the site. The property is adjacent to Peyton Slough, where Mococo had a permitted discharge point from its process. In 1997, the San Francisco Bay Regional Water Quality Control Board ("RWQCB") required characterization and remediation of Peyton Slough for Copper, Zinc and Acidic Soils. Various remediation activities were undertaken and completed, and the site has received final concurrence from the Army Corps with respect to the completed work. The RWQCB has agreed that Eco Services LLC, a wholly owned subsidiary of the Company ("Eco Services"), has achieved the goals for vegetative cover. The current marsh condition is being sustained by the opening and subsequent closing of the tide gates on a once per year basis. The Company is continuing to indicate to the RWQCB a plan to involve Contra Costa County and work towards development of an alliance for operating, maintaining and funding the tide gates is appropriate. The Company is currently in the process of obtaining permits for the long-term maintenance of Peyton Slough.

As of December 31, 2020 and 2019, the Company has recorded a reserve of $427 and $709, respectively, for subsurface remediation and the Soil Vapor Extraction Project at the Company's Dominguez, CA site. In the 1980s and 1990s, the EPA and the Los Angeles Regional Water Quality Control Board conducted investigations of the site due to historic chlorinated pesticide and chlorinated solvent use. Soil and groundwater beneath the site were impacted by chlorinated solvents and associated breakdown products, petroleum hydrocarbons, chlorinated pesticides and metals. A Corrective Measures Plan approved in October 2011 requires (1) soil vapor extraction ("SVE") in affected areas, (2) covering of unpaved areas containing pesticide impacted soil, and (3) annual groundwater monitoring of the perched water-bearing zone. Annual groundwater sampling and soil vapor monitoring indicates that the SVE system has been effective in reducing subsurface contaminant levels. The Company is moving in the direction of rendering the SVE system dormant and potentially closing this matter within the next few years following rebound testing, including the preparation of an updated long-term Operations and Maintenance Plan as requested by the California Department of Toxic Substances Control.

Letters of Credit

At December 31, 2020, the Company had outstanding letters of credit of $18,190. Letters of credit are guarantees of payment to third parties. The Company's letters of credit are used primarily as collateral for various items, including environmental, energy and insurance payments. The letters of credit are supported by the Company's ABL facility.

25. Long-term Supply Contract:

As part of Solvay USA, Inc.'s ("Solvay") 2004 sale of its Specialty Phosphates business, Solvay agreed to continue to supply sulfuric acid to a customer in support of the phosphoric acid production for its specialty phosphates business under a preexisting supply agreement. On July 30, 2014, Eco Services entered into an Asset Purchase Agreement with Solvay which provided for the sale, transfer and assignment by Solvay and the acquisition, acceptance and assumption by Eco Services, of substantially all of the assets of Solvay's Eco Services business unit of Solvay's regeneration and virgin sulfuric acid production business operations in the United States (the "2014 Acquisition"). This non-cancelable agreement extends to 2031, and was assumed by the Company in connection with the 2014 Acquisition.

The liability associated with this unfavorable supply agreement was recorded at a fair value of $27,300 in connection with the 2014 Acquisition. The fair value was determined using the income method based on the differential of the estimated margin over the cost of the sulfuric acid per the market as compared to the below market margin included in the supply agreement, and the application of this excess differential to the anticipated volumes over the term of the agreement using a commensurate discount rate. In December 2018, the customer to the supply agreement ceased production and closed the facility which utilized the Company's sulfuric acid under the agreement. As such, all orders for sulfuric acid under the agreement were discontinued in December 2018. Although the agreement is not cancelable, the likelihood is remote that the Company will be further obligated to supply the customer under the agreement since this is the only facility subject to the agreement, and there are no transfer or substitution rights under the agreement to another facility. As a result, the Company wrote-off the remaining supply contract liability of $20,612 at December 31, 2018 and recorded a corresponding gain to other operating expense, net for the year ended December 31, 2018.

