



2021

ANNUAL REPORT

GRAFTech
International

ABOUT GRAFTECH

GrafTech International Ltd. is a leading manufacturer of high-quality graphite electrode products essential to the production of electric arc furnace steel and other ferrous and non-ferrous metals. We believe that we have the most competitive portfolio of low-cost ultra-high power graphite electrode manufacturing facilities in the industry, including three of the highest capacity facilities in the world. We are the only large scale graphite electrode producer that is substantially vertically integrated into petroleum needle coke, a key raw material for graphite electrode manufacturing. This unique position provides us with competitive advantages in product quality and cost.



Founded in 1886, we have over 135 years of experience in the research and development of graphite- and carbon-based solutions, and our intellectual property portfolio is extensive. Headquartered in Brooklyn Heights, Ohio, GrafTech has more than 1,350 employees globally, with manufacturing facilities and sales offices operating in 11 countries, serving customers in over 50 countries.

Graphite electrodes are an industrial consumable product used primarily in electric arc furnace steel production, one of the two primary methods of steel production and the steelmaking technology used by all “mini mills.” Electrodes act as conductors of electricity in the furnace, generating sufficient heat to melt scrap metal, iron ore, or other raw materials used to produce steel or other metals. We estimate that, on average, the cost of graphite electrodes represents less than 5% of the total production cost of steel in a

typical electric arc furnace, but they are essential to electric arc furnace steel production. Importantly, electric arc furnace steelmaking is more environmentally friendly than blast furnace steelmaking.

The electric arc furnace method produces approximately 25% of the carbon dioxide emissions of a blast furnace facility* and does not require the smelting of virgin iron ore or the consumption of coal.

Petroleum needle coke is the key raw material we use in the production of graphite electrodes. We are substantially vertically integrated into this critical raw material source, significantly reducing our reliance on other suppliers. We believe we are one of the largest petroleum needle coke producers in the world. We also believe that the quality of our petroleum needle coke, controlled to exacting specifications, is superior for graphite electrode production compared to most of the petroleum needle coke available to our peers on the open market. This allows GrafTech to produce high-quality electrodes in a cost efficient manner.



*Statement from the Steel Manufacturers Association

FINANCIAL HIGHLIGHTS

Key Financial Measures (in millions, except per share amounts)

	2020	2021
Net sales	\$1,224	\$1,346
Net income	\$434	\$388
Earnings per share ⁽¹⁾	\$1.62	\$1.46
Adjusted EBITDA ⁽²⁾	\$659	\$670

Highlights

Sales volume (in thousand metric tons) ⁽³⁾	135	167
Production volume (in thousand metric tons) ⁽⁴⁾	134	165
Capital expenditures (in millions)	\$36	\$58

Net Sales
(in millions)



Earnings per Share ⁽¹⁾



Adjusted EBITDA ⁽²⁾
(in millions)

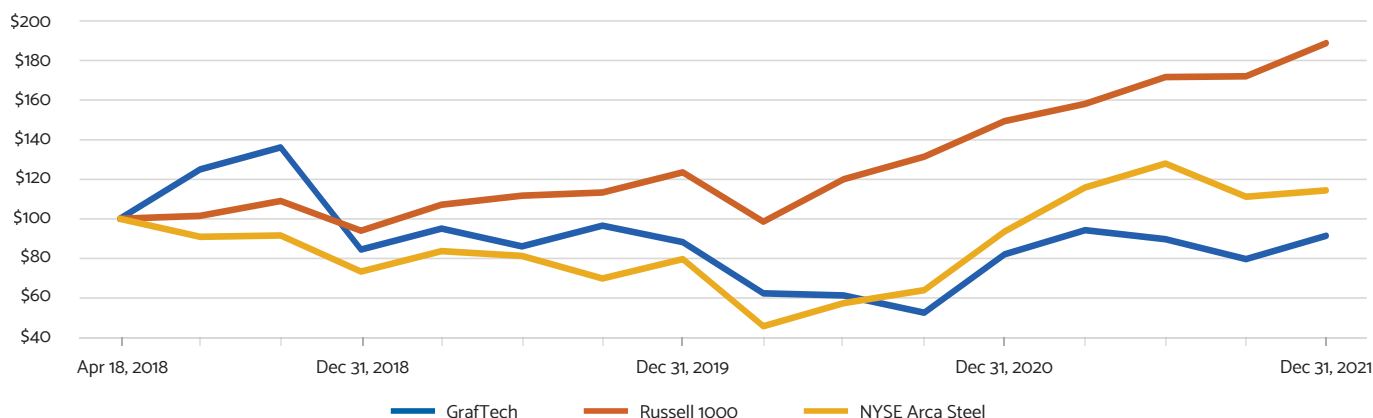


Sales Volume ⁽³⁾
(in thousand metric tons)



Stock Performance

The following graph compares the cumulative total shareholder returns of our common shares, the Russell 1000 index and the NYSE Arca Steel index, with dividends assumed to be reinvested when received. The graph assumes the investing of \$100 from April 18, 2018 (the date of our initial public offering) through December 31, 2021. The performance reflected below is not necessarily indicative of future performance.



⁽¹⁾ Earnings per share represents diluted earnings per share.

⁽²⁾ Non-GAAP financial measure, see page 40 of the enclosed Annual Report on Form 10-K for the year ended December 31, 2021 for information and a reconciliation of net income, the most directly comparable financial measure calculated and presented in accordance with GAAP, to adjusted EBITDA.

⁽³⁾ Sales volume reflects only graphite electrodes manufactured by GrafTech.

⁽⁴⁾ Production volume reflects graphite electrodes we produced during the period.

LETTER TO STOCKHOLDERS



David J. Rintoul
Chief Executive Officer and President

Our performance reflects the dedication and hard work of the more than 1,350 members of our global team, and I thank them for their ongoing commitment. I would also like to thank our loyal customers, suppliers, communities and stockholders for their continued support.

2021 Results

Health and safety excellence is a core value at GrafTech and fundamental to everything we do. As people are our most important asset, we firmly believe that getting health and safety right leads to us doing business right. In 2021, our total recordable injury rate was 0.49, a modest improvement over 2020. Importantly, this was nearly half of our pre-pandemic levels. We remain steadfast in our efforts to achieve our ultimate goal of every employee going home safely every day.

We were also pleased to deliver another year of strong financial results, as we capitalized on improved industry trends and our competitive advantages. In 2021, our sales volume of 167 thousand metric tons was a 24% increase compared to 2020. For the year, we generated \$388 million of net income⁽¹⁾, \$1.46 of earnings per share, and \$670 million of adjusted EBITDA⁽²⁾, which resulted in an adjusted EBITDA margin⁽³⁾ of 50%. Additionally, we converted 68% of our adjusted EBITDA into adjusted free cash flow⁽⁴⁾ of \$456 million.

A significant portion of our cash flow was utilized to further strengthen our balance sheet and enhance our financial flexibility, as we reduced debt by \$400 million during 2021. At the same time, we returned \$61 million to our stockholders, through the repurchase of common shares and the payment of quarterly dividends. As we enter 2022, we remain committed to a disciplined capital allocation strategy. We expect to continue to reduce debt to further improve our strategic flexibility. We also anticipate returning capital to our stockholders and will continue to invest in our business.

Lastly, we are proud of the progress we made across the organization in 2021 towards our environmental, social and governance ("ESG") initiatives. In September 2021, we published our second annual sustainability report which highlighted our ESG performance and efforts. These included completing

Fellow Stockholders,

GrafTech completed another solid year in 2021, with a further improvement in our safety performance and strong financial results, while navigating through a dynamic environment. We continued to execute our commercial strategy of delivering high-quality graphite electrode services, solutions and products to our customers, by capitalizing on our low-cost structure and our substantial vertical integration into petroleum needle coke, a key raw material for graphite electrode manufacturing.

capital projects to improve air emissions at each of our graphite electrode manufacturing facilities in 2021. In addition, we undertook a robust materiality assessment across our global footprint which will further build the foundation and strategy of our future ESG work.

Looking Ahead

In February 2022, I shared my plans to retire from the Company in the months to come. Looking back on my four years at GrafTech, I am proud of what we have achieved, and I am grateful to have had the opportunity to lead this dedicated global team as we moved the Company forward together. During those four years, we encountered challenging times, for our industry and for the world, but our team persevered. With our culture of continuous improvement, we delivered strong financial performance and significantly improved our safety track record.

Looking ahead, the long-term outlook for our business remains strong. There continues to be a global shift to electric arc furnace ("EAF") steel production, reflecting both the environmental and economic advantages of EAF steel production compared to integrated steelmaking. Graphite electrodes are a mission-critical and highly engineered consumable that is produced for the EAF steel industry. As one of the largest manufacturers of ultra-high power graphite electrodes, GrafTech is well-positioned to capitalize on EAF steel industry growth.

We also have a sustainable competitive advantage from our low-cost structure and vertical integration into the key raw material used to produce graphite electrodes, which is petroleum needle coke. In addition to growth driven by the EAF industry, the demand for needle coke is rapidly expanding due to its use in lithium-ion batteries for the fast-growing electric vehicle market. As a result, our substantial vertical integration into needle coke supports our ability to provide certainty of high-quality graphite electrode supply to our customers. Lastly, we have enhanced our strategic flexibility through the actions we have taken to strengthen our balance sheet. For these reasons, we believe the services and solutions that GrafTech provides will help position both our customers and our Company for a better future.

In closing, our accomplishments in 2021 would not have been possible without the efforts of our global team members and I appreciate their ongoing commitment. Once again, thanks also go to our customers, suppliers and communities for their continued support. Lastly, I would like to thank you, our stockholders, for your continued investment and confidence in GrafTech. While my tenure at GrafTech will soon be coming to an end, I look back with pride and I look forward with excitement, knowing the Company is well-positioned for long-term growth.

David J. Rintoul
Chief Executive Officer and President
March 28, 2022

(1) 2021 net income includes one-time pre-tax Change in Control charges of \$88 million as a result of the ownership of our largest stockholder moving below 30% of our total shares outstanding.

(2) Non-GAAP financial measure, see page 40 of the enclosed Annual Report on Form 10-K for the year ended December 31, 2021 ("Form 10-K") for reconciliation.

(3) Non-GAAP financial measure, adjusted EBITDA margin is calculated as adjusted EBITDA divided by net sales (2021 adjusted EBITDA of \$670 million divided by 2021 net sales of \$1,346 million).

(4) Non-GAAP financial measure, adjusted free cash flow is calculated as net cash provided by operating activities less capital expenditures and adjusted for Change in Control payments (2021 net cash provided by operating activities of \$443 million less 2021 capital expenditures of \$58 million plus 2021 Change in Control payments of \$71 million). Adjusted free cash flow conversion, a non-GAAP measure, is calculated as adjusted free cash flow divided by adjusted EBITDA.

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
for the fiscal year ended December 31, 2021

OR

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

for the transition period from to

Commission file number: 1-13888



GRAFTECH INTERNATIONAL LTD.

(Exact name of registrant as specified in its charter)

Delaware 27-2496053

(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification Number)

982 Keynote Circle 44131

Brooklyn Heights, Ohio (Zip Code)

(Address of principal executive offices)

Registrant's telephone number, including area code: (216) 676-2000

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, \$0.01 par value per share	EAF	New York Stock Exchange

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

None

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

Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

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

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

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

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐

Smaller reporting company ☐ 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. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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

The aggregate market value of the voting and non-voting common stock held by non-affiliates of the registrant as of June 30, 2021 was \$2,365.0 million, based on the closing price of the registrant's common stock as reported on the New York Stock Exchange as of the last business day of the registrant's most recently completed second quarter.

On February 11, 2022, 263,255,708 shares of our common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement (the "Proxy Statement") to be filed with the Securities and Exchange Commission relative to the registrant's 2022 Annual Meeting of Stockholders are incorporated by reference into Part III of this Report.

[THIS PAGE INTENTIONALLY LEFT BLANK]

Table of Contents

PART I		4
Presentation of Financial, Market and Legal Data		4
Forward Looking Statements		4
Item 1. Business		6
Item 1A. Risk Factors		16
Item 1B. Unresolved Staff Comments		28
Item 2. Properties		28
Item 3. Legal Proceedings		28
Item 4. Mine Safety Disclosures		29
Information About Our Executive Officers		29
PART II		31
Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities		31
Item 6. [Reserved]		31
Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations		32
Item 7A. Quantitative and Qualitative Disclosures About Market Risk		50
Item 8. Financial Statements and Supplementary Data		52
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure		96
Item 9A. Controls and Procedures		96
Item 9B. Other Information		96
Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections		97
PART III		97
Item 10. Directors, Executive Officers and Corporate Governance		97
Item 11. Executive Compensation		97
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholders		97
Item 13. Certain Relationships and Related Transactions, and Director Independence		98
Item 14. Principal Accountant Fees and Services		98
PART IV		98
Item 15. Exhibit and Financial Statement Schedules		98
Item 16. Form 10-K Summary		101
Signatures		102

PART I

References herein to the "Company", "we", "our", or "us" refer collectively to GrafTech International Ltd. and its subsidiaries.

Presentation of Financial, Market and Industry Data

We present our financial information on a consolidated basis. Unless otherwise noted, when we refer to dollars, we mean U.S. dollars.

Certain market and industry data included in this Annual Report on Form 10-K for the year ended December 31, 2021 (the "Annual Report" or "Report") has been obtained from third-party sources that we believe to be reliable. Market estimates are calculated by using independent industry publications, government publications and third-party forecasts in conjunction with our assumptions about our markets. We cannot guarantee the accuracy or completeness of this market and market share data and have not independently verified it. None of the sources has consented to the disclosure or use of data in this Annual Report. While we are not aware of any misstatements regarding any market, industry or similar data presented herein, such data involves risks and uncertainties and is subject to change based on various factors, including those discussed under the headings "Forward-Looking Statements" and "Risk Factors" in this Annual Report.

Cautionary Note Regarding Forward-Looking Statements

This Report may contain forward-looking statements within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements reflect our current views with respect to, among other things, financial projections, plans and objectives of management for future operations, and future economic performance. Examples of forward-looking statements include, among others, statements we make regarding future estimated revenues and volumes derived from our take-or-pay agreements with initial terms of three-to-five years ("LTA"), future pricing of short-term agreements and spot sales ("Non-LTA"), anticipated levels of capital expenditures, and guidance relating to earnings per share and adjusted EBITDA. You can identify these forward-looking statements by the use of forward-looking words such as "will," "may," "plan," "estimate," "project," "believe," "anticipate," "expect," "foresee," "intend," "should," "would," "could," "target," "goal," "continue to," "positioned to," "are confident," or the negative versions of those words or other comparable words. Any forward-looking statements contained in this Report are based upon our historical performance and on our current plans, estimates and expectations considering information currently available to us. The inclusion of this forward-looking information should not be regarded as a representation by us that the future plans, estimates, or expectations contemplated by us will be achieved. Our expectations and targets are not predictions of actual performance and historically our performance has deviated, often significantly, from our expectations and targets. These forward-looking statements are subject to various risks and uncertainties and assumptions relating to our operations, financial results, financial condition, business, prospects, growth strategy and liquidity. Accordingly, there are or will be important factors that could cause our actual results to differ materially from those indicated in these statements. We believe that these factors include, but are not limited to:

- the ultimate impact the COVID-19 pandemic has on our business, results of operations, financial condition and cash flows, including the duration and spread of any variants, the duration and scope of related government orders and restrictions, the impact on our employees, and the disruptions and inefficiencies in our supply chain;
- the possibility that we may be unable to implement our business strategies, including our ability to secure and maintain longer-term customer contracts, in an effective manner;
- the cyclical nature of our business and the selling prices of our products, which may decline in the future, may lead to periods of reduced profitability and net losses in the future;
- the risks and uncertainties associated with litigation, arbitration, and like disputes, including disputes related to contractual commitments;
- the possibility that global graphite electrode overcapacity may adversely affect graphite electrode prices;
- our dependence on the global steel industry generally and the electric arc furnace steel industry in particular;
- the sensitivity of our business and operating results to economic conditions and the possibility others may not be able to fulfill their obligations to us in a timely fashion or at all;
- the competitiveness of the graphite electrode industry;
- our dependence on the supply of raw materials, including decant oil, petroleum needle coke, and energy, and disruptions in supply chains for these materials;
- our manufacturing operations are subject to hazards;

- changes in, or more stringent enforcement of, health, safety and environmental regulations applicable to our manufacturing operations and facilities;
- the legal, compliance, economic, social and political risks associated with our substantial operations in multiple countries;
- the possibility that fluctuation of foreign currency exchange rates could materially harm our financial results;
- the possibility that our results of operations could deteriorate if our manufacturing operations were substantially disrupted for an extended period, including as a result of equipment failure, climate change, regulatory issues, natural disasters, public health crises, such as the COVID-19 pandemic, political crises or other catastrophic events;
- our dependence on third parties for certain construction, maintenance, engineering, transportation, warehousing and logistics services;
- the possibility that we are unable to recruit or retain key management and plant operating personnel or successfully negotiate with the representatives of our employees, including labor unions;
- the sensitivity of goodwill on our balance sheet to changes in the market;
- the possibility that we are subject to information technology systems failures, cybersecurity attacks, network disruptions and breaches of data security;
- our dependence on protecting our intellectual property and the possibility that third parties may claim that our products or processes infringe their intellectual property rights;
- the possibility that our indebtedness could limit our financial and operating activities or that our cash flows may not be sufficient to service our indebtedness;
- the possibility that restrictive covenants in our financing agreements could restrict or limit our operations;
- the fact that borrowings under certain of our existing financing agreements subject us to interest rate risk;
- the possibility that disruptions in the capital and credit markets could adversely affect our results of operations, cash flows and financial condition, or those of our customers and suppliers;
- the possibility that the market price of our common stock could be negatively affected by sales of substantial amounts of our common stock in the public markets, including by Brookfield Asset Management Inc. and its affiliates;
- the possibility that we may not pay cash dividends on our common stock in the future; and
- the fact that our stockholders have the right to engage or invest in the same or similar businesses as us.

These factors should not be construed as exhaustive and should be read in conjunction with the risk factors and other cautionary statements that are included in this Report. The forward-looking statements made in this Report relate only to events as of the date on which the statements are made. Except as required by law, we do not undertake any obligation to publicly update or review any forward-looking statement, whether as a result of new information, future developments or otherwise.

If one or more of these or other risks or uncertainties materialize, or if our underlying assumptions prove to be incorrect, our actual results may vary materially from what we may have expressed or implied by these forward-looking statements. We caution that you should not place undue reliance on any of our forward-looking statements. You should specifically consider the factors identified in this Report that could cause actual results to differ before making an investment decision to purchase our common stock. Furthermore, new risks and uncertainties arise from time to time, and it is impossible for us to predict those events or how they may affect us.

For a more complete discussion of these and other factors, see "Risk Factors" in Part I of this Report and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II of this Report.

Item 1. Business

Our company

GrafTech International Ltd. is a leading manufacturer of high-quality graphite electrode products essential to the production of electric arc furnace ("EAF") steel and other ferrous and non-ferrous metals. We believe that we have the most competitive portfolio of low-cost ultra-high power ("UHP") graphite electrode manufacturing facilities in the industry, including three of the highest capacity facilities in the world. We are the only large scale graphite electrode producer that is substantially vertically integrated into petroleum needle coke, a key raw material for graphite electrode manufacturing. This unique position provides us with competitive advantages in product quality and cost. Founded in 1886, we have over 135 years of experience in the research and development ("R&D") of graphite- and carbon-based solutions, and our intellectual property portfolio is extensive. We currently have graphite electrode manufacturing facilities in Calais, France, Pamplona, Spain, Monterrey, Mexico and St. Marys, Pennsylvania. Our customers include major steel producers and other ferrous and non-ferrous metal producers in Europe, Russia and other Commonwealth of Independent States countries, the Middle East and Africa (collectively, "EMEA"), the Americas and Asia-Pacific ("APAC"), which sell their products into the automotive, construction, appliance, machinery, equipment and transportation industries. Our vision is to provide highly engineered graphite electrode services, solutions and products to EAF operators. Based on the high-quality of our graphite electrodes, reliability of our petroleum needle coke supply and our excellent customer service, we believe that we are viewed as a preferred supplier to the global EAF steel producer market.

Graphite electrodes are an industrial consumable product used primarily in EAF steel production, one of the two primary methods of steel production and the steelmaking technology used by all "mini-mills." Electrodes act as conductors of electricity in the furnace, generating sufficient heat to melt scrap metal, iron ore or other raw materials used to produce steel or other metals. We estimate that, on average, the cost of graphite electrodes represents less than 5% of the total production cost of steel in a typical EAF, but they are essential to EAF steel production. Graphite electrodes are currently the only known commercially available products that have the high levels of electrical conductivity and the capability to sustain the high levels of heat generated in EAF steel production. As a result, EAF steel manufacturers require a reliable supply of high-quality graphite electrodes. Graphite electrodes are also used in steel refining in ladle furnaces and in other processes, such as the production of titanium dioxide, stainless steel, silicon metals and other ferrous and non-ferrous metals.

With the growth of EAF steel production, graphite electrode production has become focused on the manufacture of UHP electrodes. The production of UHP electrodes requires an extensive proprietary manufacturing process and material science knowledge, including the use of higher quality needle coke blends. We primarily compete in the UHP graphite electrode market.

Petroleum needle coke, a crystalline form of carbon derived from decant oil, is the key raw material we use in the production of graphite electrodes. We achieved substantial vertical integration with this critical raw material source through our acquisition of Seadrift Coke L.P. ("Seadrift") in November 2010, significantly reducing our reliance on other suppliers. The petroleum needle coke industry is highly concentrated. We believe Seadrift is one of the largest petroleum needle coke producers in the world. We also believe that the quality of Seadrift's petroleum needle coke is superior for graphite electrode production compared to most of the petroleum needle coke available to our peers on the open market, allowing us to produce high-quality electrodes in a cost-efficient manner. Additionally, we believe that this vertical integration provides a significant cost advantage relative to our competitors.

As a leading producer of graphite electrodes, we believe we are well-positioned to be a key provider to the EAF steel making industry. Our production capacity is approximately 200,000 metric tons ("MT")¹ through our primary manufacturing facilities in Calais, France, Pamplona, Spain, and Monterrey, Mexico. In 2021, we shifted graphitization and machining of a portion of semi-finished products from Monterrey to St. Marys, Pennsylvania, in order to improve environmental performance, production flexibility and overall cost efficiencies across the two facilities.

Graphite electrodes are an essential consumable in the EAF steel production process and require a long lead time to manufacture, and our strategic customers are highly focused on securing certainty of supply of reliable, high-quality graphite electrodes. We believe we are uniquely capable among graphite electrode producers to pursue our LTA contracting strategy due to our substantial vertical integration into petroleum needle coke production.

On August 15, 2015, we became an indirect wholly owned subsidiary of Brookfield Asset Management Inc. (together with its affiliates, "Brookfield"). In April 2018, we completed our initial public offering ("IPO"). Our common stock is listed

¹ Production capacity reflects expected maximum production volume during the period depending on product mix and expected maintenance outage. Actual production may vary.

on the New York Stock Exchange ("NYSE") under the symbol "EAF." Brookfield owned approximately 24% of our common stock as of December 31, 2021.

Our executive offices are located at 982 Keynote Circle, Brooklyn Heights, Ohio 44131 and our telephone number is (216) 676-2000. Our website address is www.graftech.com. Information on, or accessible through, our website is not part of this Annual Report. We have included our website address only as an inactive textual reference and do not intend it to be an active link to our website.

Competitive strengths

We are one of the largest producers of graphite electrodes in the world, accounting for approximately a quarter of global production capacity (excluding China), and we believe our strategically positioned global footprint provides us with competitive advantages.

We believe our facilities are among the most strategically located and lowest cost, large-scale graphite electrode manufacturing plants in the world. Of the graphite electrode manufacturing facilities currently operating, we estimate that our three primary operating manufacturing facilities represent approximately a quarter of estimated production capacity for graphite electrodes outside of China, making us a critical supplier to global EAF steel manufacturers. Our manufacturing facilities are located in the Americas and EMEA, providing us with access to reliable energy sources, logistical and freight advantages in sourcing raw materials and shipping our graphite electrodes to our customers compared to our competitors, and excellent visibility into the large North American and European EAF steelmaking markets. Our experience in producing graphite electrodes for a varied global customer base positions us to meet customer requirements across a range of product types and quality levels, including support and technical services, further distinguishing us from our competitors.

We are a pure-play provider of an essential consumable for EAF steel producers, the fastest-growing sector of the steel industry.

According to the World Steel Association ("WSA"), since 2000, EAF steelmaking grew at an annual pace of approximately 2%, compared with 1% for steelmaking overall, excluding China. As a result of the increasing global availability of steel scrap and the more resilient, high-variable cost and environmentally friendly EAF model, we expect EAF steel producers to continue to grow at a faster rate than blast oxygen furnace ("BOF") producers globally. Additionally, EAF steel producers are increasingly able to utilize higher quality scrap and iron units, their two primary raw materials, to produce higher quality steel grades and capture market share from BOF producers, while maintaining a favorable cost structure. The EAF method produces approximately 25% of the carbon dioxide ("CO₂") emissions of a BOF facility and does not require the smelting of virgin iron ore or the burning of coal. Additionally, as a result of significantly increased steel production in China since 2000, the supply of Chinese scrap is expected to increase substantially, which may result in lower scrap prices and provide the Chinese steel manufacturing industry with local scrap feedstock that was not historically available. We believe these trends will allow EAF steel producers to increase their market share and grow at a faster rate than BOF steel producers resulting in increasing demand for graphite electrodes.

We believe we have the industry's most efficient production platform of high production capacity assets with substantial vertical integration.

From 2014 to 2016, we rationalized inefficient plants during the downturn and more recently completed a manufacturing footprint optimization program. We believe that the optimization of our graphite electrode plant network will continue to drive improved fixed cost absorption. Moreover, our Calais, Pamplona, Monterrey and St. Marys facilities each provides unique cost advantages given its scale and access to reliable energy sources.

Seadrift provides a substantial portion of our petroleum needle coke supply needs internally at a competitive cost and allows us to maximize capacity utilization more efficiently than competitors, who may be more constrained by a limited or costly petroleum needle coke supply. Seadrift is one of only five petroleum needle coke facilities in the world outside of China, and we believe it is one of the largest petroleum needle coke producers in the world.

We are the only petroleum needle coke producer in the world specifically focused on the production of graphite electrodes.

Our production of petroleum needle coke specifically for graphite electrodes provides us the opportunity to produce super premium petroleum needle coke of the highest quality and allows us to tailor graphite electrodes for customer requirements. Seadrift has approximately 140,000 MT of petroleum needle coke production capacity, which we believe makes it one of the largest petroleum needle coke producers in the world. Sourcing the majority of our petroleum needle coke internally allows us to offer our customers certainty of supply, further enhancing our competitive position and supporting our LTA strategy. To align with our LTA profile, we have hedged the decant oil required to produce substantially all of the graphite electrodes sold under these contracts, providing us with substantial visibility into our raw material costs. We believe our use of petroleum needle coke is a further competitive advantage, as the use of pitch needle coke, an alternative raw material, results in longer bake times during graphite electrode production.

We provide highly engineered graphite electrode products and are competitively positioned to provide services and solutions to EAF operators.

We utilize our own R&D facility as well as process engineers located at plant sites to constantly work at process and product improvements. This work has yielded the development of new products, which have improved our competitive position. In addition, we believe that our ArchiTech Furnace Productivity System (“ArchiTech”) continues to provide a competitive advantage. ArchiTech, which has been installed at customer furnaces around the world, enables our engineers to work with our customers seamlessly to maximize the performance of their furnaces and provide real-time diagnostics and troubleshooting. This remote functionality has been particularly helpful during the COVID-19 pandemic. We believe our customers value our high-quality products and customer service, which subsequently improves our commercial opportunities.

Our experienced executive leadership and general managers and flexible workforce have positioned us for future earnings growth.

Our seasoned leadership is committed to earnings growth. Our executive and manufacturing leadership have led manufacturing companies through many cycles and are focused on positioning us for profitable growth in any environment. We have undertaken strategic investments to increase our production capacity in a capital-efficient manner while positively impacting our cost structure.

Graphite electrode industry

EAF steel producers are the primary consumers of graphite electrodes. The size of the electrodes varies depending on the size of the furnace, the size of the furnace’s electric transformer and the planned productivity of the furnace. In a typical furnace using alternating electric current and operating at a typical number of production cycles per day, three electrodes are fully consumed (requiring the addition of new electrodes), on average, every eight to ten operating hours. UHP graphite electrodes are consumed at a rate of approximately 1.7 kilograms per MT of steel production in EAF facilities.

The actual rate of consumption and addition of electrodes for a particular furnace depends primarily on the efficiency and productivity of the furnace. Therefore, demand for graphite electrodes is directly related to the amount and efficiency of EAF steel production. EAF steel production requires significant heat (as high as 5,000° F) to melt the raw materials, primarily scrap metal, in the furnace. Heat is generated as electricity (as much as 150,000 amps) passes through the electrodes and creates an electric arc between the electrodes and the raw materials.

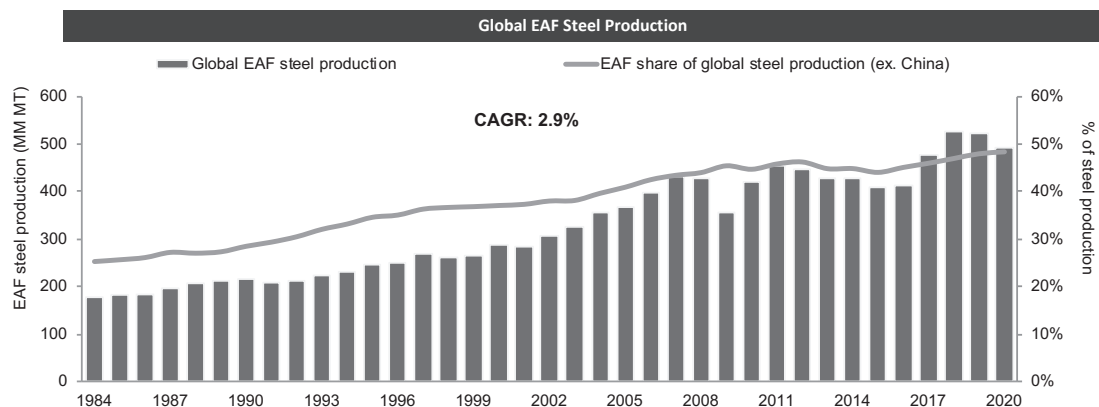
The industry is fairly consolidated, particularly outside of China. The five largest global producers in the industry are Showa Denko K.K., GrafTech, Fangda Carbon New Material Technology Co. LTD, Tokai Carbon Co., Ltd. and Graphite India Limited.

Supply trends

We estimate that from 2014 to 2016, the industry closed or repurposed approximately 20% of global production capacity outside of China, consisting of smaller, higher cost facilities. Based on our experience, high capacity manufacturing facilities can have a significant operating cost advantage as compared to low capacity manufacturing facilities, encouraging producers to consolidate facilities in order to reduce costs. The majority of the production capacity reduction was permanent due to the demolition, long-term environmental remediation and repurposing of most of these lower capacity facilities. These consolidation and production capacity reductions in the graphite electrode industry, along with the EAF steel industry’s recovery, lead us to believe that the graphite electrode industry will continue its long-term growth trajectory.

Demand trends

Our graphite electrodes are primarily used in the EAF steelmaking process, and long-term global growth in that market has driven increased demand for graphite electrodes. EAF steelmaking has historically been the fastest-growing segment of the global steel market. According to the WSA, global EAF steel production grew at 2.9% compound annual growth rate from 1984 to 2020, while taking market share from other methods of steelmaking in most regions of the world, outside of China. EAF steel producers benefit from their flexibility in sourcing iron units, being able to make steel from either scrap or alternative sources of iron like direct reduced iron and hot briquetted iron, both made directly from iron ore. Most of the growth in EAF steelmaking has taken place in Western Europe and North America, two regions with substantial amounts of scrap available for use in EAFs.



Source: World Steel Association

EAF Steel Production's Outlook

Since 2016, the EAF steel industry has grown at a 4.5% compound annual rate according to the WSA. This recovery has taken place since China began to restructure its steel industry, encouraging consolidation and shutting down excess capacity. China has also begun to implement environmental regulations to improve air quality impacted by CO₂ emissions associated with the burning of coal in BOF steelmaking. Additionally, trade remedies in developed economies such as North America and Western Europe are protecting their domestic steel industries against imports from BOF-steel producing countries, which has resulted in a significant decrease in Chinese steel exports. According to China Customs and Baiinfo, Chinese steel exports declined from 112 million MT in 2015 to 67 million MT in 2021. This resulted in increased steel production outside of China, benefiting EAF steel production.

We believe there is a particular opportunity for EAF steelmaking to take further market share in China as well. China's Ministry of Industry and Information Technology's current draft guidelines call for EAF steelmaking to constitute 15% of overall steel production by 2025, doubling its current share of output. If Chinese EAF steelmaking production capacity were to reach 15%, based on 2020 production levels, that would add 62 million MT of additional EAF steel production for a total of 160 million MT, compared to 2020 EAF steel production in the next largest regions of 86 million MT in Europe, 71 million MT in North America and 56 million MT in India, according to WSA.

Pricing trends

Pricing for graphite electrodes is determined through contract negotiations and spot transactions between producers and consumers. Pricing has historically been cyclical, reflecting the demand trends of the global EAF steelmaking industry and supply of graphite electrodes. Moreover, as petroleum needle coke represents a significant percentage of the raw material cost of graphite electrodes, graphite electrodes have typically been priced at a spread to petroleum needle coke. Over the period from 2007 to 2021, the average graphite electrode spread over petroleum needle coke was approximately \$3,600 per MT, on an inflation-adjusted basis using constant 2021 dollars. In tight demand markets, this spread has increased, resulting in higher graphite electrode prices.

There is no widely accepted graphite electrode reference price. Historically, between 2007 and 2021, our weighted average realized price of graphite electrodes, excluding LTAs, was approximately \$5,700 per MT (on an inflation-adjusted basis using constant 2021 dollars).

In 2019 and in 2020, market prices declined from the peaks of 2017 and 2018. The prices continued to decline into the first half of 2021 before starting to recover in the second half of the year. During the fourth quarter of 2021, our average price for non-LTA business was approximately \$5,000 per MT, 10% higher than in the third quarter of 2021. The non-LTA sales price reflects a mix of annual agreements negotiated in the fourth quarter of the prior year, semi-annual and quarterly agreements negotiated earlier in the year along with spot agreements. There is a lag between the time we negotiate price for non-LTA sales and when our electrodes are delivered and recognized in revenue. We expect our first quarter 2022 non-LTA prices to increase 17 to 20% over the fourth quarter of 2021 as the price of annual and semi-annual agreements have now been reset to the current market conditions.

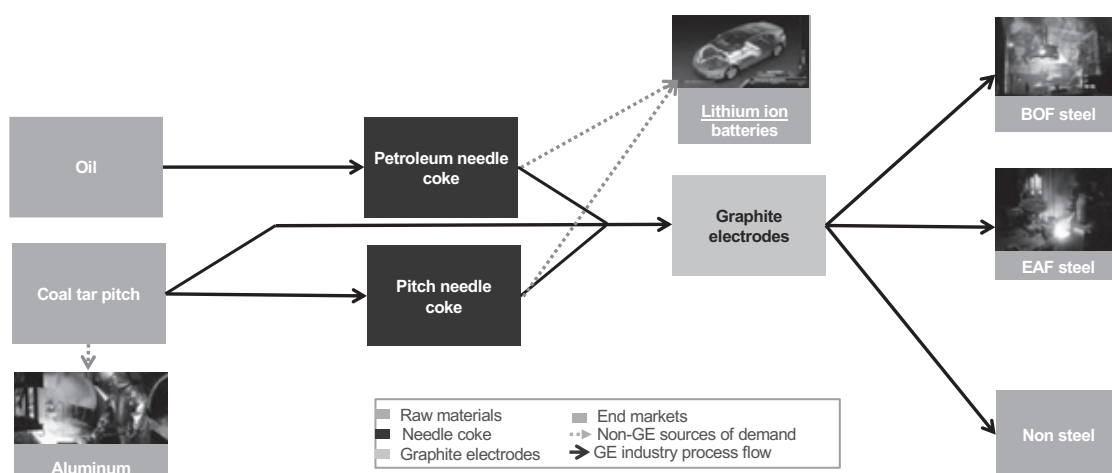
Needle coke industry

Introduction

Needle coke is the primary raw material for the production of graphite electrodes used by EAF steelmakers and producers of stainless steel, silicon metals and other ferrous and non-ferrous metals, and is also a primary raw material in the production of lithium-ion batteries used to power electric vehicles. Needle coke is derived from two carbon sources. Petroleum needle coke is produced through a manufacturing process very similar to a refinery. The production process converts decant oil, a byproduct of the gasoline refining process, into petroleum needle coke and generally takes two to three months to produce. Pitch needle coke, used principally by Asian graphite electrode manufacturers, is made from coal tar pitch, a byproduct of coking metallurgical coal used in BOF steelmaking.

Graphite electrode producers combine petroleum needle coke and pitch needle coke with binders and other ingredients to form graphite electrodes. Petroleum needle coke and pitch needle coke, relative to other varieties of coke, are distinguished by their needle-like structure and their quality, which is measured by the presence of impurities, principally sulfur, nitrogen and ash. Petroleum needle coke and pitch needle coke are typically low in these impurities. Additionally, the needle-like structure of petroleum and pitch needle coke creates expansion along the length of the electrode, rather than the width, which reduces the likelihood of fractures. In order to minimize fractures caused by disproportionate expansion over the width of an electrode, and minimize the effect of impurities, large-diameter graphite electrodes (18 inches to 32 inches) employed in high-intensity EAF applications are comprised almost exclusively of petroleum needle coke and pitch needle coke.

The process map below shows the raw materials required to make graphite electrodes, the various consumers of these raw materials, as well as the consumers of graphite electrodes.



Source: Management estimates

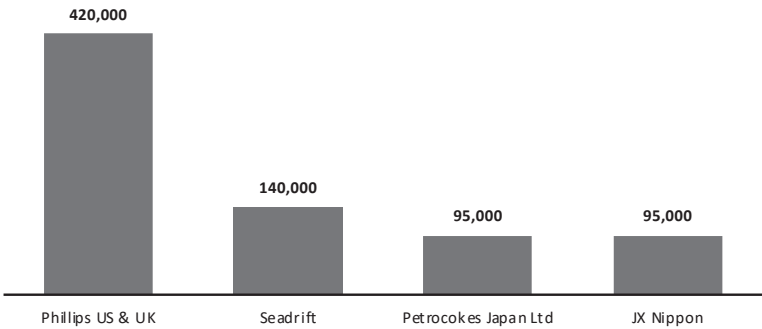
Previously, producers of petroleum needle coke typically agreed to supply petroleum needle coke in 12 month contracts; however, since 2017, producers of petroleum needle coke have typically used three to six month contracts. As a result, our competitors must continually renegotiate supply agreements in response to changing market conditions. We are substantially vertically integrated through our ownership of our Seadrift facility, which provides the majority of our needle coke requirements and insulates us from rapid changes in the needle coke market.

Market size and major producers

The needle coke industry is concentrated. We estimate that Seadrift has approximately one-fifth of the petroleum needle coke production capacity outside China.

Graphite electrode manufacturers prefer petroleum needle coke because of the meaningfully longer bake and graphitizing time required for pitch needle coke. Additionally, the demand for petroleum needle coke in lithium-ion battery manufacturing is growing rapidly. Electric vehicle manufacturers prefer artificial graphite such as petroleum needle coke in lithium-ion batteries because of its greater energy density, providing batteries with longer driving ranges and longevity.

Estimated Petroleum needle coke industry production capacity (excluding China) by company (MT)



Source: Management estimates

Industry trends

Petroleum needle coke production capacity outside of China has remained relatively flat for the last several years due to the capital intensity, technical know-how and long lead times required to build greenfield needle coke production facilities and the stringent regulatory process associated with building new needle coke production capacity. Furthermore, we believe that brownfield expansion opportunities in developed countries are generally not available as petroleum needle coke manufacturing is a continuous process with significant costs associated with shutting down and restarting facilities for maintenance or capital investment.

While the vast majority of petroleum needle coke is used in the production of graphite electrodes, the use of needle coke in lithium-ion batteries for electric vehicles is growing with the increased production of these vehicles. According to the International Energy Agency ("IEA"), the global electric car fleet exceeded 10 million in 2020, as compared to 17,000 in 2010. The IEA projects that global annual sales of electric cars may range between 13 million and 20 million by 2025. Most electric vehicles rely on lithium-ion batteries as their key performance component. Some manufacturers of lithium-ion batteries for electric vehicles use needle coke as a raw material for carbon anodes in their batteries due to advantages in terms of charging rate and capacity. According to IEA, battery pack capacity has been increasing in recent years and is expected to continue. Based on IEA’s estimates for electric vehicle sales and battery pack size, and management estimates for needle coke used in anodes, demand for needle coke from electric vehicles could grow significantly from over 100,000 MT in 2020 to over 650,000 MT in 2025.²

Contracts and Customers

We sell our products under LTAs and under short-term purchase agreements, either annual, semi-annual or quarterly. We also sell electrodes under spot purchase orders for limited quantities at a time.

The LTAs were entered into between the end of 2017 and early 2019. As graphite electrodes are an essential consumable in the EAF steel production process and require a long lead time to manufacture, we believe our strategic customers are highly focused on securing certainty of supply of reliable, high-quality graphite electrodes.

We believe we are uniquely capable among graphite electrode producers to pursue our LTA contracting strategy due to our substantial vertical integration into petroleum needle coke production. All of our petroleum needle coke production is used internally and is not sold to external customers. Demand for petroleum needle coke increased due to an increased demand for

² Source: IEA Global Electric Vehicle Outlook 2020 for electric vehicle sales and battery pack capacity. This also assumes approximately 0.8 kilogram anode material per kilowatt-hour of battery pack capacity. Anode material is assumed to be approximately 50% synthetic and 50% natural graphite, with a yield of 50%.

graphite electrodes and the use of needle coke in lithium-ion batteries for electric vehicles. Consequently, we expect this limited availability of petroleum needle coke will restrict new graphite electrode production. Seadrift, our wholly-owned subsidiary acquired in 2010, provides the majority of our petroleum needle coke requirements and produces sufficient needle coke to supply substantially all of the graphite electrode production that we have contracted under our LTAs. We have also hedged the decant oil required to produce substantially all of the graphite electrodes sold under these contracts, providing us substantial visibility into our raw material costs.

Because the market price of graphite electrodes may be based, in part, on the current or forecasted costs of key raw materials, periods of raw material price volatility may have an impact on the market price. In particular, as petroleum needle coke represents a significant percentage of the raw material cost of graphite electrodes, the price of graphite electrodes has historically been influenced by the price of petroleum needle coke. See “Risk Factors—Risks related to our business and industry—Pricing for graphite electrodes has historically been cyclical, and the price of graphite electrodes may decline in the future.” The fixed prices under our contracts prevent us from passing along changes related to our costs of raw materials to our customers. See “Risk Factors—Risks related to our business and industry—We are dependent on the supply of petroleum needle coke. Our results of operations could deteriorate if recent disruptions in the supply of petroleum needle coke continue or worsen for an extended period.” However, as described above, we believe our ability to source substantially all of our petroleum needle coke requirements for these contracts from our Seadrift facility and our hedging of our purchases of decant oil mitigates the impact of periodic shortages and price fluctuations of raw materials.

All of our LTAs have fixed prices. Within this contract framework, our customers are contractually bound to purchase the specified volume of product at the price under the contract. These fixed prices under the contracts also prevent us from passing along any changes related to the costs of raw materials to contract customers. As a result of the LTA obligation of the contracts, the customer must purchase the annual contracted volume (or annual volume within the specified range). In the event the customer does not take delivery of the annual volume specified in the contract, our contracts provide for a capacity payment equal to the product of the number of MTs short of the annual volume specified in the contract multiplied by the price under the contract for that contract year.

In addition to defining annual volumes and prices, these LTAs include significant termination payments (typically, 50% to 70% of remaining contracted revenue) and, in certain cases, parent guarantees and collateral arrangements to manage our customer credit risk. In most cases, the customer can terminate the contract unilaterally only: (i) upon certain bankruptcy events; (ii) if we materially breach certain anti-corruption legislation; (iii) if we are affected by a force majeure event that precludes the delivery of the agreed-to graphite electrodes for more than a six-month period; or (iv) if we fail to ship certain minimum levels during a specified period of time. The customer will also be able to temporarily suspend obligations under the contract due to a force majeure event, as will we, with the contract term being extended by a period equal to the duration of such suspension.

Our contracts provide our customers with certain remedies in the event that we are unable to deliver the contracted volumes of graphite electrodes on a quarterly basis. Our substantially vertically integrated Seadrift plant is particularly important to our ability to provide our customers with a reliable supply of graphite electrodes. Therefore, the likelihood that we will fail to deliver the contracted volume is significantly reduced due to our substantial vertical integration. For a discussion of certain risks related to our LTA contracting initiative, see “Risk Factors—Risks related to our business and industry—We may be unable to implement our business strategies, including our initiative to secure and maintain LTAs, in an effective manner.”

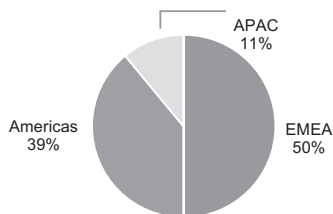
During the challenging market conditions in 2020, we were able to work with our customers to develop mutually beneficial solutions to their challenges, including volume commitments. We have negotiated LTA modifications with many of these customers. We also worked to preserve our rights under the LTAs in a few arbitrations that arose from some non-performance and other disputes during the year.

In addition to the LTAs, we continue to sell available volumes under annual, semi-annual, quarterly and spot purchase orders.

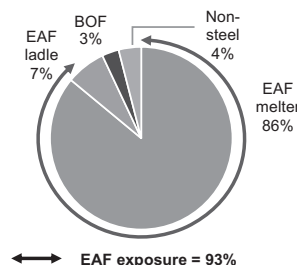
2021 Revenue and production by region and end market

Approximately 93% of our graphite electrodes were purchased by EAF steel producers in 2021. The remaining portion is primarily used in various other ferrous and non-ferrous melting applications, fused materials, chemical processing, and alloy metals. We sell our products in every major geographic region globally. Sales of our products to buyers outside the United States accounted for approximately 79% of net sales in both 2021 and 2020 and 77% in 2019. Overall, in 2021, we generated 89% of our net sales from EMEA and the Americas.

2021 Revenue by Region



2021 Graphite Electrode Sales by End Market



We believe our LTA contracting strategy provides us with cash flow visibility and has secured a high-quality customer base. We perform financial and credit reviews of all eligible potential customers prior to entering into these contracts. Less creditworthy customers are required to post a bank guarantee, letter of credit or significant cash prepayment. Sales from our LTAs represented 77% and 87% of our net sales in 2021 and 2020, respectively.