26. Related Party Transactions:

The Company maintains certain policies and procedures for the review, approval and ratification of related party transactions to ensure that all transactions with selected parties are fair, reasonable and in the Company's best interests. All significant relationships and transactions are separately identified by management if they meet the definition of a related party or a related party transaction. Related party transactions include transactions that occurred during the year, or are currently proposed, in which the Company was or will be a participant, and for which any related person had or will have a direct or indirect material interest. All related party transactions are reviewed, approved and documented by the appropriate level of the Company's management in accordance with these policies and procedures.

Joint Venture Agreement

The Company entered into a joint venture agreement (the "ZI Partnership Agreement") in 1988 with Shell Catalysts & Technologies, an affiliate of Royal Dutch Shell plc, to form Zeolyst International, a 50/50 joint venture partnership (the "Partnership"). Under the terms of the ZI Partnership Agreement, the Partnership leases certain land used in its Kansas City production facilities from PQ Corporation. This lease, which has been recorded as an operating lease, provided for rental payments to the Company of $310, $305 and $295 during the years ended December 31, 2020, 2019 and 2018, respectively. The terms of this lease are evergreen as long as the ZI Partnership Agreement is in place. The Partnership recognized sales to the Company's former Performance Materials business of $861, $803 and $645 during the years ended December 31, 2020, 2019 and 2018, respectively.

The Partnership purchases certain of its raw materials from the Company and is charged for various manufacturing costs incurred at the Company's Kansas City production facility. The amount of these costs charged to the Partnership were $16,065, $19,976 and $16,869 for the years ended December 31, 2020, 2019 and 2018, respectively. Certain administrative, marketing, engineering, management-related, and research and development services are provided to the Partnership by the Company. During the years ended December 31, 2020, 2019 and 2018, the Partnership was charged $12,229, $12,871 and $12,727, respectively, for these services. In addition, the Partnership was charged certain product demonstration costs of $1,853, $2,204 and $1,768 during the years ended December 31, 2020, 2019 and 2018, respectively. These charges to the Partnership are recorded as reductions in either cost of goods sold or selling, general and administrative expenses in the consolidated statements of income, depending on the nature of the expenditures.

Other

From time to time, the Company makes sales to and purchases raw materials from portfolio companies of funds that are affiliated with CCMP and companies that are affiliated with INEOS Capital Partners. The Company had sales of $11,212, $4,154 and $5,664 to companies affiliated with INEOS Capital Partners during the years ended December 31, 2020, 2019, and December 31, 2018 respectively. The Company did not purchase raw materials from companies affiliated with INEOS Capital Partners during the years ended December 31, 2020, 2019, and December 31, 2018 respectively.

27. Quarterly Financial Summary (Unaudited):

The following tables summarize the Company's quarterly financial results during the years ended December 31, 2020 and 2019:

	2020			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales	$ 125,554	$ 115,641	$ 130,675	$ 124,050
Gross profit	37,704	34,872	40,831	37,546
Operating income	11,974	9,845	18,754	10,993
Net income (loss) from continuing operations	(3,347)	34,317	(22,658)	45,968
Net income (loss) from discontinued operations, net of tax	3,856	(18,071)	30,470	(352,239)
Net (loss) income	509	16,246	7,812	(306,271)
Less: Net (loss) income attributable to the noncontrolling interest - discontinued operations	285	321	298	(3,837)
Net income (loss) attributable to Ecovyst Inc.	224	15,925	7,514	(302,434)
Earnings (loss) per common share - basic				
Continuing operations	$ (0.03)	$ 0.25	$ (0.17)	$ 0.34
Discontinued operations	$ 0.03	$ (0.13)	$ 0.23	$ (2.57)
Net earnings (loss) per share - basic	$ —	$ 0.12	$ 0.06	$ (2.23)
Earnings (loss) per common share - diluted:				
Continuing operations	$ (0.03)	$ 0.25	$ (0.17)	$ 0.34
Discontinued operations	$ 0.03	$ (0.13)	$ 0.23	$ (2.56)
Net earnings (loss) per share - diluted	$ —	$ 0.12	$ 0.06	$ (2.22)
Weighted average shares outstanding:				
Basic	135,240,897	135,083,126	135,106,969	135,406,081
Diluted	135,240,897	135,671,830	135,106,969	136,284,272