Sales and customer service

We differentiate and sell the value of our graphite electrodes primarily based on price, product quality and performance, delivery reliability and customer technical service.

We have a large customer technical service organization, with supporting application engineering and scientific groups and approximately 30 engineers and specialists around the world serving in this area. We believe that we are one of the industry leaders in providing value-added technical services to our customers.

Our direct sales force currently operates from 11 sales offices located around the world. We sell our graphite electrodes primarily through our direct sales force, independent sales representatives and distributors, all of whom are trained and experienced with our products.

We have customer technical service personnel based around the world to assist customers to maximize their production and minimize their costs. A portion of our engineers and technicians provide technical service and advice to key steel and other metals customers. These services relate to furnace applications and operation, as well as furnace upgrades to reduce energy consumption, improve raw material costs and increase output.

We believe we have a competitive advantage in offering customers ArchiTech, which we believe is an advanced support and technical service platform in the graphite electrode industry. ArchiTech, which has been installed in customer furnaces worldwide, enables our engineers to work with our customers seamlessly to maximize the performance of their furnaces and provide real-time diagnostics and troubleshooting.

Distribution

We deploy various demand management and inventory management techniques to seek to ensure that we can meet our customers' delivery requirements while still maximizing the capacity utilization of our production capacity. We can experience significant variation in our customers' delivery requirements as their specific needs vary and change throughout the year. We generally seek to maintain appropriate inventory levels, taking into account these factors as well as the significant differences in manufacturing cycle times for graphite electrode products and our customers' products.

Finished products are usually stored at our manufacturing facilities. Limited quantities of some finished products are also stored at local warehouses around the world to meet customer needs.

Facilities

We currently manufacture our graphite electrodes in three primary manufacturing facilities strategically located in the Americas and EMEA, two of the largest EAF steelmaking markets. Our locations allow us to serve our customers in the Americas and EMEA efficiently. Our production capacity is approximately 200,000 MT through our primary manufacturing

facilities in Calais, France, Pamplona, Spain, and Monterrey, Mexico³. In 2021, we shifted graphitization and machining of a portion of semi-finished products from Monterrey to St. Marys, Pennsylvania, in order to improve environmental performance, production flexibility and overall cost efficiencies across the two facilities. We believe that our business has the lowest manufacturing cost structure of all of our major competitors, primarily due to the large scale of our manufacturing facilities.

Our manufacturing facilities significantly benefit from their size and scale, work force flexibility, access to reliable sources of power and other key raw materials, and our substantial vertical integration with Seadrift. Our Calais, Pamplona, Monterrey and St. Marys facilities have access to reliable sources of electricity with essential logistical infrastructure in place, which is a significant element of our manufacturing costs. Our Seadrift facility currently produces the majority of our petroleum needle coke requirements for our graphite electrode production, allowing us to source our primary raw material internally and at cost, a significant advantage relative to our peers. Seadrift also produces sufficient needle coke to supply substantially all of the graphite electrode production that we have contracted under our LTAs.

Manufacturing

We manufacture graphite electrodes ranging in size up to 30 inches in diameter, over 11 feet in length, and weighing as much as 5,900 pounds (2.6 MT). The manufacturing process includes six main processes: screening of raw materials (needle coke) and blending with coal tar pitch followed by forming, or extrusion, of the electrode; baking the electrode; impregnating the electrode with a special pitch that improves strength; re-baking the electrode; graphitizing the electrode using electric resistance furnaces; and machining. The first baking process converts the pitch into hard coke. During the baking process, the electrode pitch volatiles are removed, leaving porosities inside. To improve graphite electrode quality, the electrode is then impregnated with additional coal tar pitch to fill the porosities and baked a second time. After impregnation and re-baking, the manufacturing process continues with graphitization as the electrodes are heated at 5,000° F in a special longitudinal furnace to convert the carbon into graphite. The graphitization cycle removes additional impurities and improves the electrodes' key qualities: thermal and electrical conductivity, thermal shock resistance performance, lubricity, and abrasion resistance.

High-quality graphite electrodes have low electrical resistivity and strong durability. Resistivity is enhanced by removing impurities during the production process, while durability is determined by the coefficient of thermal expansion ("CTE") of the raw material used to produce the graphite electrode. Lower CTE needle coke produces higher quality electrodes. UHP electrodes used in harsh EAF melter applications have low resistivity and low CTE to maximize efficient use of electricity in the EAF and minimize electrode consumption. The total manufacturing time of a graphite electrode and its associated connecting pin is on average approximately six months from needle coke production to customer delivery. We believe that the period of time required to produce a graphite electrode meaningfully constrains the ability of graphite electrode producers to react to real-time changes in steel market environments and acts as a barrier to entry.

Production of a graphite electrode begins with the production of either petroleum needle coke, our primary raw material, or pitch needle coke. Petroleum needle coke is produced through a manufacturing process very similar to a refinery. The production process converts decant oil, a byproduct of the gasoline refining process, into petroleum needle coke and generally takes two to three months to produce. Needle coke takes its name from the needle-like shape of the coke particles. We produce calcined petroleum needle coke at Seadrift. Seadrift is not dependent on any single refinery for decant oil. While Seadrift has purchased a substantial majority of its raw material inventory from a limited number of suppliers in recent years, we believe that there is a large supply of suitable decant oil in the United States available from a variety of sources. In addition, we use derivatives to hedge the decant oil required to produce substantially all of the graphite electrodes sold under our LTAs, providing us with substantial visibility into our raw material costs.

We purchase the electric power used in our manufacturing processes from local suppliers under contracts with pricing based on rate schedules or price indices. Our electricity costs can vary significantly depending on these rates and usage. Natural gas used in the baking and re-baking processes is purchased from local suppliers primarily under annual volume contracts with pricing based on various natural gas price indices.

Research and development

We have over 135 years of experience in the R&D of graphite- and carbon-based solutions. By focusing our management's attention and R&D spending exclusively on the graphite electrode business, we have been able to improve the quality of our graphite electrodes, repositioning ourselves as an industry leader and improving our relationships with strategic customers. Our focus on improving the quality of petroleum needle coke through R&D has led to our petroleum needle coke production at Seadrift being best-in-class for use in the manufacturing of highly durable UHP electrodes. We believe that the above strengths and capabilities provide us with a competitive advantage.

³ Production capacity reflects expected maximum production volume during the period depending on product mix and expected maintenance outage. Actual production may vary.

Intellectual property

We believe that our intellectual property, consisting primarily of patents and proprietary know-how, provides us with competitive advantages and is important to our growth opportunities. Our intellectual property portfolio is extensive, with over 135 U.S. and foreign patents and published patent applications.

We own, have the right to use or have obtained licenses for various trade names and trademarks used in our businesses. For example, the UCAR trademark is owned by Union Carbide Corporation ("Union Carbide") (which was acquired by Dow Chemical Company) and is licensed to us on a worldwide, exclusive and royalty-free basis until 2025. This particular license automatically renews for successive 10 year periods. It permits non-renewal by Union Carbide at the end of any renewal period upon five years' notice of non-renewal.

We rely on patent, trademark, copyright and trade secret laws, as well as appropriate agreements to protect our intellectual property. Among other things, we seek to protect our proprietary know-how and information, by requiring employees, consultants, strategic partners and others who have access to such proprietary information and know-how to enter into confidentiality or restricted use agreements.

Insurance

We maintain insurance against civil liabilities relating to personal injuries to third parties, for loss of or damage to property, for business interruptions and for certain environmental matters, that provides coverage, subject to the applicable coverage limits, deductibles and retentions, and exclusions, that we believe are appropriate upon terms and conditions and for premiums that we consider fair and reasonable in the circumstances. There can be no assurance that we will not incur losses beyond the limits of or outside the coverage of our insurance.

Regulatory Matters

As a company with global operations, we are subject to the laws and regulations of the United States and the multiple foreign jurisdictions in which we operate or conduct business as well as the rules, reporting obligations and interpretations of all such requirements and obligations by various governing bodies, which may differ among jurisdictions. These include federal, state, local and foreign environmental laws and regulations, increasingly complex and changing laws and regulations enacted to protect business and personal data in the United States and other jurisdictions, including the European Union's General Data Protection Regulation, anti-corruption laws, import/export controls, anti-competition laws, U.S. securities laws and a variety of regulations including work-related and community safety laws. We believe we operate in compliance in all material respects with applicable laws and regulations, and maintaining compliance with them is not expected to materially affect our capital expenditures, earnings and competitive position. Estimates of future costs for compliance with U.S. and foreign environmental protection laws and regulations, and for environmental liabilities, are necessarily imprecise due to numerous uncertainties, including the impact of potential new laws and regulations, the availability and application of new and diverse technologies, the extent of insurance coverage, the potential discovery of contaminated properties, or the identification of new hazardous substance disposal sites at which we may be a potentially responsible party ("PRP") and, in the case of sites subject to the Comprehensive Environmental Response, Compensation and Liability Act and similar state and foreign laws, the final determination of remedial requirements and the ultimate allocation of costs among the PRPs. Subject to the inherent imprecision in estimating such future costs, but taking into consideration our experience to date regarding environmental matters of a similar nature and facts currently known, we estimate that our costs and capital expenditures (in each case, before adjustment for inflation) for environmental protection regulatory compliance programs and for remedial response actions will not be material over the next several years. Furthermore, we establish accruals for environmental liabilities when it is probable that a liability has been or will be incurred, and the amount of the liability can be reasonably estimated. We adjust the accrual as new remedial actions or other commitments are made, as well as when new information becomes available that changes the prior estimates previously made and we believe our existing accruals are reasonable.

Human Capital Resources

As of December 31, 2021, we had 1,353 employees (excluding contractors), 867 of which were hourly employees. A total of 481 employees were in Europe (including Russia), 573 were in Mexico and Brazil, two were in South Africa, 290 were in the United States and seven were in the Asia Pacific region.

As of December 31, 2021, approximately 557 employees, or 41%, of our worldwide employees, were covered by collective bargaining or similar agreements that expire, or are subject to renegotiation, at various times through December 31, 2022. We believe that, in general, our relationships with our employees' unions are good and that we will be able to renew or

extend our collective bargaining or similar agreements on reasonable terms as they expire. We have not had any material work stoppages or strikes during the past decade.

The health and safety of our global team is a top priority and is a core value of the Company. Our comprehensive programs strive to achieve zero injuries and no harm done. Our global Health, Safety and Environmental Protection ("HS&EP") Policy applies to all employees, contractors, and visitors, and governs our actions and decisions every day. We also have a Code of Conduct and Ethics for Suppliers and Contractors that includes HS&EP guidelines required for doing business with GrafTech. GrafTech's focus on HS&EP is a top priority for all employees. We have built risk recognition into our HS&EP programs. From pre-job planning, safety walks and inspections, planned job observations, or training employees on health and safety best practices, we strive to identify and mitigate risks. In the spirit of continuous improvement, regular inspections, internal reviews and corporate audits are conducted to foster compliance with our high standards.

Available Information

We make available, free of charge, on or through our website, our annual reports on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities and Exchange Act of 1934 (the "Exchange Act") as soon as reasonably practicable after we electronically file them with, or furnish them to, the U.S. Securities and Exchange Commission ("SEC"). We maintain our website at <http://www.graftech.com>. The information contained on our website is not part of this Report. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically. Please see <http://www.sec.gov> for more information.

Item 1A. Risk Factors

Our business, financial condition, results of operations and cash flow can be affected by a number of factors, whether currently known or unknown, including but not limited to those described below. You should carefully read all of the information included in this report and carefully consider, among other matters, the following risk factors, as well as any discussed under Part II, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations." Although the risks are organized by headings, and each risk is discussed separately, many are interrelated. Moreover, the risks below are not the only risks we face and additional risks not currently known to us or that we presently deem immaterial may emerge or become material at any time. The occurrence of any of the following risks could materially and adversely affect our business, financial condition, results of operations and cash flow, in which case, the market price of our securities could decline.

Risks related to our business and industry

The COVID-19 pandemic has had, and is expected to continue to have, an adverse impact on our business, results of operations, financial position and cash flows.

The COVID-19 pandemic and preventative measures taken to contain or mitigate the pandemic have caused, and are continuing to cause, business slowdowns or shutdowns in affected areas and significant disruption in the financial markets and economy both globally and in the United States. For example, as a result of the COVID-19 pandemic, the average approximate non-LTA price for graphite electrodes delivered and recognized in revenue in the first quarter of 2021 decreased 35% compared to the first quarter in 2020. In addition, we expect some cost increases in 2022, driven by recent global cost pressures, particularly for third-party needle coke, energy and freight. As the pandemic continues, we continue to limit travel and have certain employees working from home on rotations so that all employees are not in our offices at the same time. While these measures have been necessary and appropriate, they have resulted in additional costs and have adversely impacted our business and financial performance.

While the COVID-19 pandemic had begun to subside in certain areas of the world where we operate and serve our customers, the infection rates in some of these areas have experienced a resurgence in the spread of COVID-19 and the infection rates in other areas continue to escalate, including as a result of new variants of the virus. As a result, we are unable to predict the ultimate impact of the COVID-19 pandemic at this time. The pandemic has adversely affected, and is expected to continue to adversely affect, our business, results of operations, financial position and cash flows. Such effects may be material and the potential impacts include, but are not limited to:

- adverse impacts on our customers, and resultant impacts on demand for our products;
- disruptions at our facilities, including reductions in operating hours, labor shortages and changes in operating procedures, including additional cleaning and disinfecting procedures;

- disruptions in our supply chain due to transportation delays, travel restrictions, raw material cost increases and shortages, and closures of businesses or facilities;
- reductions in our operating effectiveness due to workforce disruptions from COVID-19 restrictions and social distancing resulting from, among other things, “shelter in place” and “stay at home” orders, and the unavailability of key personnel necessary to conduct our business activities; and
- volatility in the global financial markets, which could have a negative impact on our ability to access capital and additional sources of financing in the future.

In addition, we cannot predict the impact that the COVID-19 pandemic will have on our customers, employees, suppliers and distributors, and any adverse impacts on these parties may have a material adverse impact on our business. The impact of the COVID-19 pandemic may also exacerbate other risks discussed in this Annual Report, any of which could have a material effect on us. This situation continues to change rapidly and additional impacts may arise that we are not currently aware of.

We may be unable to implement our business strategies, including our initiative to secure and maintain LTAs, in an effective manner.

Our future financial performance and success largely depend on our ability to successfully implement our business strategies for growth. We have undertaken, and will continue to undertake, various business strategies to sell a majority of our production capacity through LTAs, and improve operating efficiencies and generate cost savings. We cannot assure you that we will successfully implement our business strategies or that implementing these strategies will sustain or improve and not harm our results of operations. In particular, our ability to successfully implement our strategy to enter into and maintain LTAs is subject to certain risks, including customers seeking to renegotiate key terms of their contracts, such as pricing and specified volume commitments, in the event market conditions change during the contract term; our inability to extend contracts when they expire; and a disruption in our access to Seadrift-produced petroleum needle coke, which we will rely on, in part, to deliver the contracted volumes under our LTAs. Under current market conditions where the spot price of graphite electrodes is below our weighted average contract price for LTA contracted volumes, it may be unlikely that customers will commit to extend or re-enter into LTAs at the current prices of our LTAs. As a result, we cannot assure you that we will successfully implement this strategy or realize the anticipated benefits of these contracts. Recently, because of current market conditions, including the effects of the COVID-19 pandemic, certain customers with LTAs have struggled to take their committed volumes, which has resulted in some non-performance and disputes, including a few arbitrations, and we have modified some LTAs. In addition, the costs involved in implementing our strategies may be significantly greater than we currently anticipate.

Our business strategies are based on our assumptions about future demand for our products and on our continuing ability to produce our products profitably. Each of these factors depends, among other things, on our ability to finance our operations, maintain high-quality and efficient manufacturing operations, effectively manage our customer relationships while enforcing customer commitments, respond to competitive and regulatory changes, access quality raw materials in a cost-effective and timely manner and retain and attract highly skilled technical, managerial, marketing and finance personnel. Any failure to develop, revise or implement our business strategies in a timely and effective manner may adversely affect our business, financial condition, results of operations or cash flows.

Global graphite electrode overcapacity has adversely affected graphite electrode prices in the past, and may adversely affect them again, which could negatively impact our sales, margins and profitability.

Overcapacity in the graphite electrode industry has adversely affected pricing in the past and may do so again. The rapid growth of Chinese steel production after 2010, which was primarily produced from BOF steelmaking, created a significant global oversupply of steel. Chinese steel exports gained market share from EAF steel producers, creating graphite electrode industry oversupply and inventory de-stocking in this period. Although Chinese steel exports have decreased since 2016, any significant future growth in Chinese steel exports could once again lead to an oversupply of steel, which would adversely affect the price of graphite electrodes.

An increase in global graphite electrode production capacity that outpaces an increase in demand for graphite electrodes could adversely affect the price of graphite electrodes. We believe worldwide graphite electrode supply will increase in 2022 as a result of Chinese capacity additions. While growth in the Chinese EAF steel market may support some of these capacity additions, the additional graphite electrode capacity may exceed local Chinese requirements. Excess production capacity may result in manufacturers producing and exporting electrodes at prices that are lower than prevailing domestic prices, and sometimes at or below their cost of production. Excessive imports into the Americas and EMEA, which markets collectively make up 89% of our net sales, can also exert downward pressure on graphite electrode prices, which negatively affects our sales, margins and profitability.

Pricing for graphite electrodes has historically been cyclical and the price of graphite electrodes may decline in the future.

Pricing for graphite electrodes has historically been cyclical, reflecting the demand trends of the global EAF steelmaking industry and the supply of graphite electrodes. In addition, as petroleum needle coke reflects a significant percentage of the raw material cost of graphite electrodes, graphite electrodes have historically been priced at a spread to petroleum needle coke, which in the past has increased in tight demand markets. Historically, between 2007 and 2021, our weighted average realized price of graphite electrodes was approximately \$5,700 per MT (on an inflation-adjusted basis using constant 2021 dollars).

During the last demand trough in 2016, our weighted average realized price of graphite electrodes fell to approximately \$2,800 per MT, on an inflation-adjusted basis using constant 2021 dollars. Following the significant rationalization of graphite electrode production globally, the resumption of growth in EAF steel production, falling scrap prices, reductions in Chinese steel exports and constrained supply of needle coke, graphite electrode prices reached record highs in 2018.

Current prices have receded from the highs of 2018, and the price of graphite electrodes may decline in the future. Supply and demand normalized in 2019, tipping towards overcapacity that exerts downward pressure on graphite electrode prices, and spot prices fell 25% during 2019. Spot prices decreased further in 2020, bottoming out in the spring of 2021 before beginning to increase. Despite this increase, current spot prices are below our weighted average contract price for LTA contracted volumes. Our business, financial condition and operating results could be materially and adversely affected to the extent prices for graphite electrodes decline in the future.

We are dependent on the global steel industry generally and the EAF steel industry in particular, which historically have been highly cyclical, and a downturn in these industries may materially adversely affect our business.

We sell our products primarily to the EAF steel production industry. The EAF steel production industry historically has been highly cyclical and is affected significantly by general economic conditions. As a result, we have experienced periods of significant net losses.

Significant customers for the steel industry include companies in the automotive, construction, appliance, machinery, equipment and transportation industries, which are industries that were negatively affected by the general economic downturn and the deterioration in financial markets, including severely restricted liquidity and credit availability, in the recent past. In particular, EAF steel production declined approximately 17% from 2008 to 2009 as a result of that general economic downturn and deterioration in financial markets. In addition, EAF steel production declined approximately 10% from 2011 to 2015 due to global steel production overcapacity driven largely by Chinese BOF steel exports.

Our customers, including major steel producers, have in the past experienced and may again experience downturns or financial distress that could adversely impact our ability to collect our accounts receivable on a timely basis or at all.

The graphite industry is highly competitive. Our market share, net sales or net income could decline due to vigorous price and other competition.

Competition in the graphite industry (other than, generally, with respect to new products) is based primarily on price, product differentiation and quality, delivery reliability and customer service. Graphite electrodes, in particular, are subject to rigorous price competition. Competition with respect to new products is, and is expected to continue to be, based primarily on price, performance and cost effectiveness, customer service and product innovation. Competition could prevent implementation of price increases, require price reductions or require increased spending on R&D, marketing and sales that could adversely affect us. In such a competitive market, changes in market conditions, including customer demand and technological development, could adversely affect our competitiveness, sales and/or profitability.

We are dependent on the supply of petroleum needle coke. Our results of operations could deteriorate if recent disruptions in the supply of petroleum needle coke continue or worsen for an extended period.

Petroleum needle coke is our key raw material used in the production of graphite electrodes. Seadrift currently provides the majority of our current petroleum needle coke requirements, and we purchase the remainder from external sources. We plan to rely on Seadrift-produced petroleum needle coke to support the production of substantially all of the contracted volumes of graphite electrodes under our LTAs. As a result, a disruption in Seadrift's production of petroleum needle coke, like the one that occurred in February 2021 due to a winter storm, could adversely affect our ability to achieve the anticipated benefits of these contracts if we are forced to purchase petroleum needle coke from external sources at a higher cost to support the production of these contracted volumes. If a market shortage of petroleum needle coke occurs, we may be unable to acquire sufficient amounts of petroleum needle coke from external sources to support our remaining needle coke requirements currently

used in the production of graphite electrodes for sale in the spot market. As a result, a disruption in the supply of petroleum needle coke could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are dependent on supplies of raw materials (in addition to petroleum needle coke) and energy. Our results of operations could deteriorate if those supplies increase in cost or are substantially disrupted for an extended period.

We purchase raw materials and energy from a variety of sources. In many cases, we purchase them under short-term contracts or on the spot market, in each case at fluctuating prices. The availability and price of raw materials and energy may be subject to curtailment or change due to:

- limitations, which may be imposed under new legislation or regulation;
- suppliers' allocations to meet demand from other purchasers during periods of shortage (or, in the case of energy suppliers, extended hot or cold weather);
- interruptions or terminations in production by suppliers; and
- market and other events and conditions.

Petroleum and coal products, including decant oil and coal tar pitch, which are our principal raw materials other than petroleum needle coke, and energy, particularly natural gas, have been subject to significant price fluctuations. For example, Seadrift may not always be able to obtain an adequate quantity of suitable low-sulfur decant oil for the manufacture of petroleum needle coke, and capital may not be available to install equipment to allow use of higher sulfur decant oil (which is more readily available in the United States) if supplies of low-sulfur decant oil become more limited in the future. Further, low-sulfur emissions regulations adopted in 2020 by the International Maritime Organization have at times negatively affected pricing for low-sulfur decant oil and they may again in the future cause similar adverse impacts.

We have in the past entered into, and may continue in the future to enter into, derivative contracts and short-duration fixed-rate purchase contracts to effectively fix a portion of our exposure to certain products. These hedging strategies may not be available or successful in eliminating our exposure. A substantial increase in raw material or energy prices that cannot be mitigated or passed on to customers or a continued interruption in supply, particularly in the supply of decant oil or energy, would have a material adverse effect on our business, financial condition, results of operations or cash flows. These hedges may be insufficient or ineffective in protecting against the impact of these fluctuations.

Our operations are subject to hazards which could result in significant liability to us.

Our operations are subject to hazards associated with manufacturing and the related use, storage, transportation and disposal of raw materials, products and wastes. These hazards include explosions, fires, severe weather (including but not limited to hurricanes or other adverse weather that may be increasing as a result of climate change) and natural disasters, industrial accidents, mechanical failures, discharges or releases of toxic or hazardous substances or gases, transportation interruptions, human error and terrorist activities. These hazards can cause personal injury and loss of life, severe damage to or destruction of property and equipment as well as environmental damage, and may result in suspension of operations and the imposition of civil and criminal liabilities, including penalties and damage awards. While we believe our insurance policies are in accordance with customary industry practices, such insurance may not cover all risks associated with the hazards of our business and is subject to limitations, including deductibles and maximum liabilities covered. We may incur losses beyond the limits, or outside the coverage, of our insurance policies. In the future, we may not be able to obtain coverage at current levels, and our premiums may increase significantly on coverage that we maintain. Costs associated with unanticipated events in excess of our insurance coverage could have a material adverse effect on our business, competitive or financial position or our ongoing results of operations.

We are subject to a variety of legal, economic, social and political risks associated with our substantial operations in multiple countries, which could have a material adverse effect on our financial and business operations.

A substantial majority of our net sales are derived from sales outside the United States, and a majority of our operations and our property, plant and equipment and other long-lived assets are located outside the United States. As a result, we are subject to risks associated with operating in multiple countries, including:

- currency fluctuations and devaluations in currency exchange rates, including impacts of transactions in various currencies, translation of various currencies into dollars for U.S. reporting and financial covenant compliance purposes, and impacts on results of operations due to the fact that the costs of our non-U.S. operations are primarily incurred in local currencies while their products are primarily sold in dollars and euros;

- imposition of or increase in customs duties and other tariffs;
- imposition of or increases in currency exchange controls, including imposition of or increases in limitations on conversion of various currencies into dollars, euros, or other currencies, making of intercompany loans by subsidiaries or remittance of dividends, interest or principal payments or other payments by subsidiaries;
- imposition of or increases in revenue, income or earnings taxes and withholding and other taxes on remittances and other payments by subsidiaries;
- inflation, deflation and stagflation in any country in which we have a manufacturing facility;
- imposition of or increases in investment or trade restrictions by the United States or other jurisdictions or trade sanctions adopted by the United States;
- compliance with laws on anti-corruption, export controls, customs, sanctions and other laws governing our operations, including in challenging jurisdictions;
- inability to determine or satisfy legal requirements, effectively enforce contract or legal rights, including our rights under our LTAs and intellectual property rights, and obtain complete financial or other information under local legal, judicial, regulatory, disclosure and other systems; and
- nationalization or expropriation of assets, and other risks that could result from a change in government or government policy, or from other political, social or economic instability.

Any of these risks could have a material adverse effect on our business, financial condition, results of operations or cash flows, and we may not be able to mitigate these effects.

Our results of operations could deteriorate if our manufacturing operations were substantially disrupted for an extended period for any reason, including equipment failure, climate change, natural disasters, public health crises, political crises or other catastrophic events.

Our manufacturing operations are subject to disruption due to equipment failure, extreme weather conditions, floods, hurricanes and tropical storms and similar events, major industrial accidents, including fires or explosions, cybersecurity attacks, strikes and lockouts, adoption of new laws or regulations, changes in interpretations of existing laws or regulations or changes in governmental enforcement policies, civil disruption, riots, terrorist attacks, war, public health crises, such as the COVID-19 pandemic, and other events. These events may also impact the operations of one or more of our suppliers. For example, the potential physical impacts of climate change on our operations are uncertain and will likely be particular to the geographic circumstances. These physical impacts may include changes in rainfall and storm patterns, shortages of water or other natural resources, changing sea levels, and changing global average temperatures. For instance, our Seadrift facility in Texas and our Calais facility in France are located in geographic areas less than 50 feet above sea level. As a result, any future rising sea levels could have an adverse impact on their operations and on their suppliers. In the event manufacturing operations are substantially disrupted at one of our primary operating facilities, we will not have the ability to increase production at our remaining operating facilities in order to compensate. To the extent any of these events occur, our business, financial condition and operating results could be materially and adversely affected.

Plant operational improvements may be delayed or may not achieve the expected benefits.

Our ability to complete future operational improvements, including the shift of graphitization and machining of additional volume of semi-finished product from Monterrey to St. Marys, may be delayed, interrupted or otherwise limited by the need to obtain environmental and other regulatory approvals, unexpected cost increases, availability of labor and materials, unforeseen hazards such as weather conditions, and other risks customarily associated with construction projects. Moreover, the costs of these activities could have a negative impact on our results of operations. In addition, these operational improvements may not achieve the expected benefits as a result of changes in market conditions, raw material shortages or other unforeseen contingencies.

We depend on third parties for certain construction, maintenance, engineering, transportation, warehousing and logistics services.

We contract with third parties for certain services relating to the design, construction and maintenance of various components of our production facilities and other systems. If these third parties fail to comply with their obligations, the facilities may not operate as intended, which may result in delays in the production of our products and materially adversely affect our ability to meet our production targets and satisfy customer requirements or we may be required to recognize

impairment charges. In addition, production delays could cause us to miss deliveries and breach our contracts, which could damage our relationships with our customers and subject us to claims for damages under our contracts. Any of these events could have a material adverse effect on our business, financial condition, results of operations or cash flows.

We also rely primarily on third parties for the transportation of the products we manufacture. In particular, a significant portion of the goods we manufacture are transported to different countries, which requires sophisticated warehousing, logistics and other resources. If any of the third parties that we use to transport products are unable to deliver the goods we manufacture in a timely manner, we may be unable to sell these products at full value or at all, which could cause us to miss deliveries and breach our contracts, which could damage our relationships with our customers and subject us to claims for damages under our contracts. Any of these events could have a material adverse effect on our business, financial condition, results of operations or cash flows.

We may be subject to information technology systems failures, cybersecurity attacks, network disruptions and breaches of data security, which could compromise our information and expose us to liability.

Our information technology systems are an important element for effectively operating our business. Information technology systems or processes, and the information technology systems or processes of our customers, our third-party service providers, our vendors or other parties that have been entrusted with our information, including risks associated with any failure to maintain or upgrade our systems, network disruptions and breaches of data security could disrupt our operations by impeding our processing of transactions, our ability to protect customer or company information or our financial reporting, leading to increased costs. It is possible that future technological developments could adversely affect the functionality of our computer systems and require further action and substantial funds to prevent or repair computer malfunctions. Our computer systems, including our back-up systems, could be damaged or interrupted by power outages, computer and telecommunications failures, computer viruses, cybercrimes, internal or external security breaches, events such as fires, earthquakes, floods, tornadoes and hurricanes, or errors by our employees. Although we have taken steps to address these concerns by implementing network security, back-up systems and internal control measures, these steps may be insufficient or ineffective. Security and/or privacy breaches, acts of vandalism or terror, computer viruses, misplaced or lost data, programming, and/or human error or other similar events with respect to our information technology systems or processes or the information technology systems or processes of third-parties that have been entrusted with our information expose us to a risk of loss or misuse of this information, litigation and potential liability, which could have a material adverse effect on our business, financial condition, results of operations or cash flows.

If we are unable to successfully negotiate with the representatives of our employees, including labor unions, we may experience strikes and work stoppages.

We are party to collective bargaining agreements and similar agreements with our employees. As of December 31, 2021, approximately 557 employees, or 41%, of our worldwide employees, were covered by collective bargaining or similar agreements all of which were covered by agreements that expire, or are subject to renegotiation, at various times through December 31, 2022. Although we believe that, in general, our relationships with our employees are good, we cannot predict the outcome of current and future negotiations and consultations with employee representatives, which could have a material adverse effect on our business. We may not succeed in renewing or extending these agreements on terms satisfactory to us. Although we have not had any material work stoppages or strikes during the past decade, they may occur in the future during renewal or extension negotiations or otherwise. A material work stoppage, strike or other union dispute could adversely affect our business, financial condition, results of operations and cash flows.

We have significant goodwill on our balance sheet that is sensitive to changes in the market, which could result in impairment charges.

We had approximately \$171 million of goodwill on our balance sheet as of December 31, 2021. Goodwill is tested for impairment annually in the fourth quarter or more often if events or changes in circumstances indicate a potential impairment may exist. Factors that could indicate that our goodwill is impaired include a decline in our stock price and market capitalization, lower than projected operating results and cash flows, and slower growth rates in our industry. Declines in our stock price, lower operating results and any decline in industry conditions in the future could increase the risk of impairment. Impairment testing incorporates our estimates of future operating results and cash flows, estimates of future growth rates, and our judgment regarding the applicable discount rates used on estimated operating results and cash flows. If we determine at a future time that impairment exists, it may result in a significant non-cash charge to earnings and lower stockholders' equity.

Our ability to grow and compete effectively depends on protecting our intellectual property. Failure to protect our intellectual property could adversely affect our business.

We believe that our intellectual property, consisting primarily of patents and proprietary know-how and information, is important to our growth. Our intellectual property portfolio is extensive, with over 135 U.S. and foreign patents and published patent applications, which we believe is more than any of our major competitors in the businesses in which we operate. Failure to protect our intellectual property may result in the loss of the exclusive right to use our technologies. We rely on patent, trademark, copyright and trade secret laws and confidentiality and restricted-use agreements to protect our intellectual property. However, some of our intellectual property is not covered by any patent or patent application or any such agreement. Intellectual property protection does not protect against technological obsolescence due to developments by others or changes in customer needs.

Patents are subject to complex factual and legal considerations. Accordingly, the validity, scope and enforceability of any particular patent can be uncertain. Therefore, we cannot assure you that:

- any of the U.S. or non-U.S. patents now or hereafter owned by us, or that third parties have licensed to us or may in the future license to us, will not be circumvented, challenged or invalidated;
- any of the U.S. or non-U.S. patents that third parties have non-exclusively licensed to us, or may non-exclusively license to us in the future, will not be licensed to others; or
- any of the patents for which we have applied or may in the future apply will be issued at all or with the breadth of claim coverage we seek.

Moreover, patents, even if valid, only provide protection for a specified limited duration. In addition, effective patent, trademark and trade secret protection may be limited or unavailable or we may not apply for it in the United States or in any of the other countries in which we operate.

The protection of our intellectual property rights may be achieved, in part, by prosecuting claims against others who we believe have misappropriated our technology or have infringed upon our intellectual property rights, as well as by defending against misappropriation or infringement claims brought by others against us. Our involvement in litigation to protect or defend our rights in these areas could result in a significant expense to us, adversely affect the development of sales of the related products, and divert the efforts of our technical and management personnel, regardless of the outcome of such litigation.

We cannot assure you that agreements designed to protect our proprietary know-how and information will not be breached, that we will have adequate remedies for any such breach, or that our strategic alliance suppliers and customers, consultants, employees or others will not assert rights against us with respect to intellectual property arising out of our relationships with them.

Third parties may claim that our products or processes infringe their intellectual property rights, which may cause us to pay unexpected litigation costs or damages or prevent us from selling our products or services.

From time to time, we may become subject to legal proceedings, including allegations and claims of alleged infringement or misappropriation by us of the patents and other intellectual property rights of third parties. We cannot assure you that the use of our patented technology or proprietary know-how or information does not infringe the intellectual property rights of others. In addition, attempts to enforce our own intellectual property claims may subject us to counterclaims that our intellectual property rights are invalid, unenforceable or are licensed to the party against whom we are asserting the claim or that we are infringing that party's alleged intellectual property rights. We may also be obligated to indemnify affiliates or other partners who are accused of violating third parties' intellectual property rights by virtue of those affiliates or partners' agreements with us, and this could increase our costs in defending such claims and our damages.

Legal proceedings involving intellectual property rights, regardless of merit, are highly uncertain and can involve complex legal and scientific analyses, can be time consuming, expensive to litigate or settle and can significantly divert resources, even if resolved in our favor. Our failure to prevail in such matters could result in loss of intellectual property rights or judgments awarding substantial damages and injunctive or other equitable relief against us. If we were to be held liable or discover or be notified that our products or processes potentially infringe or otherwise violate the intellectual property rights of others, we may face a loss of reputation and may not be able to exploit some or all of our intellectual property rights or technology. If necessary, we may seek licenses to intellectual property of others. However, we may not be able to obtain the necessary licenses on terms acceptable to us or at all. Our failure to obtain a license from a third-party for that intellectual property necessary for the production or sale of any of our products could cause us to incur substantial liabilities and/or suspend the production or shipment of products or the use of processes requiring the use of that intellectual property. We may be required to substantially re-engineer our products or processes to avoid infringement.

Any of the foregoing may require considerable effort and expense, result in substantial increases in operating costs, delay or inhibit sales or preclude us from effectively competing in the marketplace, which in turn could have a material adverse effect on our business and financial results.

Risks related to our indebtedness

Our indebtedness could limit our financial and operating activities and adversely affect our ability to incur additional debt to fund future needs and our ability to fulfill our obligations under our existing and future indebtedness.

Our credit agreement (as amended, the “2018 Credit Agreement”) provides for (i) an aggregate \$2,250 million senior secured term loan facility (the “2018 Term Loan Facility”) and (ii) a \$250 million senior secured revolving credit facility (the “2018 Revolving Credit Facility” and, together with the 2018 Term Loan Facility, as amended, the “Senior Secured Credit Facilities”).

As of December 31, 2021, we had approximately \$1,030 million of secured indebtedness outstanding including borrowings under the Senior Secured Credit Facilities and our 4.625% Senior Secured Notes due 2028 (the “2020 Senior Secured Notes”). As of December 31, 2021, we had \$246.7 million available for borrowing under the 2018 Revolving Credit Facility (taking into account approximately \$3.3 million of outstanding letters of credit issued thereunder).

Interest expense for the years ended December 31, 2021 and December 31, 2020 was \$68.8 million and \$98.1 million, respectively.

Our indebtedness could:

- require us to dedicate a substantial portion of our cash flow to the payment of principal and interest, thereby reducing the funds available for operations and future business opportunities;
- make it more difficult for us to satisfy our obligations;
- limit our ability to borrow additional money if needed for other purposes, including working capital, capital expenditures, debt service requirements, acquisitions and general corporate or other purposes, on satisfactory terms or at all;
- limit our ability to adjust to changing economic, business and competitive conditions;
- place us at a competitive disadvantage with competitors who may have less indebtedness or greater access to financing;
- require us to reduce or delay capital expenditures or sell assets or operations to meet our scheduled debt service obligations;
- make us more vulnerable to an increase in interest rates, a downturn in our operating performance or a decline in general economic conditions; and
- make us more susceptible to changes in credit ratings, which could impact our ability to obtain financing in the future and increase the cost of such financing.

Compliance with our debt obligations under the Senior Secured Credit Facilities and 2020 Senior Secured Notes could materially limit our financial or operating activities, or hinder our ability to adapt to changing industry conditions, which could result in our losing market share, a decline in our revenue or a negative impact on our operating results.

The 2018 Credit Agreement and the indenture governing the 2020 Senior Secured Notes include covenants that could restrict or limit our financial and business operations.

The 2018 Credit Agreement and the indenture governing the 2020 Senior Secured Notes contain a number of restrictive covenants that, subject to certain exceptions and qualifications, restrict or limit our ability and the ability of our subsidiaries to, among other things:

- incur, repay or refinance indebtedness;
- create liens on or sell our assets;
- engage in certain fundamental corporate changes or changes to our business activities;

- make investments or engage in mergers or acquisitions;
- pay dividends or repurchase stock;
- engage in certain affiliate transactions;
- enter into agreements or otherwise restrict our subsidiaries from making distributions or paying dividends to the borrowers under the Senior Secured Credit Facilities or to us or certain of our subsidiaries, as applicable; and
- repay intercompany indebtedness or make intercompany distributions or pay intercompany dividends.

The 2018 Credit Agreement also contains certain affirmative covenants and contains a financial covenant that requires us to maintain a senior secured first lien net leverage ratio not greater than 4.00:1.00 when the aggregate principal amount of borrowings under the 2018 Revolving Credit Facility and outstanding letters of credit issued under the 2018 Revolving Credit Facility (except for undrawn letters of credit in an aggregate amount equal to or less than \$35 million), taken together, exceed 35% of the total amount of commitments under the 2018 Revolving Credit Facility.

These covenants and restrictions could affect our ability to operate our business and may limit our ability to react to market conditions or take advantage of potential business opportunities as they arise. Additionally, our ability to comply with these covenants may be affected by events beyond our control, including general economic and credit conditions and industry downturns.

If we fail to comply with the covenants in the 2018 Credit Agreement and the indenture governing the 2020 Senior Secured Notes, and are unable to obtain a waiver or amendment, an event of default would result, and the lenders and noteholders could, among other things, declare outstanding amounts due and payable or, with respect to the 2018 Credit Agreement, refuse to lend additional amounts to us or require deposit of cash collateral in respect of outstanding letters of credit. If we were unable to repay or pay the amounts due, the lenders under the 2018 Credit Agreement and the noteholders could, among other things, proceed against the collateral granted to them to secure the indebtedness, which includes substantially all of our and our U.S. subsidiaries' assets and certain assets of certain of our non-U.S. subsidiaries.

Risks related to tax matters

We are required to make payments under a Tax Receivable Agreement for certain tax benefits we may claim in the future, and the amounts we may pay could be significant.

In connection with the completion of our IPO, we entered into a tax receivable agreement (the "Tax Receivable Agreement") that provides Brookfield the right to receive future payments from us of 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of certain tax assets attributable to periods prior to our IPO, including certain federal net operating losses ("NOLs"), previously taxed income under Section 959 of the Code, foreign tax credits, and certain NOLs in GrafTech Switzerland S.A. (collectively, the "Pre-IPO Tax Assets"). In addition, we pay interest on the payments we make to Brookfield with respect to the amount of this cash savings from the due date (without extensions) of our tax return where we realize this savings to the payment date at a rate equal to London Interbank Offered Rate ("LIBOR") plus 1.00% per annum. The term of the Tax Receivable Agreement commenced on April 23, 2018 and will continue until there is no potential for any future tax benefit payments.

We made our initial payment of approximately \$28 million related to the Tax Receivable Agreement in February 2020 and have since made an additional payment of \$22 million. We expect that, based on current tax laws, future payments under the Tax Receivable Agreement relating to the Pre-IPO Tax Assets will be approximately \$19.3 million in the aggregate. The maximum amount over the term of the agreement is approximately \$70 million.

Risks related to government regulation

Stringent health, safety and environmental regulations applicable to our manufacturing operations and facilities could result in substantial costs related to compliance, sanctions or material liabilities and may affect the availability of raw materials.

We are subject to stringent environmental, health and safety laws and regulations relating to our current and former properties (including former onsite landfills over which we have retained ownership), other properties that neighbor ours or to which we sent wastes for treatment or disposal, as well as our current raw materials, products, and operations. Some of our products (including our raw materials) are subject to extensive environmental and industrial hygiene regulations governing the registration and safety analysis of their component substances. Coal tar pitch, which is classified as a substance of very high concern under the EU's Registration, Evaluation, Authorization and Restriction of Chemical Regulation ("REACH")

regulations, is used in certain of our processes but in a manner that we believe does not currently require us to obtain a specific authorization under the REACH guidelines. Violations of these laws and regulations, or of the terms and conditions of permits required for our operations, can result in damage claims, reputational harm, the imposition of substantial fines and criminal sanctions and sometimes require the installation of costly pollution control or safety equipment or costly changes in operations to limit pollution or decrease the likelihood of injuries. In addition, we are currently conducting remediation and/or monitoring at certain current and former properties and may become subject to material liabilities in the future for the investigation and cleanup of contaminated properties, including properties on which we have ceased operations. We have been in the past, and could be in the future, subject to claims alleging personal injury, death or property damage resulting from exposure to hazardous substances, accidents or otherwise for conditions creating an unsafe workplace. Further, alleged noncompliance with or stricter enforcement of, or changes in interpretations of, existing laws and regulations, adoption of more stringent new laws and regulations, discovery of previously unknown contamination or imposition of new or increased requirements could require us to incur costs or become the basis of new or increased liabilities or reputational harm that have a material adverse impact on our operations, costs or results of operations. It is also possible that the impact of safety and environmental regulations on our suppliers could affect the availability and cost of our raw materials.

For example, legislators, regulators and others, as well as many companies, are considering ways to reduce emissions of greenhouse gases (“GHGs”) due to scientific, political and public concern that GHG emissions are altering the atmosphere in ways that are affecting, and are expected to continue to affect, the global climate. The EU has established GHG regulations and is revising its emission trading system for the period after 2020 in a manner that may require us to incur additional costs. The United States required reporting of GHG emissions from certain large sources beginning in 2011. Further measures, in the EU and many other countries, may be enacted in the future. In particular, in December 2015, more than 190 countries participating in the United Nations Framework Convention on Climate Change (“UNFCCC”) reached an international agreement related to curbing GHG emissions (the “Paris Agreement”). Further GHG regulations under the Paris Agreement or otherwise may take the form of a national or international cap-and-trade emissions permit system, a carbon tax, emissions controls, reporting requirements, or other regulatory initiatives. For more information, see the section entitled “Business.”

It is possible that some form of regulation of GHG emissions will also be introduced in the future in other countries in which we operate or market our products. Regulation of GHG emissions could impose additional costs, both direct and indirect, on our business, and on the businesses of our customers and suppliers, such as increased energy and insurance rates, higher taxes, new environmental compliance program expenses, including capital improvements, environmental monitoring and the purchase of emission credits, and other administrative costs necessary to comply with current and potential future requirements or limitations that may be imposed, as well as other unforeseen or unknown costs. To the extent that similar requirements and limitations are not imposed globally, this regulation may impact our ability to compete with companies located in countries that do not have these requirements or limitations. We may also experience a change in competitive position relative to industry peers, changes in prices received for products sold and changes to profit or loss arising from increased or decreased demand for our products. The impact of any future GHG regulatory requirements on our global business will be dependent upon the design of the regulatory schemes that are ultimately adopted and, as a result, we are unable to predict their significance to our operations at this time.

Global data and privacy protection laws applicable to us require substantial costs related to compliance, and any failure to comply could result in significant liability to us, including fines and penalties.

We collect data, including personally identifiable information of our employees, in the course of our business activities and transfer such data between our affiliated entities, to and from our business partners and to third-party service providers, which may be subject to global data privacy laws and cross-border transfer restrictions. While we take steps to comply with these legal requirements, any changes to such laws may impact our ability to effectively transfer data across borders in support of our business operations and any breach of such laws may lead to administrative, civil or criminal liability, as well as reputational harm to the Company and its employees. For example, the EU’s GDPR, introduced a number of obligations for subject companies, including obligations relating to data transfers and the security of personal data they process. We take steps to protect the security and integrity of the information we collect, but there is no guarantee that the steps we have taken will prevent inadvertent or unauthorized use or disclosure of such information, or prevent third parties from gaining unauthorized access to this information despite our efforts. Any such incident could result in legal claims or proceedings, liability under laws that protect the privacy of personally identifiable information (including the GDPR) and damage to our reputation.

The cost of ongoing compliance with global data protection and privacy laws and the potential fines and penalties levied in the event of a breach of such laws may have an adverse effect on our business and operations. For example, the GDPR currently provides that supervisory authorities in the EU may impose administrative fines for non-compliance of up to €20,000,000 or 4% of the subject company’s annual, group-wide turnover (whichever is higher) and individuals who have suffered damage as a result of a subject company’s non-compliance with the GDPR also have the right to seek compensation

from such company. We will need to continue dedicating financial resources and management time to compliance efforts with respect to global data protection and privacy laws, including the GDPR.

Risks related to our common stock

If the ownership of our common stock continues to be highly concentrated, it may prevent minority stockholders from influencing significant corporate decisions and may result in conflicts of interest.