	2019			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales	$ 121,709	$ 138,148	$ 143,947	$ 128,943
Gross profit	33,895	45,034	49,984	38,297
Operating income	11,650	18,346	24,811	11,160
Net income from continuing operations	(406)	7,330	14,264	9,932
Net income (loss) from discontinued operations, net of tax	3,850	23,393	12,546	9,401
Net income	3,444	30,723	26,810	19,333
Less: Net income attributable to the noncontrolling interest - discontinued operations	290	145	106	230
Net income attributable to Ecoyvst Inc.	3,154	30,578	26,704	19,103
Earnings (loss) per common share - basic:				
Continuing operations	$ —	$ 0.06	$ 0.11	$ 0.07
Discontinued operations	$ 0.02	$ 0.17	$ 0.09	$ 0.07
Net earnings per share - basic	$ 0.02	$ 0.23	$ 0.20	$ 0.14
Earnings (loss) per common share - diluted:				
Continuing operations	$ —	$ 0.06	$ 0.11	$ 0.07
Discontinued operations	$ 0.02	$ 0.17	$ 0.09	$ 0.07
Net earnings per share - diluted	$ 0.02	$ 0.23	$ 0.20	$ 0.14
Weighted average shares outstanding:				
Basic	133,946,308	134,142,552	134,511,819	134,912,212
Diluted	133,946,308	135,323,024	135,649,710	136,151,739

28. Supplemental Cash Flow Information:

The following table presents supplemental cash flow information for the Company, which includes activity from both continuing and discontinued operations:

	Years ended December 31,		
	2020	2019	2018
Cash paid during the year for:			
Income taxes, net of refunds	$35,013	$ 17,406	$ 23,842
Interest[(1)]	90,291	117,775	110,834
Non-cash investing activity[(2)]:			
Capital expenditures acquired on account but unpaid as of the year end	16,245	27,155	23,498

(1) Cash paid for interest is shown net of capitalized interest for the periods presented and excludes $4,963 and $8,480 of net interest proceeds on swaps designated as net investment hedges for the years ended December 31, 2020 and 2019, respectively, which are included within cash flows from investing activities, discontinued operations in the Company's consolidated statements of cash flows.

(2) For the supplemental non-cash information on lease liabilities arising from obtainingright-of-use lease assets, see Note 13 to these consolidated financial statements for additional details.

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets as of December 31, 2020, 2019 and 2018 to the total of the same amounts shown in the consolidated statements of cash flows for the years then ended:

	December 31,		
	2020	2019	2018
Cash and cash equivalents	$113,377	$36,125	$27,397
Restricted cash included in prepaid and other current assets	1,640	1,287	1,363
Total cash, cash equivalents and restricted cash shown in the consolidated statements of cash flows	$115,017	$37,412	$28,760

29. Subsequent Events:

Chem32 Acquisition

On February 24, 2021, the Company completed the acquisition of Chem32, a leading supplier of catalystpre-activation services, for a purchase price of $44,000, subject to customary purchase price adjustments as set forth in the agreement.

Events Subsequent to Original Issuance of Financial Statements (Unaudited)

Sale of the Company's Performance Chemicals Business

On February 28, 2021, the Company announced that it entered into a definitive agreement to sell its Performance Chemicals business for a purchase price of $1,100,000, subject to certain adjustments set forth in the agreement. The Company completed the sale of its Performance Chemicals business effective August 1, 2021. The Company used a portion of the net cash proceeds to repay the entire Senior Secured Term Loan Facility due February 2027 of $231,363 and the 5.750% Senior Notes due 2025 of $295,000. The 5.750% Senior Notes due 2025 were redeemed at a redemption price equal to the sum of 102.875% of the principal amount outstanding plus accrued and unpaid interest to, but excluding, August 2, 2021. Additionally, the Company's Board declared a special cash dividend of $3.20 per share, payable on August 23, 2021 to shareholders of record as of the close of business on August 12, 2021. See Note 5 for more information on the transaction.

The final loss on the sale of the Performance Chemicals business was $157,539, which is included in net (loss) income from discontinued operations, net of tax in the Company's condensed consolidated statements of income for the nine months ended September 30, 2021. In connection with the sale of the Performance Chemicals business and the related loss, the Company has recognized a tax benefit of $33,052 within net loss from discontinued operations, net of tax on the condensed consolidated statement of income.