As of February 11, 2022, Brookfield owned approximately 24% of our outstanding common stock. Accordingly, Brookfield has significant influence over all matters requiring a stockholder vote, including the election of directors; mergers, consolidations and acquisitions; the sale of all or substantially all of our assets and other decisions affecting our capital structure; the amendment of our Amended and Restated Certificate of Incorporation (“Amended Certificate of Incorporation”) and our Amended and Restated By-Laws (“Amended By-Laws”); and our winding up and dissolution. This concentration of ownership may delay, deter or prevent acts that would be favored by our other stockholders. The interests of Brookfield may not always coincide with our interests or the interests of our other stockholders. This concentration of ownership may also have the effect of delaying, preventing or deterring a change in control. Also, Brookfield may seek to cause us to take courses of action that, in its judgment, could enhance its investment in us, but that might involve risks to our other stockholders or adversely affect us or our other stockholders. As a result, the market price of our common stock could decline or stockholders might not receive a premium over the then-current market price of our common stock upon a change in control. In addition, this concentration of share ownership may adversely affect the trading price of our common stock because investors may perceive disadvantages in owning shares in a company with significant stockholders.

Our largest stockholder, Brookfield, whose representatives serve on our Board of Directors, has the right to engage or invest in the same or similar businesses as us.

Brookfield has other investments and business activities in addition to their ownership of us. Brookfield has the right, and has no duty to abstain from exercising such right, to engage or invest in the same or similar businesses as us, do business with any of our clients, customers or vendors or employ or otherwise engage any of our officers, directors or employees. If Brookfield or any of its officers, directors or employees acquire knowledge of a potential transaction that could be a corporate opportunity, they have no duty, to the fullest extent permitted by law, to offer such corporate opportunity to us, our stockholders or our affiliates.

In the event that any of our directors and officers who is also a director, officer or employee of Brookfield acquires knowledge of a corporate opportunity or is offered a corporate opportunity, provided that this knowledge was not acquired solely in such person’s capacity as our director or officer and such person acts in good faith, then to the fullest extent permitted by law such person is deemed to have fully satisfied such person’s fiduciary duties owed to us and is not liable to us, if Brookfield pursues or acquires the corporate opportunity or if Brookfield does not present the corporate opportunity to us.

Certain provisions, including in our Amended Certificate of Incorporation and our Amended By-Laws, could hinder, delay or prevent a change in control, which could adversely affect the price of our common stock.

Our Amended Certificate of Incorporation and Amended By-Laws contain provisions that could make it more difficult for a third-party to acquire us without the consent of our Board of Directors or Brookfield, including:

- provisions in our Amended Certificate of Incorporation and Amended By-Laws that prevent stockholders from calling special meetings of our stockholders, except where the Delaware General Corporation Law (“DGCL”) confers the right to fix the date of such meetings upon stockholders;
- advance notice requirements by stockholders with respect to director nominations and actions to be taken at annual meetings;
- provisions in our Amended Certificate of Incorporation provide for a classified Board of Directors such that only one of three classes of directors is elected each year, which prevents our stockholders from replacing the majority our directors at once;
- no provision in our Amended Certificate of Incorporation or Amended By-Laws provides for cumulative voting in the election of directors, which means that the holders of a majority of the outstanding shares of our common stock can elect all the directors standing for election;
- under our Amended Certificate of Incorporation, our Board of Directors have authority to cause the issuance of preferred stock from time to time in one or more series and to establish the terms, preferences and rights of any such series of preferred stock, all without approval of our stockholders; and

- nothing in our Amended Certificate of Incorporation precludes future issuances without stockholder approval of the authorized but unissued shares of our common stock.

These provisions may make it difficult and expensive for a third-party to pursue a tender offer, change in control or takeover attempt that is opposed by Brookfield, our management or our board of directors. Public stockholders who might desire to participate in these types of transactions may not have an opportunity to do so, even if the transaction is favorable to stockholders. These anti-takeover provisions could substantially impede the ability of public stockholders to benefit from a change in control or to change our management and Board of Directors and, as a result, may adversely affect the market price of our common stock and your ability to realize any potential change of control premium.

Our Amended Certificate of Incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our Amended Certificate of Incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a breach of fiduciary duty;
- any action asserting a claim against us arising under the DGCL, our Amended Certificate of Incorporation or our Amended By-Laws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

This exclusive forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers, and other employees. If a court were to find the exclusive forum provision in our Amended Certificate of Incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could harm our business.

The market price of our common stock could be negatively affected by sales of substantial amounts of our common stock in the public markets.

The sale in the public markets of our common stock by Brookfield, which, as of February 11, 2022, owned approximately 24% of our outstanding common stock, or by our officers and directors, or the perception that these sales may occur, could cause the market price of our common stock to decline or cause the market price of our common stock to trade at a discount. Brookfield may from time to time seek to sell or otherwise dispose of some or all of its shares, including by transferring shares to affiliates, distributing shares to its partners, members or beneficiaries, or selling shares in underwritten offerings, block sales, open market transactions or otherwise. Brookfield and our officers and directors may also sell shares into the public markets in accordance with the requirements of Rule 144, and Brookfield is entitled to request that we facilitate SEC registration of their sales of shares pursuant to the terms of a registration rights agreement. A decline in the price of our common stock might impede our ability to raise capital through the issuance of additional common stock or other equity securities.

We cannot guarantee that our stock repurchase program will be fully consummated or that it will enhance long-term stockholder value. Stock repurchases could also increase the volatility of the trading price of our stock and will diminish our cash reserves.

Although our Board of Directors has authorized a stock repurchase program that does not have an expiration date, the program does not obligate us to acquire any particular amount of shares of common stock, and the stock repurchase program may be suspended or discontinued at any time at our discretion. We cannot guarantee that the program will be fully consummated or that it will enhance long-term stockholder value. The program could affect the trading price of our stock, and increase volatility, and any announcement of a termination of this program may result in a decrease in the trading price of our common stock. In addition, our use of this program will diminish our cash.

We may not pay cash dividends on our common stock.

We currently pay cash dividends on our common stock in accordance with our dividend policy. We cannot assure you, however, that we will pay dividends in the future in these amounts or at all. Our Board of Directors may change the timing and

amount of any future dividend payments or eliminate the payment of future dividends in its sole discretion, without any prior notice to our stockholders.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The Company uses the following principal physical properties in connection with the manufacturing and sales of graphite electrodes and corporate administrative operations. The total capacity utilization, reflecting production volume as a percentage of production capacity, of our graphite electrode manufacturing facilities in Calais, France, Monterrey, Mexico, Pamplona, Spain and St. Marys, Pennsylvania, was 72% and 58% for the years ended December 31, 2021 and December 31, 2020, respectively. Production capacity reflects expected maximum production volume during the period depending on product mix and expected maintenance outage. Actual production may vary. The properties that we own are encumbered by our 2018 Credit Agreement and our 2020 Senior Secured Notes.

<u>Location of Facility</u>	<u>Primary Use</u>	<u>Owned or Leased</u>
<i>Americas</i>		
Brooklyn Heights, Ohio	Corporate Headquarters, Innovation and Technology Center and Sales Office	Leased
Monterrey, Mexico	Graphite Electrode Manufacturing Facility and Sales Office	Owned
St. Marys, Pennsylvania	Graphite Electrode Manufacturing Facility	Owned
Port Lavaca, Texas	Petroleum Needle Coke Manufacturing Facility (Seadrift)	Owned
Salvador, Bahia, Brazil	Graphite Electrode Machine Shop and Sales Office	Owned
<i>Europe</i>		
Calais, France	Graphite Electrode Manufacturing Facility and Sales Office	Owned
Pamplona, Spain	Graphite Electrode Manufacturing Facility and Sales Office	Owned
Bussigny, Switzerland	Global Sales and Production Planning Office	Leased

Item 3. Legal Proceedings

We are involved in various investigations, lawsuits, claims, demands, labor disputes and other legal proceedings, including with respect to environmental and human exposure or other personal injury matters, arising out of or incidental to the conduct of our business. While it is not possible to determine the ultimate disposition of each of these matters and proceedings, we do not believe that their ultimate disposition will have a material adverse effect on our financial position, results of operations or cash flows. Additionally, we are involved in the following legal proceedings.

We are involved in various arbitrations, sometimes as claimants and other times as respondents/counterclaimants, pending before the International Chamber of Commerce with several customers who, among other things, have failed to perform under their LTAs and in certain instances are seeking to modify or frustrate their contractual commitments to us. In particular, Aperam South America LTDA, Aperam Sourcing S.C.A., ArcelorMittal Sourcing S.C.A., and ArcelorMittal Brasil S.A. (collectively, the “Claimants”) initiated a single arbitration proceeding against two of the Company’s subsidiaries in the International Chamber of Commerce in June 2020. In June 2021, the Claimants filed their statement of claim, seeking approximately \$61 million plus interest in monetary relief and/or reimbursement in respect of several fixed price LTAs that were executed between such subsidiaries and the Claimants in 2017 and 2018. The Claimants argue, among other things, that they should no longer be required to comply with the terms of the LTAs that they signed due to an alleged drop in market prices for graphite electrodes in January 2020. Alternatively, the Claimants argue that they should not be required to comply with the LTAs that they signed due to alleged market circumstances at the time of execution. We believe we have valid defenses to these claims. We intend to vigorously defend them and enforce our rights under the LTAs.

Pending litigation in Brazil has been brought by employees seeking to recover additional amounts and interest thereon under certain wage increase provisions applicable in 1989 and 1990 under collective bargaining agreements to which employers in the Bahia region of Brazil were a party (including our subsidiary in Brazil). Companies in Brazil have settled claims arising

out of these provisions and, in May 2015, the litigation was remanded by the Brazilian Supreme Court in favor of the employees union. After denying an interim appeal by the Bahia region employers on June 26, 2019, the Brazilian Supreme Court finally ruled in favor of the employees union on September 26, 2019. The employers union has determined not to seek annulment of such decision. Separately, on October 1, 2015, a related action was filed by current and former employees against our subsidiary in Brazil to recover amounts under such provisions, plus interest thereon, which amounts together with interest could be material to us. If the Brazilian Supreme Court proceeding above had been determined in favor of the employers union, it would also have resolved this proceeding in our favor. In the first quarter of 2017, the state court initially ruled in favor of the employees. We appealed this state court ruling, and the appellate court issued a decision in our favor on May 19, 2020. The employees have further appealed and, on December 16, 2020, the court upheld the decision in favor of GrafTech Brazil. On February 22, 2021, the employees filed a further appeal and, on April 28, 2021, the court rejected the employees' appeal in favor of GrafTech Brazil. The employees filed a further appeal and we intend to vigorously defend our position. As of December 31, 2021, we are unable to assess the potential loss associated with these proceedings as the claims do not currently specify the number of employees seeking damages or the amount of damages being sought.

On September 30, 2020, a stockholder of the Company filed a lawsuit in the Delaware Court of Chancery. The stockholder filed an amended complaint on February 5, 2021, in response to the defendants' motion to dismiss. The amended complaint challenges the fairness of the Company's repurchase of shares of its common stock from Brookfield for \$250 million pursuant to a December 3, 2019 share repurchase agreement and also a related block trade by Brookfield of shares of the Company's common stock. The stockholder, on behalf of an alleged class of holders of shares of the Company's common stock as of December 3, 2019 and also purportedly on behalf of the Company, asserts claims for breach of fiduciary duty against certain members of the Company's Board of Directors and Brookfield. The stockholder also challenges the appointment of the independent director who was appointed to the Company's Board of Directors on August 5, 2020, as allegedly in violation of the Company's Amended and Restated Certificate of Incorporation and the Stockholder Rights Agreement with certain Brookfield entities and affiliates. The stockholder seeks, among other things, an award of monetary relief to the Company and a declaration that the appointment of the independent director to the Board of Directors is invalid. On March 22, 2021, the defendants filed a motion to dismiss the amended complaint. On September 29, 2021, the stockholder voluntarily abandoned the stockholder's direct individual and class action claims challenging the share repurchase. On October 4, 2021, the Delaware Court of Chancery heard oral argument on the defendants' motion to dismiss the stockholder's remaining claims and took the matter under advisement. On January 21, 2022, the motion to dismiss was granted in favor of the defendants.

Item 4. Mine Safety Disclosures

Not applicable.

Supplemental Item. Information about our Executive Officers

The following table sets forth information with respect to our current executive officers, including their ages.

Name	Age	Position
David J. Rintoul	64	Chief Executive Officer and President
Timothy K. Flanagan	44	Chief Financial Officer, Vice President of Finance and Treasurer
Quinn J. Coburn	58	Senior Vice President
Jeremy S. Halford	49	Executive Vice President, Chief Operating Officer
Gina K. Gunning	55	Chief Legal Officer and Corporate Secretary
Iñigo Perez Ortiz	50	Senior Vice President, Commercial

David J. Rintoul became Chief Executive Officer and President and was elected to our Board of Directors in March 2018. Prior to joining the Company, Mr. Rintoul served as President of U.S. Steel Tubular Products, a fully-integrated tubular products manufacturer, and as a Senior Vice President of United States Steel Corporation ("U.S. Steel"), an integrated steel producer, since 2014. Before that, Mr. Rintoul has served in various roles at U.S. Steel since 2007, including oversight of U.S. Steel's Slovak and Serbian operations. Mr. Rintoul's career in the steel industry spans 39 years with positions at both integrated and mini mill producers in the United States, Europe and Canada, including extensive mini-mill operational experience at North-Star Bluescope Steel in Delta, Ohio from 2001 to 2005 and from construction through full operations at Acme Steel Company in Riverdale, Illinois from 1995 to 2001. Mr. Rintoul holds an Associate's degree in Mechanical Engineering Technology from Sault College of Applied Arts and Technology, a Bachelor's degree in Business Administration from Lake Superior State University and a Master's degree in Business Administration from the University of Notre Dame.

Timothy K. Flanagan joined the Company as Chief Financial Officer, Vice President of Finance and Treasurer in November 2021. Mr. Flanagan previously served as Executive Vice President, Chief Financial Officer of Cleveland-Cliffs Inc., a flat-rolled steel producer and supplier of iron ore pellets, from January 2017 to February 2019. Prior to being promoted to Executive Vice President, Chief Financial Officer of Cleveland-Cliffs, he held a variety of financial leadership roles at Cleveland-Cliffs Inc. since joining in 2008, including being responsible for the accounting, reporting, treasury and financial planning and analysis functions and serving as the Vice President, Corporate Controller and Chief Accounting Officer from March 2012 to December 2016. Before joining the Company, Mr. Flanagan served as Chief Financial Officer of Benesch, Friedlander, Coplan & Aronoff, LLP, an AmLaw 200 law firm, from June 2019 to November 2021. He has a B.S. in Accounting from the University of Dayton.

Quinn J. Coburn became Senior Vice President in November 2021. Prior to that, Mr. Coburn served as Chief Financial Officer, Vice President Finance and Treasurer from September 2015 to November 2021. He became interim Chief Financial Officer beginning in May 2015 after previously serving as Vice President of Finance and Treasurer. He joined the Company in August 2010 after working at NCR Corporation from December 1992 until August 2010, including service as NCR Corporation's Vice President and Treasurer. Mr. Coburn graduated with a B.S. in Accounting from Utah State University in 1988. He received a Master of Business Administration from University of Pennsylvania's The Wharton School in 1992.

Jeremy S. Halford became Executive Vice President, Chief Operating Officer in October 2021. Mr. Halford joined the Company in May 2019 as Senior Vice President, Operations and Development. Mr. Halford previously served as the President of Arconic Engineered Structures, a producer of highly engineered titanium and aluminum components for the aerospace, defense and oil and gas markets, a position he held since January 2017. Mr. Halford also was President of Doncasters Aerospace, a manufacturer of components and assemblies for the civil and military aero engine and airframe markets, from 2014 to 2016, and Vice President, Global Business Development, Doncasters Group Limited from 2013 to 2014. Previously, he also was President of Mayfran International from 2012 to 2013, and spent seven years at Alcoa Corporation ("Alcoa") in a variety of general management and strategy roles. Mr. Halford holds a Master of Business Administration degree from Harvard University and a Bachelor of Science degree in Mechanical Engineering from GMI Engineering and Management Institute (now Kettering University).

Gina K. Gunning joined the Company as Chief Legal Officer and Corporate Secretary in July 2018. She has more than 25 years of law firm and in-house corporate legal experience across multiple industries. Prior to joining GrafTech, she was an Associate General Counsel at FirstEnergy Corp., a distributor and generator of electricity, from 2012 to 2018, where she was responsible for legal matters involving SEC reporting, business development, and capital markets, as well as corporate and executive compensation topics. She also served as a partner at Jones Day. Ms. Gunning holds a Juris Doctor from Notre Dame Law School and a Bachelor of Arts in English from the University of Notre Dame.

Iñigo Perez Ortiz joined the Company as Senior Vice President, Commercial in February 2020. Mr. Perez most recently served as Vice President, Europe and Asia, Sales and Customer Service at Alcoa, a global industry leader in bauxite, alumina, and aluminum products, a position he held since 2017. Previously at Alcoa, Mr. Perez was Commercial Director, Europe and Asia Pacific from 2011 to 2017, Sales Manager, Europe from 2007 to 2011 and Sales Office Manager from 2002 to 2007. Prior to his career at Alcoa, Mr. Perez served in a variety of senior commercial roles at Autopulit S.A., Warner Electric and Babcock Wilcox Espanola, S.A. Mr. Perez holds a Master in Industrial Plans Management, Lean Manufacturing and Engineering degree from Polytechnic University of Barcelona, an Executive Master of Business Administration degree from Instituto de Empresa and a Mining Engineer degree from the University of the Basque Country.

PART II

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

Market Information

Our common stock is listed on the NYSE under the trading symbol "EAF."

Holders

As of December 31, 2021, there were 12 registered holders of record of our common stock. A substantially greater number of holders of our common stock are "street name" or beneficial holders, whose shares of record are held by banks, brokers, and other financial institutions.

Dividend Policies and Restrictions

We currently pay a quarterly cash dividend of \$0.01 per share, or an aggregate of \$0.04 per share on an annualized basis. We expect to continue to pay this dividend out of cash generated from operations; we do not intend to incur indebtedness to fund regular, quarterly dividend payments.

We cannot assure you, however, that we will pay dividends in the future in these amounts or at all. Our Board of Directors may change the timing and amount of any future dividend payments or eliminate the payment of future dividends in its sole discretion, without any prior notice to our stockholders. Our ability to pay dividends will depend upon many factors, including our financial position and liquidity, results of operations, legal requirements, restrictions that may be imposed by the terms of our current and future credit facilities and other debt obligations and other factors deemed relevant by our Board of Directors.

For further discussion of the factors that may affect our business and our ability to pay dividends, see "Risk Factors-Risks related to our business and industry" and "Risk Factors-Risks related to our common stock-We may not pay cash dividends on our common stock."

Repurchases

The table below sets forth the information on a monthly basis regarding GrafTech's purchases of its common stock, par value \$0.01 per share, during the fourth quarter of 2021.

Period	Issuer Purchases of Equity Securities			Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs ⁽¹⁾
	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	
October 1 through October 31, 2021	364,620	\$ 10.32	364,620	\$ 9,030,314
November 1 through November 30, 2021	—	—	—	159,030,314
December 1 through December 31, 2021	—	—	—	159,030,314
Total	364,620	\$ 10.32	364,620	\$ 159,030,314

⁽¹⁾ On July 31, 2019, we announced that our Board of Directors approved the repurchase of up to \$100 million of our common stock in open market purchases, including under Rule 10b5-1 and/or Rule 10b-18 plans. On November 4, 2021, we announced that our Board of Directors approved the repurchase of up to an additional \$150 million of our common stock in open market purchases, including under Rule 10b5-1 and/or Rule 10b-18 plans. As of December 31, 2021, we are now authorized to repurchase up to \$159,030,314 million in shares of our common stock, inclusive of the amount remaining under the previous authorization. The stock repurchase program has no expiration date.

Item 6. [Reserved]

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

The following discussion and analysis of our financial condition and results of operations should be read together with our Consolidated Financial Statements and the accompanying notes and other financial information appearing elsewhere in this Annual Report. Discussion and analysis regarding our financial condition and results of operations for 2020 as compared to 2019 is included in Item 7 of our Annual Report for the year-ended December 31, 2020, filed with the SEC on February 23, 2021. Information in this section is intended to assist the reader in obtaining an understanding of our Consolidated Financial Statements, the changes in certain key items in those financial statements from year-to-year, the primary factors that accounted for those changes, any known trends or uncertainties that we are aware of that may have a material effect on our future performance, as well as how certain accounting principles affect our Consolidated Financial Statements. This discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. See "Cautionary Note Regarding Forward-Looking Statements." Our actual results could differ materially from those forward-looking statements as a result of many factors, including those discussed in "Risk Factors" and elsewhere in this Annual Report.

Overview

We are a leading manufacturer of high-quality graphite electrode products essential to the production of EAF steel and other ferrous and non-ferrous metals. We believe that we have the most competitive portfolio of low-cost UHP graphite electrode manufacturing facilities in the industry, including three of the highest capacity facilities in the world. We are the only large scale graphite electrode producer that is substantially vertically integrated into petroleum needle coke, a key raw material for graphite electrode manufacturing. Between 1984 and 2011, EAF steelmaking was the fastest-growing segment of the steel sector, with production increasing at an average rate of 3.5% per year, based on WSA data. Historically, EAF steel production has grown faster than the overall steel market due to the greater resilience, more variable cost structure, lower capital intensity and more environmentally friendly nature of EAF steelmaking. This trend was partially reversed between 2011 and 2015 due to global steel production overcapacity driven largely by Chinese BOF steel production. Beginning in 2016, efforts by the Chinese government to restructure China's domestic steel industry have led to limits on BOF steel production and lower export levels, and developed economies, which typically have much larger EAF steel industries, have instituted a number of trade policies in support of domestic steel producers. In response to this increased demand, we modified our commercial strategy and executed LTAs with our customers. Since 2000, EAF production has grown at an average rate of 2.7%.

We service customers at over 300 locations across the globe. In the second half of 2020, we began to see a measured recovery in the global steel markets from the initial downturns resulting from the then challenging market conditions, with each region recovering at different rates. This recovery continued through 2021 and had a positive influence on graphite electrode demand. By the first quarter of 2021, both the global (ex-China) and U.S. steel market capacity utilization rates had surpassed 73%. These increased utilization rates continued through 2021, particularly in the United States.

The commercial team has worked diligently in 2021 to achieve solid results in the current environment. Full year 2021 sales volumes were 167,000 MT, consisting of LTA volumes of 110,000 MT and non-LTA volumes of 57,000 MT.

During the fourth quarter of 2021, our average price from LTAs was approximately \$9,400 per MT and our average price for non-LTA business was approximately \$5,000 per MT. Our average non-LTA graphite electrode price increased 10% sequentially from the third quarter of 2021.

Market prices for graphite electrodes began to increase in the first quarter of 2021, as steel producers' capacity utilization rates increased and they worked through carryover graphite electrode inventories from 2020. There is a lag between the time we negotiate price for non-LTA sales and when our electrodes are delivered and recognized in revenue, which depressed our non-LTA prices during 2021. Prices increased during the second quarter and throughout the remainder of 2021. Prices for non-LTA business reset on January 1, 2022 and we expect our average first quarter non-LTA prices to increase an additional 17 to 20% over the fourth quarter.

In parallel, we expect our costs to increase in 2022, driven by recent global inflationary pressures, particularly for third party needle coke, energy and freight. While we are anticipating our first quarter 2022 costs to increase 7 to 9% over the fourth quarter 2021, we expect further increases after the first quarter to be lower in magnitude as we continue to take steps to mitigate these cost increases.

Capital structure and capital allocation

As of December 31, 2021, we had cash and cash equivalents of \$57.5 million and total debt of approximately \$1.0 billion. We continue to make progress in reducing our long-term debt, repaying \$100 million in the fourth quarter, for a total debt repayment of \$400 million in 2021.

We are committed to delivering value to our stockholders through our disciplined capital allocation strategy. In 2022, we will continue to focus on investing in our business, strengthening our balance sheet and making opportunistic purchases under the remaining \$159 million stock repurchase authorization. Our capital expenditures in 2022 are focused on specific, highly targeted capital investments in operational improvement activities and are expected to be in the range of \$70 and \$80 million.

Industry conditions

The graphite electrode industry has historically followed the growth of the EAF steel industry and, to a lesser extent, the steel industry as a whole, which has been highly cyclical and affected significantly by general economic conditions. Historically, EAF steel production has grown faster than the overall steel market due to the greater resilience, more variable cost structure, lower capital intensity and more environmentally friendly nature of EAF steelmaking.

Increased demand for petroleum needle coke in 2018 and 2019 led to pricing increases in those years. Needle coke prices began to retreat in the second half of 2019 and continued to decline over the course of 2020. The price of needle coke increased throughout 2021, and we expect further increases in 2022. Graphite electrodes have typically been priced at a spread to petroleum needle coke. We believe that our substantial vertical integration into petroleum needle coke through our ownership of Seadrift provides a significant cost advantage relative to our competitors. We currently anticipate utilizing all of our needle coke internally, and will supplement with third-party purchases.

Outlook

Our estimated shipments of graphite electrodes for the final year of the initial term under our LTAs and for the years 2023 through 2024 are as follows:

	2022	2023 through 2024
Estimated LTA volume ⁽¹⁾	95-105	35-45
Estimated LTA revenue ⁽²⁾	\$910-\$1,010	\$350-\$450 ⁽³⁾

(1) In thousands of MT

(2) In millions

(3) Includes expected termination fees from a few customers that have failed to meet certain obligations under their LTAs

Components of results of operations

Net sales

Net sales reflect sales of our products, including graphite electrodes and associated by-products. Several factors affect net sales in any period, including general economic conditions, competitive conditions, customer inventory levels, scheduled plant shutdowns by customers, national vacation practices, changes in customer production schedules in response to seasonal changes in energy costs, weather conditions, strikes and work stoppages at customer plants and changes in customer order patterns including those in response to the announcement of price increases or price adjustments.

Revenue is recognized when a customer obtains control of promised goods. The amount of revenue recognized reflects the consideration to which the Company expects to be entitled to receive in exchange for these goods. See Note 2, "Revenue from Contracts with Customers" to the Consolidated Financial Statements for more information. Our first quarter is historically the weakest sales quarter.

Cost of sales

Cost of sales includes the costs associated with products invoiced during the period as well as non-inventoried manufacturing overhead costs and outbound transportation costs. Cost of sales includes all costs incurred at our production facilities to make products saleable, such as raw materials, energy costs, direct labor and indirect labor and facilities costs, including purchasing and receiving costs, plant management, inspection costs, product engineering and internal transfer costs. In addition, all depreciation associated with assets used to produce products and make them saleable is included in cost of sales.

Direct labor costs consist of salaries, benefits, the service cost component of our pension and other post-employment benefit ("OPEB") plans and other personnel-related costs for employees engaged in the manufacturing of our products.

Inventory valuation

Inventories are stated at the lower of cost or market. Cost is principally determined using the "first-in, first-out" ("FIFO") and average cost, which approximates FIFO, methods. Elements of cost in inventory include raw materials, energy costs, direct labor, manufacturing overhead and depreciation of the manufacturing fixed assets. We allocate fixed production overheads to the costs of conversion based on normal capacity of the production facilities. We recognize abnormal amounts of idle facility expense, freight, handling costs, and wasted materials (spoilage) as current period charges. Market, or net realizable value, is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation.

Research and development

We conduct our R&D both independently and in conjunction with our strategic suppliers, customers and others. Expenditures relating to the development of new products and processes, including improvements to existing products, are expensed as incurred.

Selling and administrative expenses

Selling and administrative expenses include salaries, benefits and other personnel-related costs for employees engaged in sales and marketing, customer technical services, engineering, finance, information technology, human resources and executive management. Other costs include outside legal and accounting fees, risk management (insurance), global operational excellence, global supply chain, in-house legal, the service cost component of our pension and OPEB plans, share-based compensation and certain other administrative and global resources costs.

Other (income) expense, net

Other (income) expense, net consists of a gain related to the settlement of a value-added tax matter in Brazil, the non-service cost components of our pension and OPEB plans, including a "mark-to-market adjustment," which represents actuarial gains and losses that result from the remeasurement of plan assets and obligations due to changes in assumptions or experience. We recognize in earnings these actuarial gains and losses in connection with the annual remeasurement in the fourth quarter of each year. In addition, other (income) expense, net includes the impact of foreign currency on non-operating assets and liabilities and other miscellaneous non-operating income and expense.

Related party Tax Receivable Agreement expense (benefit)

Related party Tax Receivable Agreement (benefit) expense represents our benefit or expense associated with Brookfield's right, as sole pre-IPO stockholder, to receive future payments from us for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of certain tax assets attributable to periods prior to our IPO.

Interest expense

Interest expense consists primarily of interest expense on our 2018 Term Loan Facility, 2018 Revolving Credit Facility, 2020 Senior Secured Notes, amortization of debt issuance costs and accretion of original issue discounts, as well as the settlement losses (gains) on our interest rate swaps.

Effects of changes in currency exchange rates

When the currencies of non-U.S. countries in which we have a manufacturing facility decline (or increase) in value relative to the U.S. dollar, this has the effect of reducing (or increasing) the U.S. dollar equivalent cost of sales and other expenses with respect to those facilities. In certain countries in which we have manufacturing facilities, and in certain export markets, we sell in currencies other than the U.S. dollar. Accordingly, when these currencies increase (or decline) in value relative to the U.S. dollar, this has the effect of increasing (or reducing) net sales. The result of these effects is to increase (or decrease) operating and net income.

The impact of these changes in the average exchange rates of other currencies against the U.S. dollar on our net sales was an increase of \$5.5 million for the year ended December 31, 2021, an increase of \$3.6 million for the year ended December 31, 2020, and a decrease of \$6.9 million for the year ended December 31, 2019.

The impact of these changes in the average exchange rates of other currencies against the U.S. dollar on our cost of sales was an increase of \$10.1 million for the year ended December 31, 2021, and decreases of \$4.9 million and \$9.1 million for the years ended December 31, 2020 and 2019, respectively.

As part of our cash management, we also have intercompany loans between our subsidiaries. These loans are deemed to be temporary and, as a result, remeasurement gains and losses on these loans are recorded as currency gains or losses in other (income) expense, net on the Consolidated Statements of Operations.

We have in the past and may in the future use various financial instruments to manage certain exposures to risks caused by currency exchange rate changes, as described under “Quantitative and Qualitative Disclosures about Market Risk.”

Key metrics used by management to measure performance

In addition to measures of financial performance presented in our Consolidated Financial Statements in accordance with generally accepted accounting principles in the United States (“GAAP”), we use certain other financial measures and operating metrics to analyze the performance of our Company. The “non-GAAP” financial measures consist of EBITDA, adjusted EBITDA, adjusted net income and adjusted earnings per share, which help us evaluate growth trends, establish budgets, assess operational efficiencies and evaluate our overall financial performance. The key operating metrics consist of sales volume, production volume, production capacity and capacity utilization.

Key financial measures

(in thousands, except per share amounts)	For the year ended December 31,	
	2021	2020
Net sales	\$ 1,345,788	\$ 1,224,361
Net income	388,330	434,374
Earnings per share ⁽¹⁾	1.46	1.62
EBITDA ⁽²⁾	590,010	669,332
Adjusted net income ⁽²⁾	464,585	422,512
Adjusted earnings per share ⁽¹⁾⁽²⁾	1.74	1.58
Adjusted EBITDA ⁽²⁾	669,940	658,946

⁽¹⁾ Earnings per share represents diluted earnings per share. Adjusted earnings per share represents adjusted diluted earnings per share.

⁽²⁾ Non-GAAP financial measures; see below for information and reconciliations of EBITDA, adjusted EBITDA and adjusted net income to net income and adjusted EPS to EPS, the most directly comparable financial measures calculated and presented in accordance with GAAP.

Key operating measures

In addition to measures of financial performance presented in accordance with GAAP, we use certain operating metrics to analyze the performance of our company. The key operating metrics consist of sales volume, production volume, production capacity and capacity utilization. These metrics align with management's assessment of our revenue performance and profit margin, and will help investors understand the factors that drive our profitability.

Sales volume reflects the total volume of graphite electrodes sold for which revenue has been recognized during the period. For a discussion of our revenue recognition policy, see “—Critical accounting policies—Revenue recognition” in this section. Sales volume helps investors understand the factors that drive our net sales.

Production volume reflects graphite electrodes produced during the period. Production capacity reflects expected maximum production volume during the period depending on product mix and expected maintenance outage. Actual production may vary. Capacity utilization reflects production volume as a percentage of production capacity. Production

volume, production capacity and capacity utilization help us understand the efficiency of our production, evaluate cost of sales and consider how to approach our contract initiative.

(in thousands)	For the year ended December 31,	
	2021	2020
Sales volume (MT) ⁽¹⁾	167	135
Production volume (MT) ⁽²⁾	165	134
Total production capacity ⁽³⁾⁽⁴⁾	230	230
Total capacity utilization ⁽⁴⁾⁽⁵⁾	72 %	58 %
Production capacity excluding St. Marys (MT) ⁽³⁾⁽⁶⁾	202	202
Capacity utilization excluding St. Marys ⁽⁵⁾⁽⁶⁾	82 %	66 %

⁽¹⁾ Sales volume reflects only graphite electrodes manufactured by GrafTech.

⁽²⁾ Production volume reflects graphite electrodes we produced during the period.

⁽³⁾ Production capacity reflects expected maximum production volume during the period depending on product mix and expected maintenance outage. Actual production may vary.

⁽⁴⁾ Includes graphite electrode facilities in Calais, France; Monterrey, Mexico; Pamplona, Spain; and St. Marys, Pennsylvania.

⁽⁵⁾ Capacity utilization reflects production volume as a percentage of production capacity.

⁽⁶⁾ In the first quarter of 2018, our St. Marys, Pennsylvania facility began graphitizing a limited amount of electrodes sourced from our Monterrey, Mexico facility.

Non-GAAP financial measures

In addition to providing results that are determined in accordance with GAAP, we have provided certain financial measures that are not in accordance with GAAP. EBITDA, adjusted EBITDA, adjusted net income and adjusted EPS are non-GAAP financial measures. We define EBITDA, a non-GAAP financial measure, as net income or loss plus interest expense, minus interest income, plus income taxes and depreciation and amortization. We define adjusted EBITDA as EBITDA plus any pension and other post-employment benefit (OPEB) plan expenses, adjustments for public offerings and related expenses, non-cash gains or losses from foreign currency remeasurement of non-operating assets and liabilities in our foreign subsidiaries where the functional currency is the U.S. dollar, related party payable - tax receivable agreement adjustments, stock-based compensation, non-cash fixed asset write-offs, value-added tax credit gains in Brazil and Change in Control charges that were triggered as a result of the ownership of our largest stockholder falling below 30% of our total outstanding shares. For purposes of this section, a "Change in Control" occurred when Brookfield and any affiliates thereof ceased to own stock of the Company that constitutes at least thirty percent (30%) or thirty-five percent (35%), as applicable, of the total fair market value or total voting power of the stock of the Company. Adjusted EBITDA is the primary metric used by our management and our Board of Directors to establish budgets and operational goals for managing our business and evaluating our performance.

We monitor adjusted EBITDA as a supplement to our GAAP measures, and believe it is useful to present to investors, because we believe that it facilitates evaluation of our period-to-period operating performance by eliminating items that are not operational in nature, allowing comparison of our recurring core business operating results over multiple periods unaffected by differences in capital structure, capital investment cycles and fixed asset base. In addition, we believe adjusted EBITDA and similar measures are widely used by investors, securities analysts, ratings agencies, and other parties in evaluating companies in our industry as a measure of financial performance and debt-service capabilities.

Our use of adjusted EBITDA has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our results as reported under GAAP. Some of these limitations are:

- adjusted EBITDA does not reflect changes in, or cash requirements for, our working capital needs;
- adjusted EBITDA does not reflect our cash expenditures for capital equipment or other contractual commitments, including any capital expenditure requirements to augment or replace our capital assets;
- adjusted EBITDA does not reflect the interest expense or the cash requirements necessary to service interest or principal payments on our indebtedness;
- adjusted EBITDA does not reflect tax payments that may represent a reduction in cash available to us;
- adjusted EBITDA does not reflect expenses relating to our pension and OPEB plans;
- adjusted EBITDA does not reflect the non-cash gains or losses from foreign currency remeasurement of non-operating assets and liabilities in our foreign subsidiaries where the functional currency is the U.S. dollar;

- adjusted EBITDA does not reflect public offerings and related expenses;
- adjusted EBITDA does not reflect related party payable - Tax Receivable Agreement adjustments;
- adjusted EBITDA does not reflect stock-based compensation or the non-cash write-off of fixed assets;
- adjusted EBITDA does not reflect gains on a value-added tax matter in Brazil;
- adjusted EBITDA does not reflect the Change in Control charges; and
- other companies, including companies in our industry, may calculate EBITDA and adjusted EBITDA differently, which reduces its usefulness as a comparative measure.

We define adjusted net income, a non-GAAP financial measure, as net income or loss and excluding the items used to calculate adjusted EBITDA, less the tax effect of those adjustments. We define adjusted EPS, a non-GAAP financial measure, as adjusted net income divided by the weighted average of diluted common shares outstanding during the period. We believe adjusted net income and adjusted EPS are useful to present to investors because we believe that they assist investors' understanding of the underlying operational profitability of the Company.

In evaluating EBITDA, adjusted EBITDA, adjusted net income and adjusted EPS, you should be aware that in the future, we will incur expenses similar to the adjustments in the reconciliation presented below, other than the Change in Control charges. Our presentations of EBITDA, adjusted EBITDA, adjusted net income, adjusted EPS, should not be construed as suggesting that our future results will be unaffected by these expenses or any unusual or non-recurring items. When evaluating our performance, you should consider EBITDA, adjusted EBITDA, adjusted net income, adjusted EPS, alongside other measures of financial performance and liquidity, including our net income (loss), EPS, respectively, and other GAAP measures.

The following table reconciles our non-GAAP key financial measures to the most directly comparable GAAP measures:

Reconciliation of Net Income to Adjusted Net Income

	For the year ended December 31,	
	2021	2020
Net income	\$ 388,330	\$ 434,374
<u>Diluted income per common share:</u>		
Net income per share	\$ 1.46	\$
Weighted average shares outstanding	266,317,194	267,930,644
Net income	\$ 388,330	\$ 434,374
Adjustments, pre-tax:		
Pension and OPEB plan (benefits) expenses ⁽¹⁾	(2,545)	
Public offerings and related expenses ⁽²⁾	663	
Non-cash (gains) losses on foreign currency remeasurement ⁽³⁾	(119)	
Stock-based compensation ⁽⁴⁾	1,917	
Non-cash fixed asset write-off ⁽⁵⁾	3,197	
Related party Tax Receivable Agreement adjustment ⁽⁶⁾	231	
Change in Control LTIP award ⁽⁷⁾	73,384	
Change in Control stock-based compensation acceleration ⁽⁷⁾	14,713	
Brazil value-added tax credit ⁽⁸⁾	(11,511)	
Total non-GAAP adjustments pre-tax	\$ 79,930	\$
Income tax impact on non-GAAP adjustments ⁽⁹⁾	3,675	
Adjusted net income	\$ 464,585	\$ 422,512

- (1) Net periodic (benefit) cost for our pension and OPEB plans, including a mark-to-market (gain) loss, representing actuarial gains and losses that result from the remeasurement of plan assets and obligations due to changes in assumptions or experience. We recognize in earnings the actuarial gains and losses in connection with the annual remeasurement in the fourth quarter of each year.
- (2) Legal, accounting, printing and registration fees associated with the public offerings and related expenses.
- (3) Non-cash (gains) losses from foreign currency remeasurement of non-operating assets and liabilities of our non-U.S. subsidiaries where the functional currency is the U.S. dollar.
- (4) Non-cash expense for stock-based compensation grants.
- (5) Non-cash fixed asset write-off recorded for obsolete assets.
- (6) Non-cash expense adjustment for future payment to our sole pre-IPO stockholder for tax assets that are expected to be utilized.
- (7) In the second quarter of 2021, we incurred Change in Control charges as a result of the ownership of our largest stockholder, Brookfield, moving below 30% of our shares outstanding.
- (8) Gain from the settlement of a value-added tax matter in Brazil.
- (9) The tax impact on the non-GAAP adjustments is affected by their tax deductibility and the applicable jurisdictional tax rates.

Reconciliation of EPS to Adjusted EPS

	For the year ended December 31,	
	2021	2020
EPS	\$ 1.46	\$ 1.62
Adjustments per share:		
Pension and OPEB plan (benefits) expenses ⁽¹⁾	(0.01)	0.03
Public offerings and related expenses ⁽²⁾	—	—
Non-cash losses on foreign currency remeasurement ⁽³⁾	—	0.01
Stock-based compensation ⁽⁴⁾	—	0.01
Non-cash fixed asset write-off ⁽⁵⁾	0.01	—
Related party Tax Receivable Agreement adjustment ⁽⁶⁾	—	(0.08)
Change in Control LTIP award ⁽⁷⁾	0.27	—
Change in Control stock-based compensation acceleration ⁽⁷⁾	0.06	—
Brazil value-added tax credit ⁽⁸⁾	(0.04)	—
Total non-GAAP adjustments pre-tax per share	0.29	(0.03)
Income tax impact on non-GAAP adjustments per share ⁽⁹⁾	0.01	0.01
Adjusted EPS	\$ 1.74	\$ 1.58

- (1) Net periodic (benefit) cost for our pension and OPEB plans, including a mark-to-market (gain) loss, representing actuarial gains and losses that result from the remeasurement of plan assets and obligations due to changes in assumptions or experience. We recognize in earnings the actuarial gains and losses in connection with the annual remeasurement in the fourth quarter of each year.
- (2) Legal, accounting, printing and registration fees associated with the public offerings and related expenses.
- (3) Non-cash losses from foreign currency remeasurement of non-operating assets and liabilities of our non-U.S. subsidiaries where the functional currency is the U.S. dollar.
- (4) Non-cash expense for stock-based compensation grants.
- (5) Non-cash fixed asset write-off recorded for obsolete assets.
- (6) Non-cash expense adjustment for future payment to our sole pre-IPO stockholder for tax assets that are expected to be utilized.
- (7) In the second quarter of 2021, we incurred Change in Control charges as a result of the ownership of our largest stockholder, Brookfield, moving below 30% of our total shares outstanding.
- (8) Gain from the settlement of a value-added tax matter in Brazil.
- (9) The tax impact on the non-GAAP adjustments is affected by their tax deductibility and the applicable jurisdictional tax rates.

Reconciliation of Net Income to Adjusted EBITDA

	For the year ended December 31,	
	2021	2020
Net income	\$ 388,330	\$ 434,374
Add:		
Depreciation and amortization	65,716	62,963
Interest expense	68,760	98,074
Interest income	(872)	(1,750)
Income taxes	68,076	75,671
EBITDA	590,010	669,332
Adjustments:		
Pension and OPEB plan (benefits) expenses ⁽¹⁾	(2,545)	6,096
Public offerings and related expenses ⁽²⁾	663	264
Non-cash (gains) losses on foreign currency remeasurement ⁽³⁾	(119)	1,297
Stock-based compensation ⁽⁴⁾	1,917	2,669
Non-cash fixed asset write-off ⁽⁵⁾	3,197	378
Related party Tax Receivable Agreement adjustment ⁽⁶⁾	231	(21,090)
Change in Control LTIP award ⁽⁷⁾	73,384	—
Change in Control stock-based compensation acceleration ⁽⁷⁾	14,713	—
Brazil value-added tax credit ⁽⁸⁾	(11,511)	—
Adjusted EBITDA	\$ 669,940	\$ 658,946

- (1) Net periodic (benefit) cost for our pension and OPEB plans, including a mark-to-market (gain) loss, representing actuarial gains and losses that result from the remeasurement of plan assets and obligations due to changes in assumptions or experience. We recognize in earnings the actuarial gains and losses in connection with the annual remeasurement in the fourth quarter of each year.
- (2) Legal, accounting, printing and registration fees associated with the public offerings and related expenses.
- (3) Non-cash (gains) losses from foreign currency remeasurement of non-operating assets and liabilities of our non-U.S. subsidiaries where the functional currency is the U.S. dollar.
- (4) Non-cash expense for stock-based compensation grants.
- (5) Non-cash fixed asset write-off recorded for obsolete assets.
- (6) Non-cash expense adjustment for future payment to our sole pre-IPO stockholder for tax assets that are expected to be utilized.
- (7) In the second quarter of 2021, we incurred Change in Control charges as a result of the ownership of our largest stockholder, Brookfield, moving below 30% of our shares outstanding.
- (8) Gain from the settlement of a value-added tax matter in Brazil.

Customer base

We are a global company and sell our products in every major geographic market. Sales of these products to buyers outside the United States accounted for approximately 79% of our net sales in both 2021 and 2020 and 77% in 2019.

In 2021, five of our 10 largest customers were based in Europe, three in the United States, one in Brazil and one in Mexico. However, seven of our 10 largest customers are multi-national operations.

The following table summarizes information as to our operations in different geographical areas:

(in thousands)	For the year ended December 31,	
	2021	2020
Net sales:		
United States	\$ 285,710	\$ 260,867
Americas (excluding the United States)	241,442	187,779
Asia Pacific	154,084	127,415
Europe, Middle East, Africa	664,552	648,300
Total	\$ 1,345,788	\$ 1,224,361

In 2021, no customer accounted for 10% or more of our net sales, nor do we believe any customer poses a significant concentration of risk, as sales to one customer could be replaced by demand from other customers.

Results of operations

Results of operations for 2021 as compared to 2020

The tables presented in our period-over-period comparisons summarize our Consolidated Statements of Operations and illustrate key financial indicators used to assess the consolidated financial results. Throughout our Management Discussion and Analysis of Financial Condition and Results of Operations ("MD&A"), insignificant changes may be deemed not meaningful and are generally excluded from the discussion.

(in thousands)	For the Year Ended December 31,		Increase/ Decrease	% Change
	2021	2020		
Net sales	\$ 1,345,788	\$ 1,224,361	\$ 121,427	10 %
Cost of sales	701,335	563,864	137,471	24 %
Gross profit	644,453	660,497	(16,044)	(2) %
Research and development	3,771	3,975	(204)	(5) %
Selling and administrative expenses	132,608	67,913	64,695	95 %
Operating income	508,074	588,609	(80,535)	(14) %
Other (income) expense, net	(16,451)	3,330	(19,781)	N/A
Related party Tax Receivable Agreement expense (benefit)	231	(21,090)	21,321	N/A
Interest expense	68,760	98,074	(29,314)	(30) %
Interest income	(872)	(1,750)	(878)	(50) %
Income before provision for income taxes	456,406	510,045	(53,639)	(11) %
Provision for income taxes	68,076	75,671	(7,595)	(10) %
Net income	\$ 388,330	\$ 434,374	\$ (46,044)	(11) %

Net sales. Net sales increased \$121.4 million, or 10%, from \$1.2 billion in 2020 to \$1.3 billion in 2021. 2020 was impacted by the then challenging market conditions. Stronger demand for our products in 2021 resulted in a 24% increase in sales volume compared to 2020. Partially offsetting the increased volume was a decrease in average realized sales prices. While the non-LTA prices increased throughout the year, the decrease in average realized sales prices reflects an increased percentage of non-LTA sales versus the prior year. Prices for non-LTA business reset on January 1, 2022 and we expect our average first quarter 2022 non-LTA prices to increase an additional 17 to 20% over the fourth quarter 2021.