Settlement of the Company's Cross Currency Swaps

In March 2021, as a result of the Performance Materials and Performance Chemicals divestitures, the Company settled its cross-currency swaps. At the date of settlement, the total notional value of the cross-currency swaps was $311,380. The Company paid $13,170 in cash to settle the swaps.

2021 Term Loan Facility

In June 2021, PQ Corporation ("PQ Corp"), an indirect, wholly owned subsidiary of Ecovyst prior to the closing of the sale of the Performance Chemicals business, and Ecovyst Catalyst Technologies LLC ("Ecovyst LLC" and, following the closing of the sale of the Performance Chemicals business, the "Borrower"), an indirect, wholly owned subsidiary of the Company, entered into an agreement for a new senior secured term loan facility in an aggregate principal amount of $900,000 with an original issue discount of0.25% and interest at a floating rate of LIBOR (with a0.5% minimum LIBOR floor) plus 2.75% per annum (or, depending on the Borrower's first lien net leverage ratio,2.5%). The proceeds were used to pay in full the 2020 Term Loan Facility, partially pay the 2016 Term Loan Facility and pay the associated fees and expenses. The new senior secured term loan facility requires scheduled quarterly amortization payments, equal to 0.25% of the original principal amount of the loans under the new senior secured term loan facility.

ABL Facility

In June 2021, PQ Corp also entered into a third amendment agreement (the "ABL Amendment"), which amended its ABL Credit Agreement, dated as of May 4, 2016 (the "ABL Credit Agreement" and, as amended by the ABL Amendment, the "Amended ABL Credit Agreement"). The ABL Amendment amended the ABL Credit Agreement to, among other things, following the sale of Performance Chemicals, decrease the aggregate amount of revolving loan commitments available to the borrowers thereunder by an aggregate amount of $150,000 to $100,000, consisting of $90,000 in U.S. commitments and $10,000 in European commitments and extended the maturity date with respect to borrowings under the Amended ABL Credit Agreement to August 2, 2026.

Interest Rate Cap Novation

In August 2021, PQ Corporation novated $900,000 of its interest rate caps to Ecovyst Catalyst Technologies LLC. Other than the novation, there were no other changes to the interest rate cap. Refer to Note 19 for additional information.

Other than these items, the Company has evaluated subsequent events since the balance sheet date and determined that there are no additional matters to disclose.

SCHEDULE I
ECOVYST INC. AND SUBSIDIARIES (PARENT)
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONDENSED FINANCIAL INFORMATION
CONDENSED STATEMENTS OF INCOME
(in thousands)

In process

	Years ended December 31,		
	2020	2019	2018
Stock compensation expense	$ 25,200	$ 18,225	$19,464
Equity in net loss (income) from subsidiaries	253,571	(97,764)	(77,764)
Net (loss) income	(278,771)	79,539	58,300
Other comprehensive income (loss), net of tax:			
Pension and postretirement benefits	1,938	2,430	(7,958)
Net gain (loss) from hedging activities	166	(2,665)	(330)
Foreign currency translation	(16,596)	22,117	(35,127)
Total other comprehensive (loss) income	(14,492)	21,882	(43,415)
Comprehensive (loss) income	$(293,263)	$101,421	$14,885

See accompanying notes to condensed financial statements.

SCHEDULE I
ECOVYST INC. AND SUBSIDIARIES (PARENT)
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONDENSED FINANCIAL INFORMATION
CONDENSED BALANCE SHEETS
(in thousands, except share and per share amounts)

	December 31, 2020	December 31, 2019
ASSETS		
Investment in subsidiaries	$ 1,277,126	$ 1,779,450
Total assets	$ 1,277,126	$ 1,779,450
LIABILITIES		
Total liabilities	$ —	$ —
STOCKHOLDERS' EQUITY		
Common stock (0.01 par); authorized shares 450,000,000; issued shares 137,102,143 and 136,861,382 on December 31, 2020 and 2019, respectively; outstanding shares 136,318,557 and 136,464,961 on December 31, 2020 and 2019, respectively	1,371	1,369
Preferred stock (0.01 par); authorized shares 50,000,000; no shares issued or outstanding on December 31, 2020 and 2019, respectively	—	—
Additional paid-in capital	1,477,859	1,696,899
(Accumulated deficit) retained earnings	(175,758)	103,013
Treasury stock, at cost; shares 783,586 and 396,421 on December 31, 2020 and 2019, respectively	(11,081)	(6,483)
Accumulated other comprehensive loss	(15,265)	(15,348)
Total Ecovyst Inc. equity	1,277,126	1,779,450
Total liabilities and equity	$ 1,277,126	$ 1,779,450

See accompanying notes to condensed financial statements.

SCHEDULE I
ECOVYST INC. AND SUBSIDIARIES (PARENT)
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONDENSED FINANCIAL INFORMATION
CONDENSED STATEMENTS OF CASH FLOWS
(in thousands)

	Years ended December 31,		
	2020	2019	2018
Cash flows from operating activities:			
Net (loss) income	$(278,771)	$ 79,539	$ 58,300
Adjustments to reconcile net income to net cash provided by operating activities:			
Equity in net income from subsidiaries	253,571	(97,764)	(77,764)
Stock compensation expense	25,200	18,225	19,464
Net cash provided by operating activities	—	—	—
Cash flows from investing activities:			
Distribution from subsidiaries	243,779	—	—
Net cash provided by investing activities	243,779	—	—
Cash flows from financing activities:			
Dividends paid to stockholders	(243,779)	—	—
Net cash used in financing activities	(243,779)	—	—
Effect of exchange rate changes on cash, cash equivalents and restricted cash	—	—	—
Net change in cash, cash equivalents and restricted cash	—	—	—
Cash, cash equivalents and restricted cash at beginning of period	—	—	—
Cash, cash equivalents and restricted cash at end of period of continuing operations	$ —	$ —	$ —

See accompanying notes to condensed financial statements.

SCHEDULE I
ECOVYST INC. AND SUBSIDIARIES (PARENT)
(formerly known as PQ GROUP HOLDINGS INC. AND SUBSIDIARIES)
CONDENSED FINANCIAL INFORMATION
NOTES TO CONDENSED SCHEDULE I

1. Description of Ecovyst Inc. and Subsidiaries

Ecovyst Inc. ("Ecovyst" or the "Parent Company") is a holding company that conducts substantially all of its business operations through its wholly owned subsidiary, Ecovyst Catalyst Technologies LLC. As specified in certain of Ecovyst Catalyst Technologies LLC's debt agreements entered into concurrently with a series of transactions to reorganize and combine the businesses of PQ Holdings Inc. and Eco Services Operations LLC in May 2016 (the "Business Combination"), as subsequently amended and restated, there are restrictions on the ability of Ecovyst Catalyst Technologies LLC to make payments to its stockholder, Ecovyst, on behalf of its equity interests (refer to Note 17 to the Ecovyst consolidated financial statements for further information regarding Ecovyst debt).

2. Basis of Presentation

The accompanying condensed Parent Company financial statements are required in accordance with Rule4-08(e)(3) of Regulation S-X. These condensed financial statements have been presented on a "parent-only" basis. Under a parent-only presentation, the Parent Company's investment in its consolidated subsidiary is presented under the equity method of accounting. Under the equity method, the investment in subsidiary is stated at cost plus contributions and equity in undistributed income (loss) of the subsidiary, less distributions received since the date of acquisition. For purposes of presenting net income, this presentation assumes that the Parent Company was in existence for the full year ended December 31, 2016, the year of the Business Combination. These parent-only financial statements should be read in conjunction with Ecovyst's audited consolidated financial statements.

3. Stock-Based Compensation

Refer to Note 22 of the notes to the Ecovyst consolidated financial statements for a description of stock-based compensation.

4. Dividends Paid

On December 14, 2020, the Company's Board of Directors declared a special cash dividend of $1.80 per share, using after tax cash proceeds and cash on hand from the sale of the Performance Materials business. The dividend was paid on December 29, 2020 to the Company's stockholders of record at the close of business on December 21, 2020.