Cost of sales. Cost of sales increased \$137.5 million, or 24%, in 2021 compared to 2020, driven primarily by the increase in sales volume of manufactured electrodes. Additionally, cost of sales in 2021 was impacted by a one-time long-term incentive plan ("LTIP") charge of \$30.8 million resulting from a Change in Control after our largest stockholder's ownership of our common stock was reduced below 30% of our outstanding common stock (see Note 12, "Commitments and Contingencies," to the Consolidated Financial Statements for additional information). We expect our costs to increase in 2022, driven by recent global inflationary pressures, particularly for third party needle coke, energy and freight. While we are anticipating our first quarter 2022 costs to increase 7 to 9% over the fourth quarter 2021, we expect further increases after the first quarter to be lower in magnitude as we continue to take steps to mitigate these cost increases.

Selling and administrative expenses. Selling and administrative expenses increased \$64.7 million, or 95%, from \$67.9 million in 2020 to \$132.6 million in 2021 primarily due to the aforementioned Change in Control resulting in \$42.6 million of one-time LTIP expense. Additionally, the Change in Control resulted in \$12.9 million of one-time accelerated stock-based compensation expense.

Other (income) expense, net. Other (income) expense, net changed from an expense of \$3.3 million in 2020 to an income generation of \$16.5 million in 2021. This was primarily the result of an \$11.5 million gain on a value-added tax matter in Brazil for which we received a beneficial ruling. Additionally, our annual pension and OPEB mark-to-market adjustment resulted in a benefit in 2021 of \$3.9 million in 2021 compared to an expense of \$3.2 million in 2020.

Related party Tax Receivable Agreement expense (benefit). Related party Tax Receivable Agreement expense (benefit) increased from a benefit of \$21.1 million in 2020 to an expense of \$0.2 million in 2021. The benefit recorded in 2020 resulted from the revision of U.S. income estimates affecting the future usage of our U.S. tax attributes, which are required to be reimbursed to Brookfield under the Tax Receivable Agreement.

Interest expense. Interest expense decreased by \$29.3 million, or 30%, from \$98.1 million in 2020 to \$68.8 million in 2021, due to lower average borrowings as we repaid \$400 million of our 2018 Term Loan Facility during 2021.

Provision for income taxes. The following table summarizes the provision for income taxes in 2021 and 2020:

	For the Year Ended December 31, 2021	For the Year Ended December 31, 2020
Provision for income taxes	\$ 68,076	\$ 75,671
Income before provision for income taxes	\$ 456,406	\$ 510,045
Effective income tax rate	14.9 %	14.8 %

The effective tax rate for the year ended December 31, 2021 was 14.9% and differs from the U.S. statutory tax rate of 21% primarily due to worldwide earnings from various countries taxed at different rates, partially offset by the net combined impact related to the U.S. taxation of Global Intangible Low Tax Income ("GILTI") and Foreign Tax Credits ("FTC's"). As of December 31, 2021, the balance of our valuation allowance against deferred tax assets was \$10.6 million and does not limit the Company's ability to utilize these tax assets in the future. We expect the effective tax rate in 2022 to be approximately 14-18%.

The provision for income taxes changed from \$75.7 million, with an effective tax rate of 14.8% for the year ended December 31, 2020 to a \$68.1 million with a 14.9% effective rate for the year ended December 31, 2021. This change in effective tax rate is primarily due to the reduction in pre-tax income and the mix of worldwide earnings from various countries taxed at different rates that are offset by the U.S. taxation of GILTI and additional tax on non-deductible compensation due to the Change in Control.

GrafTech has considered the tax impact of COVID-19 legislation, including the American Rescue Plan Act, and has concluded that there is no material tax impact. The Company continues to monitor the tax effects of any legislative changes.

Currency translation and transactions

We translate the assets and liabilities of our non-U.S. subsidiaries into U.S. dollars for consolidation and reporting purposes in accordance with the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 830, *Foreign Currency Matters*. Foreign currency translation adjustments are generally recorded as part of stockholders' equity and identified as part of accumulated other comprehensive loss on the Consolidated Balance Sheets until such time as their operations are sold or substantially or completely liquidated.

We account for our Russian, Swiss, Luxembourg, United Kingdom and Mexican subsidiaries using the U.S. dollar as the functional currency, as sales and purchases are predominantly U.S. dollar-denominated. Our remaining subsidiaries use their local currency as their functional currency.

We also record foreign currency transaction gains and losses from non-permanent intercompany balances as part of cost of sales and other (income) expense, net.

Significant changes in currency exchange rates impacting us are described under "—Effects of changes in currency exchange rates" and "—Results of operations" in this section.

Liquidity and capital resources

Our sources of funds have consisted principally of cash flow from operations and debt, including our credit facilities (subject to continued compliance with the financial covenants and representations). Our uses of those funds (other than for operations) have consisted principally of dividends, capital expenditures, scheduled debt repayments, optional debt repayments, stock repurchases and other obligations. Disruptions in the U.S. and international financial markets could adversely affect our liquidity and the cost and availability of financing to us in the future.

We believe that we have adequate liquidity to meet our needs for at least the next 12 months and for the foreseeable future. As of December 31, 2021, we had liquidity of \$304.2 million, consisting of \$246.7 million of availability under our 2018 Revolving Credit Facility (subject to continued compliance with the financial covenants and representations) and cash and

cash equivalents of \$57.5 million. We had long-term debt of \$1.0 billion and short-term debt of \$0.1 million as of December 31, 2021. As of December 31, 2020, we had liquidity of \$391.8 million, consisting of \$246.4 million available under our 2018 Revolving Credit Facility and cash and cash equivalents of \$145.4 million. We had long-term debt of \$1.4 billion and short-term debt of \$0.1 million as of December 31, 2020.

As of December 31, 2021 and 2020, \$49.1 million and \$114.6 million, respectively, of our cash and cash equivalents were located outside of the U.S. We repatriate funds from our foreign subsidiaries through dividends. All of our subsidiaries face the customary statutory limitation that distributed dividends do not exceed the amount of retained and current earnings. In addition, for our subsidiary in South Africa, the South Africa Central Bank imposes that certain solvency and liquidity ratios remain above defined levels after the dividend distribution, which historically has not materially affected our ability to repatriate cash from this jurisdiction. The cash and cash equivalents balances in South Africa were \$0.5 million and \$1.6 million as of December 31, 2021 and December 31, 2020, respectively. Upon repatriation to the United States, the foreign source portion of dividends we receive from our foreign subsidiaries is no longer subject to U.S. federal income tax as a result of the Tax Cuts and Jobs Act of 2017 ("Tax Act").

Cash flow and plans to manage liquidity. Our cash flow typically fluctuates significantly between quarters due to various factors. These factors include customer order patterns, fluctuations in working capital requirements, timing of tax and interest payments and other factors. We had positive cash flow from operating activities during 2021, 2020 and 2019. Although the global economic environment experienced significant swings in these periods, our working capital management and cost-control initiatives allowed us to remain operating cash-flow positive in both times of declining and improving operating results. Cash from operations is expected to remain at positive sustained levels.

As of December 31, 2021, we had total availability under the 2018 Revolving Credit Facility of \$246.7 million after giving effect to \$3.3 million of letters of credit. As of December 31, 2020, we had \$3.6 million of letters of credit, for a total availability of \$246.4 million under the 2018 Revolving Credit Facility.

We announced on July 31, 2019, that our Board of Directors authorized a program to repurchase up to \$100 million of our outstanding common stock. We may purchase shares from time to time on the open market, including under Rule 10b5-1 and/or Rule 10b-18 plans. The amount and timing of repurchases are subject to a variety of factors including liquidity, stock price, applicable legal requirements, other business objectives and market conditions. We repurchased 4.7 million shares of common stock for a total purchase price of \$50.0 million under this program during 2021. Additionally, on November 4, 2021, we announced that our Board of Directors authorized an additional \$150 million of stock repurchases, bringing our total stock repurchase availability to \$159.0 million, inclusive of the amount remaining under the previous authorization.

In December 2020, GrafTech Finance Inc. ("GrafTech Finance") issued \$500 million aggregate principal amount the 2020 Senior Secured Notes in a private offering. The 2020 Senior Secured Notes and related guarantees are secured on a pari passu basis by the collateral securing the Senior Secured Credit Facilities. All of the proceeds from the 2020 Senior Secured Notes were used to partially repay borrowings under our 2018 Term Loan Facility.

We repaid an additional \$400 million on our 2018 Term Loan Facility in both 2021 and 2020. We are committed to delivering value to our stockholders through our disciplined capital allocation strategy. In 2022, we will continue to focus on investing in our business, strengthening our balance sheet and making opportunistic purchases under the remaining \$159.0 million stock repurchase authorization.

In February 2021, the Company entered into a second amendment (the "Second Amendment") to the 2018 Credit Agreement that decreased the Applicable Rate (as defined in the 2018 Credit Agreement) by 0.50% for each pricing level or (ii) the ABR Rate (as defined in the 2018 Credit Agreement), plus an applicable margin equal to 2.00% per annum following the Second Amendment, in each case with one step down of 25 basis points based on achievement of certain public ratings of the 2018 Term Loan Facility. The Second Amendment also decreased the interest rate floor from 1.0% to 0.50% for the 2018 Term Loan Facility.

Prior to April 2020, we had paid a quarterly cash dividend of \$0.085 per share, or an aggregate of \$0.34 per share on an annualized basis. In April 2020, as a result of the deteriorating economic environment, our Board of Directors reduced our dividend rate to \$0.01 per share, or \$0.04 per share on an annualized basis. There can be no assurance that we will pay dividends in the future in these amounts or at all. Our Board of Directors may change the timing and amount of any future dividend payments or eliminate the payment of future dividends in its sole discretion, without any prior notice to our stockholders. Our ability to pay dividends will depend upon many factors, including our financial position and liquidity, results of operations, legal requirements, restrictions that may be imposed by the terms of our current and future credit facilities and other debt obligations and other factors deemed relevant by our Board of Directors.

Potential uses of our liquidity include dividends, stock repurchases, capital expenditures, acquisitions, scheduled debt repayments, optional debt repayments and other general purposes. An improving economy, while resulting in improved results of operations, could increase our cash requirements to purchase inventories, make capital expenditures and fund payables and other obligations until increased accounts receivable are converted into cash. A downturn could significantly and negatively impact our results of operations and cash flows, which, coupled with increased borrowings, could negatively impact our credit ratings, our ability to comply with debt covenants, our ability to secure additional financing and the cost of such financing, if available.

In order to seek to minimize our credit risks, we may reduce our sales of, or refuse to sell (except for prepayment, cash on delivery or under letters of credit or parent guarantees), our products to some customers and potential customers. Our unrecovered trade receivables worldwide have not been material during the last two years individually or in the aggregate.

We manage our capital expenditures by taking into account quality, plant reliability, safety, environmental and regulatory requirements, prudent or essential maintenance requirements, global economic conditions, available capital resources, liquidity, long-term business strategy and return on invested capital for the relevant expenditures, cost of capital and return on invested capital of the Company as a whole among other factors. Capital expenditures totaled \$58.3 million in 2021. We anticipate capital expenditures between \$70 and \$80 million in 2022.

In the event that operating cash flows fail to provide sufficient liquidity to meet our business needs, including capital expenditures, any such shortfall would need to be made up by increased borrowings under our 2018 Revolving Credit Facility, to the extent available.

Related Party Transactions

We have engaged in transactions with affiliates or related parties during 2020 and 2021, and we expect to continue to do so in the future. These transactions include ongoing obligations under the Tax Receivable Agreement, stockholders rights agreement, as amended, and registration rights agreement, each with Brookfield.

Cash flows

The following table summarizes our cash flow activities:

	For the Year Ended December 31,	
	2021	2020
	(Dollars in millions)	
Cash flow provided by (used in):		
Operating activities	\$ 443.0	\$ 563.6
Investing activities	(57.9)	(35.7)
Financing activities	(471.8)	(463.7)
Net change in cash and cash equivalents	(86.6)	64.3

Operating activities

Cash provided by operating activities totaled \$443.0 million in the year ended December 31, 2021 versus \$563.6 million in the prior-year period. The decrease in operating cash-flows was primarily due to higher working capital in 2021 as compared to the prior year, driven by increased sales and higher production levels. In addition to the working capital change, cash from operating activities was negatively impacted by the \$71 million one-time payment of the LTIP award triggered by the May 2021 Change in Control (see Note 12, "Commitments and Contingencies," to the Consolidated Financial Statements for additional information), partially offset by decreases versus the prior year in use of cash totaling \$50 million for interest, tax payments, Tax Receivable Agreement payments and pension contributions.

The net impact of the changes in working capital (operating assets and liabilities), which are discussed in more detail below, include the impact of changes in: receivables, inventories, prepaid expenses, accounts payable, accrued liabilities, accrued taxes, interest payable and payments of other current liabilities.

In the year ended December 31, 2021, changes in working capital resulted in a net use of funds of \$16.4 million, which was impacted by:

- use of funds in accounts receivable of \$28.9 million due to the timing and increased level of sales;

- use of funds from increases in inventory of \$28.2 million due primarily to increases in both the price and quantity of raw materials;
- net use of funds from increases in prepaid expenses and other current assets of \$31.9 million resulting primarily from the timing of refunds of value-added taxes in certain foreign jurisdictions, including the receivable associated with the one-time Brazil value-added tax credit;
- source of funds of \$5.7 million resulting from an increase in income taxes payable driven primarily by the timing of income tax payments in 2021; and
- source of funds of \$66.6 million from increases in accounts payable and other accruals primarily driven by increased purchases of raw materials resulting from higher levels of production and by the timing of payments.

Other uses of cash in the year ended December 31, 2021 included cash paid for interest of \$56.3 million, cash paid for taxes of \$63.8 million, cash paid for the Tax Receivable Agreement of \$21.8 million and contributions to pension and other benefit plans of \$4.2 million.

In the year ended December 31, 2020, changes in working capital resulted in a net source of funds of \$86.4 million which was impacted by:

- net cash inflows in accounts receivable of \$63.6 million from the decrease in accounts receivable due to lower sales;
- source of funds from decreases in inventory of \$44.6 million from our efforts to reduce inventory due to the lower demand environment;
- use of funds of \$12.4 million resulting from a decrease in income taxes payable driven primarily by the timing of income tax payments in 2020 and lower tax liabilities as a result of lower profitability; and
- use of funds of \$12.8 million from decreases in accounts payable and other accruals primarily driven by decreased purchases of raw materials resulting from lower levels of production and timing of payments.

Other uses of cash in the year ended December 31, 2020 included cash paid for interest of \$87.0 million, \$74.0 million of cash paid for taxes, cash paid for the Tax Receivable Agreement of \$27.8 million and contributions to pension and other benefit plans of \$6.6 million.

Investing activities

Net cash used in investing activities was \$57.9 million in the year ended December 31, 2021 compared to \$35.7 million in the year ended December 31, 2020. The change is due to the increase in capital expenditures, as the 2020 spend had been lower due to the slowdown in production activity.

Financing activities

Net cash outflow from financing activities was \$471.8 million during the year ended December 31, 2021, compared to \$463.7 million during the year ended December 31, 2020. Repayments of long-term debt amounted to \$400.0 million in 2021, which was substantially similar to the amount in the prior year. Repurchases of our common stock were \$50.0 million in 2021, compared to \$30.1 million in the prior year. Dividends payments were \$10.6 million in 2021, compared to \$30.9 million in the prior year as the quarterly dividend was decreased from \$0.085 to \$0.01 per share effective the second quarter of 2020. Other uses of cash were up by approximately \$5 million versus the prior year, primarily due to the payment in 2021 of taxes related to the net share settlement of awards.

Financing transactions

In February 2018, the Company entered into the 2018 Credit Agreement, which provides for (i) the \$2.3 billion 2018 Term Loan Facility after giving effect to the June 2018 amendment (the “First Amendment”) that increased the aggregate principal amount of the 2018 Term Loan Facility from \$1.5 billion to \$2.3 billion and (ii) the \$250 million 2018 Revolving Credit Facility. GrafTech Finance is the sole borrower under the 2018 Term Loan Facility while GrafTech Finance, GrafTech Switzerland SA (“Swissco”) and GrafTech Luxembourg II S.à.r.l. (“Luxembourg Holdco”) and, together with GrafTech Finance and Swissco, the “Co-Borrowers”) are co-borrowers under the 2018 Revolving Credit Facility. The 2018 Term Loan Facility and the 2018 Revolving Credit Facility mature on February 12, 2025 and February 12, 2023, respectively.

The 2018 Term Loan Facility bears interest, at our option, at a rate equal to either (i) the Adjusted LIBO Rate (as defined in the 2018 Credit Agreement), plus an applicable margin equal to 3.00% per annum following an amendment in

February 2021 (the "Second Amendment") that decreased the Applicable Rate (as defined in the 2018 Credit Agreement) by 0.50% for each pricing level or (ii) the ABR Rate (as defined in the 2018 Credit Agreement), plus an applicable margin equal to 2.00% per annum following the Second Amendment, in each case with one step down of 25 basis points based on achievement of certain public ratings of the 2018 Term Loan Facility. The Second Amendment also decreased the interest rate floor from 1.0% to 0.50% for the 2018 Term Loan Facility.

The 2018 Revolving Credit Facility bears interest, at our option, at a rate equal to either (i) the Adjusted LIBO Rate, plus an applicable margin initially equal to 3.75% per annum or (ii) the ABR Rate, plus an applicable margin initially equal to 2.75% per annum, in each case with two 25 basis point step downs based on achievement of certain senior secured first lien net leverage ratios. In addition, we are required to pay a quarterly commitment fee on the unused commitments under the 2018 Revolving Credit Facility in an amount equal to 0.25% per annum.

The Senior Secured Credit Facilities are guaranteed by each of our domestic subsidiaries, subject to certain customary exceptions, and by GrafTech Luxembourg I S.à.r.l., a Luxembourg société à responsabilité limitée and an indirect wholly owned subsidiary of GrafTech, Luxembourg HoldCo, and Swisso (collectively, the "Guarantors") with respect to all obligations under the 2018 Credit Agreement of each of our foreign subsidiaries that is a Controlled Foreign Corporation (within the meaning of Section 956 of the Internal Revenue Code of 1986, as amended from time to time (the "Code")).

All obligations under the 2018 Credit Agreement are secured, subject to certain exceptions, by: (i) a pledge of all of the equity securities of each domestic Guarantor and of each other direct, wholly owned domestic subsidiary of GrafTech and any Guarantor, (ii) a pledge on no more than 65% of the equity interests of each subsidiary that is a Controlled Foreign Corporation (within the meaning of Section 956 of the Code), and (iii) security interests in, and mortgages on, personal property and material real property of each domestic Guarantor, subject to permitted liens and certain exceptions specified in the 2018 Credit Agreement. The obligations of each foreign subsidiary of GrafTech that is a Controlled Foreign Corporation under the 2018 Revolving Credit Facility are secured by (i) a pledge of all of the equity securities of each Guarantor that is a Controlled Foreign Corporation and of each direct, wholly owned subsidiary of any Guarantor that is a Controlled Foreign Corporation, and (ii) security interests in certain receivables and personal property of each Guarantor that is a Controlled Foreign Corporation, subject to permitted liens and certain exceptions specified in the 2018 Credit Agreement.

The 2018 Term Loan Facility amortizes at a rate of \$112.5 million a year payable in equal quarterly installments, with the remainder due at maturity. The Co-Borrowers are permitted to make voluntary prepayments at any time without premium or penalty. GrafTech Finance is required to make prepayments under the 2018 Term Loan Facility (without payment of a premium) with (i) net cash proceeds from non-ordinary course asset sales (subject to customary reinvestment rights and other customary exceptions and exclusions), and (ii) commencing with the Company's fiscal year ended December 31, 2019, 75% of Excess Cash Flow (as defined in the 2018 Credit Agreement), subject to step-downs to 50% and 0% of Excess Cash Flow based on achievement of a senior secured first lien net leverage ratio greater than 1.25 to 1.00 but less than or equal to 1.75 to 1.00 and less than or equal to 1.25 to 1.00, respectively. Scheduled quarterly amortization payments of the 2018 Term Loan Facility during any calendar year reduce, on a dollar-for-dollar basis, the amount of the required Excess Cash Flow prepayment for such calendar year, and the aggregate amount of Excess Cash Flow prepayments for any calendar year reduce subsequent quarterly amortization payments of the 2018 Term Loan Facility as directed by GrafTech Finance. As of December 30, 2021, we have satisfied all required amortization installments through the maturity date.

The 2018 Credit Agreement contains customary representations and warranties and customary affirmative and negative covenants applicable to GrafTech and restricted subsidiaries, including, among other things, restrictions on indebtedness, liens, investments, fundamental changes, dispositions, and dividends and other distributions. The 2018 Credit Agreement contains a financial covenant that requires GrafTech to maintain a senior secured first lien net leverage ratio not greater than 4.00:1.00 when the aggregate principal amount of borrowings under the 2018 Revolving Credit Facility and outstanding letters of credit issued under the 2018 Revolving Credit Facility (except for undrawn letters of credit in an aggregate amount equal to or less than \$35 million), taken together, exceed 35% of the total amount of commitments under the 2018 Revolving Credit Facility. The 2018 Credit Agreement also contains customary events of default.

2020 Senior Secured Notes

On December 22, 2020, GrafTech Finance issued \$500 million aggregate principal amount of the 2020 Senior Secured Notes at an issue price of 100% of the principal amount thereof in a private offering to qualified institutional buyers in accordance with Rule 144A under the Securities Act of 1933 (the "Securities Act") and to non-U.S. persons outside the United States under Regulation S under the Securities Act.

The 2020 Senior Secured Notes were issued pursuant to the indenture among GrafTech Finance, as issuer, the Company, as a guarantor, the other subsidiaries of the Company named therein as guarantors and U.S. Bank National Association, as trustee and notes collateral agent (the "Indenture").

The 2020 Senior Secured Notes are guaranteed on a senior secured basis by the Company and all of its existing and future direct and indirect U.S. subsidiaries that guarantee, or borrow under, the credit facilities under its 2018 Credit Agreement. The 2020 Senior Secured Notes are secured on a pari passu basis by the collateral securing the term loans under the 2018 Credit Agreement. GrafTech Finance, the Company and the other guarantors granted a security interest in such collateral, consisting of substantially all of their respective assets, as security for the obligations of GrafTech Finance, the Company and the other guarantors under the 2020 Senior Secured Notes and the Indenture pursuant to a collateral agreement, dated as of December 22, 2020 (the "Collateral Agreement"), among GrafTech Finance, the Company, the other subsidiaries of the Company named therein as grantors and U.S. Bank National Association, as collateral agent.

The 2020 Senior Secured Notes bear interest at the rate of 4.625% per annum, which accrues from December 22, 2020 and is payable in arrears on June 15 and December 15 of each year, commencing on June 15, 2021. The 2020 Senior Secured Notes will mature on December 15, 2028, unless earlier redeemed or repurchased, and are subject to the terms and conditions set forth in the Indenture.

GrafTech Finance may redeem some or all of the 2020 Senior Secured Notes at the redemption prices and on the terms specified in the Indenture. If the Company or GrafTech Finance experiences specific kinds of changes in control or the Company or any of its restricted subsidiaries sells certain of its assets, then GrafTech Finance must offer to repurchase the 2020 Senior Secured Notes on the terms set forth in the Indenture.

The Indenture contains certain covenants that, among other things, limit the Company's ability, and the ability of certain of its subsidiaries, to incur or guarantee additional indebtedness or issue preferred stock, pay distributions on, redeem or repurchase capital stock or redeem or repurchase subordinated debt, incur or suffer to exist liens securing indebtedness, make certain investments, engage in certain transactions with affiliates, consummate certain asset sales and effect a consolidation or merger, or sell, transfer, lease or otherwise dispose of all or substantially all assets. The Indenture contains events of default customary for agreements of its type (with customary grace periods, as applicable) and provides that, upon the occurrence of an event of default arising from certain events of bankruptcy or insolvency with respect to the Company or GrafTech Finance, all outstanding 2020 Senior Secured Notes will become due and payable immediately without further action or notice. If any other type of event of default occurs and is continuing, then the trustee or the holders of at least 30% in principal amount of the then outstanding 2020 Senior Secured Notes may declare all of the 2020 Senior Secured Notes to be due and payable immediately.

The entirety of the 2020 Senior Secured Notes proceeds was used to pay down a portion of our 2018 Term Loan Facility.

Fixed-rate obligations

As of December 31, 2021, we had \$500 million of fixed-rate debt consisting of our 2020 Senior Secured Notes and \$544 million of variable-rate debt. As of December 31, 2021, we have two remaining \$250 million interest rate swap contracts that were modified in 2021 to align with the terms of the 2018 Term Loan Facility, maturing in third quarter of 2024. It is expected that these swaps will fix the cash flows associated with the forecasted interest payments on this notional amount of debt to an effective fixed interest rate of 4.2%, which could be lowered to 3.95% depending on credit ratings. See Note 5, "Debt and Liquidity," to the Consolidated Financial Statements for details.

Material Cash Requirements. The following tables summarize our long-term contractual and other obligations and commitments as of December 31, 2021:

	Payments Due by Year Ending December 31,				
	Total	2022	2023-2024	2025-2026	2027+
<i>(Dollars in Thousands)</i>					
Contractual and Other Obligations					
Long-term debt (a)	\$ 1,044,137	\$ 143	\$ 286	\$ 543,708	\$ 500,000
Interest on long-term debt (b)	236,009	46,367	93,930	49,783	45,929
Total contractual obligations	1,280,146	46,510	94,216	593,491	545,929
Post-employment, pension and related benefits (c)	120,865	11,995	25,401	24,833	58,636
Related party Tax Receivable Agreement (d)	19,283	3,828	9,808	5,647	—
Total contractual and other obligations (e)	\$ 1,420,294	\$ 62,333	\$ 129,425	\$ 623,971	\$ 604,565

(a) Represents our total debt from our 2018 Term Loan Facility with an outstanding balance of \$544 million, which matures on February 12, 2025, and from our 2020 Senior Secured Notes with an outstanding balance of \$500 million due in 2028 (see "Financing transactions" in this section for full details of these obligations).

- (b) Represents estimated interest payments required on our 2018 Term Loan Facility using a monthly LIBOR curve through February 2025, net of interest rate swap impacts and estimated interest payments on the 2020 Senior Secured Notes through December 15, 2028.
- (c) Represents estimated post-employment, pension and related benefits obligations based on actuarial calculations.
- (d) Represents Brookfield's right to receive future payments from us for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of certain tax assets attributable to periods prior to our IPO, including certain federal NOLs, previously taxed income under Section 959 of the Code, foreign tax credits, and certain NOLs in Swissco. In addition, we will pay interest on the payments we will make to Brookfield with respect to the amount of these cash savings from the due date (without extensions) of our tax return where we realize these savings to the payment date at a rate equal to LIBOR plus 1.00% per annum. The term of the Tax Receivable Agreement commenced on April 23, 2018 and will continue until there is no potential for any future tax benefit payments.
- (e) In addition, letters of credit of \$3.3 million were issued under the 2018 Revolving Credit Facility as of December 31, 2021.

Costs Relating to Protection of the Environment

We have been and are subject to increasingly stringent environmental protection laws and regulations. In addition, we have an on-going commitment to rigorous internal environmental protection standards. Environmental considerations are part of all significant operating and capital expenditure decisions. The following table sets forth certain information regarding environmental expenses and capital expenditures.

	For the Year Ended December 31,		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Expenses relating to environmental protection	\$ 16,914	\$ 11,075	\$ 11,629
Capital expenditures related to environmental protection	7,014	9,018	7,251

Critical accounting policies

Critical accounting policies are those that require difficult, subjective or complex judgments by management, often as a result of the need to make estimates about the effect of matters that are inherently uncertain and may change in subsequent periods. We use and rely on estimates in determining the economic useful lives of our assets, obligations under our employee benefit plans, provisions for doubtful accounts, provisions for restructuring charges and contingencies, tax valuation allowances, evaluation of goodwill, other intangible assets, pension and OPEB and various other recorded or disclosed amounts, including inventory valuations. Estimates require us to use our judgment. While we believe that our estimates for these matters are reasonable, if the actual amount is significantly different than the estimated amount, our assets, liabilities or results of operations may be overstated or understated. The following accounting policies are deemed to be critical.

Goodwill. As a result of our acquisition by Brookfield, we have a significant amount of goodwill. Goodwill is tested for impairment annually or more frequently if an event or circumstance indicates that an impairment loss may have been incurred. Application of the goodwill impairment test requires judgment, including the identification of reporting units, assignment of assets and liabilities to reporting units, assignment of goodwill to reporting units and determination of the fair value of each reporting unit. We estimate the fair value of each reporting unit using a discounted cash flow methodology under the income approach. This requires us to use significant judgment including estimation of future cash flows, which is based upon relevant market data, internal forecasts, estimation of the long-term growth for our business, the useful life over which cash flows will occur and determination of the weighted average cost of capital for purposes of establishing a discount rate.

Refer to Note 1, "Business and Summary of Significant Accounting Policies" and Note 6, "Goodwill and Other Intangible Assets" to the Consolidated Financial Statements for information regarding our goodwill impairment testing.

Employee benefit plans. We sponsor various retirement and pension plans, including defined benefit and defined contribution plans and post-employment benefit plans that cover most employees worldwide. Excluding the defined contribution plans, accounting for these plans requires assumptions as to the discount rate, expected return on plan assets, expected salary increases and health care cost trend rate. See Note 11, "Retirement Plans and Post-employment Benefits," to the Consolidated Financial Statements for further details.

Impairments of long-lived assets. We may record impairment losses on long-lived assets used in operations when events and circumstances indicate that the assets might be impaired and the future undiscounted cash flows estimated to be

generated by those assets are less than the carrying amount of those assets. Assets to be disposed are reported at the lower of the carrying amount or fair value less estimated costs to sell. Estimates of the future cash flows are subject to significant uncertainties and assumptions. If the actual value is significantly less than the estimated fair value, our assets may be overstated. Future events and circumstances, some of which are described below, may result in an impairment charge:

- new technological developments that provide significantly enhanced benefits over our current technology;
- significant negative economic or industry trends;
- changes in our business strategy that alter the expected usage of the related assets; and
- future economic results that are below our expectations used in the current assessments.

Accounting for income taxes. We are required to estimate our income taxes in each of the jurisdictions in which we operate. This process requires us to make the following assessments:

- estimate our actual current tax liability in each jurisdiction;
- estimate our temporary differences resulting from differing treatment of items for tax and accounting purposes (which result in deferred tax assets and liabilities that we include within the Consolidated Balance Sheets); and
- assess the likelihood that our deferred tax assets will be recovered from future taxable income and, if we believe that recovery is not more likely than not, a valuation allowance is established.

If our estimates are incorrect, our deferred tax assets or liabilities may be overstated or understated.

As of December 31, 2021, we had a valuation allowance of \$10.6 million against certain deferred tax assets. Our losses in certain tax jurisdictions in recent periods represented sufficient negative evidence to require a full valuation allowance. We also have a partial valuation allowance related to certain U.S. state net operating losses where realizability is unlikely due to discontinued operations in these states. Until we determine that we will generate sufficient jurisdictional taxable income to realize our net operating losses and deferred tax assets, we continue to maintain a valuation allowance.

Related-party Tax Receivable Agreement. On April 23, 2018, the Company entered into the Tax Receivable Agreement, which provides Brookfield, as the sole pre-IPO stockholder, the right to receive future payments from us for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of certain tax assets attributable to periods prior to our IPO, including the pre-IPO Tax Assets. In addition, we will pay interest on the payments we will make to Brookfield with respect to the amount of these cash savings from the due date (without extensions) of our tax return where we realize these savings to the payment date at a rate equal to LIBOR plus 1.00% per annum. The term of the Tax Receivable Agreement commenced on April 23, 2018 and will continue until there is no potential for any future tax benefit payments.

The calculation of the Tax Receivable Agreement liability requires significant judgment with regards to the assumptions underlying the forecast of future taxable income, in total and by jurisdiction, as well as their timing.

Revenue recognition. Revenue is recognized when a customer obtains control of promised goods, in an amount that reflects the consideration which we expect to receive in exchange for those goods.

To determine revenue recognition for arrangements that we determine are within the scope of ASC 606, the following five steps are performed: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a performance obligation. We only apply the five-step model to contracts when it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, we assess the goods or services promised within each contract and determine those that are performance obligations, and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

From 2018 to the present, our revenue streams primarily consisted of LTAs and short-term purchase orders (deliveries within the year) directly with steel manufacturers. The promises of delivery of graphite electrodes represent the distinct performance obligations to which the contract consideration is allocated, based upon the electrode stand-alone selling prices for the class of customers at the time the agreements are executed. The performance obligations are considered to be satisfied at a point in time when control of the electrodes has been transferred to the customer. The Company has elected to treat the transportation of the electrodes from our premises to the customer's facilities as a fulfillment activity, and outbound freight cost is accrued when the graphite electrode performance obligation is satisfied. Any variable consideration is recognized up to its

unconstrained amount (i.e., up to the amount for which it is probable that a significant reversal of the variable revenue will not happen).

Revenue recognition requires the estimation of the electrode stand-alone selling price, using a variety of inputs, from market observable information to internal pricing guidelines. The estimate of stand-alone selling price on the various classes of contracts is the basis for the allocation of revenue amongst periods for new and modified contracts. Historically the amount of contract assets and liabilities resulting from these estimates have been immaterial. See Note 2, "Revenue from Contracts with Customers," to the Consolidated Financial Statements for additional information.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risks, primarily from changes in interest rates, currency exchange rates, energy commodity prices and commercial energy rates. From time to time, we enter into transactions that have been authorized according to documented policies and procedures in order to manage these risks. These transactions relate primarily to financial instruments described below. Since the counterparties to these financial instruments are large commercial banks and similar financial institutions, we do not believe that we are exposed to material counterparty credit risk. We do not use financial instruments for trading purposes.

Our exposure to changes in interest rates results primarily from floating rate long-term debt tied to LIBOR or Euro London Interbank Offered Rate.

Our exposure to changes in currency exchange rates results primarily from:

- sales made by our subsidiaries in currencies other than local currencies;
- raw material purchases made by our foreign subsidiaries in currencies other than local currencies; and
- investments in and intercompany loans to our foreign subsidiaries and our share of the earnings of those subsidiaries, to the extent denominated in currencies other than the U.S. dollar.

Our exposure to changes in energy commodity prices and commercial energy rates results primarily from the purchase or sale of refined oil products and the purchase of natural gas and electricity for use in our manufacturing operations.

Interest rate risk management. We periodically enter into agreements with financial institutions that are intended to limit our exposure to additional interest expense due to increases in variable interest rates. These instruments effectively cap our interest rate exposure. In 2019, we entered into four interest rate swap contracts, and in 2021, we modified three contracts and closed one contract. As of December 31, 2021, we recorded an unrealized pre-tax gain of \$5.9 million and a net unrealized pre-tax loss of \$11.9 million as of December 31, 2020. Additionally, as a result of the February 2021 modification, the modified swaps are considered hybrid instruments composed of a debt host and an embedded derivative. As of December 31, 2021, the debt host portion amounted to an unrealized pre-tax loss of \$7.0 million which is amortized over the remaining life of the swaps.

Currency rate management. We enter into foreign currency derivatives from time to time to attempt to manage exposure to changes in currency exchange rates. These foreign currency derivatives, which include, but are not limited to, forward exchange contracts and purchased currency options, attempt to hedge global currency exposures. Forward exchange contracts are agreements to exchange different currencies at a specified future date and at a specified rate. Purchased currency options are instruments which give the holder the right, but not the obligation, to exchange different currencies at a specified rate at a specified date or over a range of specified dates. Forward exchange contracts and purchased currency options are carried at fair value.

The outstanding foreign currency derivatives represented a net unrealized gain of \$0.4 million as of December 31, 2021 and a net unrealized loss of \$0.1 million as of December 31, 2020.

Energy commodity management. We have entered into commodity derivative contracts to effectively fix some or all of our exposure to refined oil products. The outstanding commodity derivative contracts represented net unrealized gain of \$8.5 million and a net unrealized loss of \$2.2 million as of December 31, 2021 and December 31, 2020, respectively.

Sensitivity analysis. We use sensitivity analysis to quantify potential impacts that market rate changes may have on the underlying exposures as well as on the fair values of our derivatives. The sensitivity analysis for the derivatives represents the hypothetical changes in value of the hedge position and does not reflect the related gain or loss on the forecasted underlying transaction.

A hypothetical increase in interest rates of 100 basis points (1%) would have increased our interest expense by \$0.3 million, net of the impact of our interest rate swap, for the year ended December 31, 2021. The same 100 basis points increase would have resulted in an increase of \$11.3 million in fair value of our interest rate swap portfolio.

As of December 31, 2021, a 10% appreciation or depreciation in the value of the U.S. dollar against foreign currencies from the prevailing market rates would result in a corresponding decrease of \$7.3 million or a corresponding increase of \$7.3 million, respectively, in the fair value of the foreign currency hedge portfolio.

A 10% increase or decrease in the value of the underlying commodity prices that we hedge would result in a corresponding increase or decrease of \$1.9 million in the fair value of the commodity hedge portfolio as of December 31, 2021. Because of the high correlation between the hedging instrument and the underlying exposure, fluctuations in the value of the instruments are generally offset by reciprocal changes in the value of the underlying exposure.

For further information related to the financial instruments described above, see Note 1, "Business and Summary of Significant Accounting Policies" and Note 8, "Fair Value Measurement and Derivative Instruments" to the Consolidated Financial Statements for additional information.

Item 8. Financial Statements and Supplementary Data

(Unless otherwise noted, all dollars are presented in thousands)

	Page
Report of Independent Registered Public Accounting Firm (PCAOB ID No. 34)	53
Consolidated Balance Sheets	55
Consolidated Statements of Operations and Comprehensive Income (Loss)	56
Consolidated Statements of Cash Flows	57
Consolidated Statements of Stockholders' Equity (Deficit)	59
Notes to the Consolidated Financial Statements	60

See the Table of Contents located at the beginning of this Report for more detailed page references to information contained in this Item.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of GrafTech International Ltd.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of GrafTech International Ltd. and subsidiaries (the "Company") as of December 31, 2021 and 2020, the related consolidated statements of operations and comprehensive income (loss), stockholders' equity (deficit), and cash flows for each of the three years in the period ended December 31, 2021, and the related notes (collectively referred to as the "financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2021, 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 financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021, 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, 2021, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

Basis for Opinions

The Company's management is responsible for these 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 the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on these financial statements and an opinion 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 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 financial statements included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures to respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the 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 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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the 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.

Related Party Tax Receivable Agreement - Refer to Notes 1 and 12 to the financial statements

Critical Audit Matter Description

On April 23, 2018, the Company entered into a Tax Receivable Agreement that provides the sole pre-IPO stockholder, the right to receive future payments from the Company for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss Federal and Cantonal tax that the Company and subsidiaries realize as a result of the utilization of certain deferred tax assets attributable to periods prior to the IPO. The Company's Tax Receivable Agreement liability was \$19.3 million as of December 31, 2021. The determination of the Tax Receivable Agreement liability required management to make significant estimates and assumptions related to forecasted revenues and taxable income in the appropriate taxing jurisdiction, which are the primary drivers of utilization of the deferred tax assets.

Given the significant estimates and assumptions related to forecasted revenues and taxable income in the appropriate jurisdictions, auditing the Tax Receivable Agreement liability required a high degree of auditor judgment and an increased extent of effort, including the need to involve our income tax specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to forecasted revenues and taxable income included the following, among others:

- Tested the effectiveness of controls over the calculation and recording of the Tax Receivable Agreement liability, including those over the forecasts of revenues and taxable income.
- With the assistance of our income tax specialists, we evaluated whether the sources of management's estimated taxable income were of the appropriate character and sufficient to utilize the deferred tax assets under the relevant tax law and tested the mathematical accuracy of the calculation used to determine the Tax Receivable Agreement liability.
- We evaluated management's ability to accurately estimate revenues and taxable income by comparing actual results to management's historical estimates and evaluating whether there have been any changes that would affect management's ability to continue accurately estimating revenues and taxable income.
- We tested the reasonableness of management's estimates of revenues and taxable income by jurisdiction by comparing management's forecast to:
 - Historical revenues and income
 - Schedule of future revenues resulting from contracts with certain customers
 - Internal communications to management and the Board of Directors
 - Industry reports for the Company and the steel industry
- We evaluated whether the estimates of future revenues and taxable income were consistent with evidence obtained in other areas of the audit.

/s/ DELOITTE & TOUCHE LLP

Cleveland, Ohio

February 22, 2022

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

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

(Dollars in thousands, except share data)

	As of December 31,	
	2021	2020
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 57,514	\$ 145,442
Accounts and notes receivable, net of allowance for doubtful accounts of \$6,835 as of December 31, 2021 and \$8,243 as of December 31, 2020	207,547	182,647
Inventories	289,432	265,964
Prepaid expenses and other current assets	73,364	35,114
Total current assets	627,857	629,167
Property, plant and equipment	815,298	784,902
Less: accumulated depreciation	313,825	278,685
Net property, plant and equipment	501,473	506,217
Deferred income taxes	26,187	32,551
Goodwill	171,117	171,117
Other assets	85,684	93,660
Total assets	\$ 1,412,318	\$ 1,432,712
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities:		
Accounts payable	\$ 117,112	\$ 70,989
Short-term debt	127	131
Accrued income and other taxes	57,097	48,720
Other accrued liabilities	56,405	56,501
Related party payable - tax receivable agreement	3,828	21,752
Total current liabilities	234,569	198,093
Long-term debt	1,029,561	1,420,000
Other long-term obligations	68,657	81,478
Deferred income taxes	40,674	43,428
Related party payable - tax receivable agreement long-term	15,455	19,098
Commitments and contingencies – Note 12		
Stockholders' equity (deficit):		
Preferred stock, par value \$0.01, 300,000,000 shares authorized, none issued	—	—
Common stock, par value \$0.01, 3,000,000,000 shares authorized, 263,255,708 and 267,188,547 shares issued and outstanding as of December 31, 2021 and December 31, 2020, respectively	2,633	2,672
Additional paid – in capital	761,412	758,354
Accumulated other comprehensive loss	(7,444)	(19,641)
Accumulated deficit	(733,199)	(1,070,770)
Total stockholders' equity (deficit)	23,402	(329,385)
Total liabilities and stockholders' equity	\$ 1,412,318	\$ 1,432,712

See accompanying Notes to the Consolidated Financial Statements

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)
(Dollars in thousands, except per share data)

	For the Year Ended December 31,		
	2021	2020	2019
<u>STATEMENTS OF OPERATIONS</u>			
Net sales	\$ 1,345,788	\$ 1,224,361	\$ 1,790,793
Cost of sales	701,335	563,864	750,390
Gross profit	644,453	660,497	1,040,403
Research and development	3,771	3,975	2,684
Selling and administrative expenses	132,608	67,913	63,674
Operating income	508,074	588,609	974,045
Other (income) expense, net	(16,451)	3,330	5,203
Related party Tax Receivable Agreement expense (benefit)	231	(21,090)	3,393
Interest expense	68,760	98,074	127,331
Interest income	(872)	(1,750)	(4,709)
Income before provision for income taxes	456,406	510,045	842,827
Provision for income taxes	68,076	75,671	98,225
Net income	<u>\$ 388,330</u>	<u>\$ 434,374</u>	<u>\$ 744,602</u>
Basic income per common share:			
Net income per share	\$ 1.46	\$ 1.62	\$ 2.58
Weighted average common shares outstanding	266,251,097	267,916,483	289,057,356
Diluted income per common share:			
Net income per share	1.46	1.62	2.58
Weighted average common shares outstanding	266,317,194	267,930,644	289,074,601
<u>STATEMENTS OF COMPREHENSIVE INCOME (LOSS)</u>			
Net income	\$ 388,330	\$ 434,374	\$ 744,602
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of tax of \$0, \$(162), and \$(67), respectively	(19,605)	6,568	(6,371)
Commodities and interest rate derivatives, net of tax of \$(8,632), \$5,399, and \$(1,546), respectively	31,802	(18,848)	4,810
Other comprehensive income (loss), net of tax:	12,197	(12,280)	(1,561)
Comprehensive income	<u>\$ 400,527</u>	<u>\$ 422,094</u>	<u>\$ 743,041</u>

See accompanying Notes to the Consolidated Financial Statements

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Dollars in thousands)

	For the Year Ended December 31,		
	2021	2020	2019
Cash flow from operating activities:			
Net income	\$ 388,330	\$ 434,374	\$ 744,602
Adjustments to reconcile net income to cash provided by operations:			
Depreciation and amortization	65,716	62,963	61,819
Related party Tax Receivable Agreement Expense (benefit)	231	(21,090)	3,393
Deferred income tax provision	(3,657)	20,241	17,503
Loss on extinguishment of debt	—	8,329	—
Stock-based compensation	16,631	2,665	2,146
Interest expense	12,051	6,192	6,344
Other charges, net	7,107	7,861	19,685
Net change in working capital*	(16,377)	86,438	(47,687)
Change in related party tax receivable agreement	(21,799)	(27,857)	—
Change in long-term assets and liabilities	(5,193)	(16,470)	(2,489)
Net cash provided by operating activities	443,040	563,646	805,316
Cash flow from investing activities:			
Capital expenditures	(58,257)	(36,075)	(64,103)
Proceeds from the sale of fixed assets	397	379	219
Net cash used in investing activities	(57,860)	(35,696)	(63,884)
Cash flow from financing activities:			
Short-term debt reductions, net	(142)	(146)	—
Debt issuance and modification costs	(3,109)	(6,278)	—
Proceeds from the issuance of long-term debt	—	500,000	—
Principal payments on long-term debt	(400,000)	(896,214)	(350,140)
Repurchase of common stock - related party	—	—	(250,000)
Repurchase of common stock - non-related party	(50,000)	(30,099)	(10,868)
Payments for taxes related to net share settlement of equity awards	(4,077)	(71)	—
Dividends paid to non-related party	(7,439)	(8,603)	(20,613)
Dividends paid to related party	(3,206)	(22,272)	(78,010)
Other - primarily interest rate swap settlements	(3,819)	—	—
Net cash used in financing activities	(471,792)	(463,683)	(709,631)
Net change in cash and cash equivalents	(86,612)	64,267	31,801
Effect of exchange rate changes on cash and cash equivalents	(1,316)	240	(746)
Cash and cash equivalents at beginning of period	145,442	80,935	49,880
Cash and cash equivalents at end of period	\$ 57,514	\$ 145,442	\$ 80,935

See accompanying Notes to the Consolidated Financial Statements

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS (Continued)

(Dollars in thousands)

	For the Year Ended December 31,		
	2021	2020	2019
<i>Supplemental disclosures of cash flow information:</i>			
<i>Net cash paid during the periods for:</i>			
Interest	\$ 56,333	\$ 86,962	\$ 121,075
Income taxes	63,791	73,971	99,278
* Net change in working capital due to the following components:			
Accounts and notes receivable, net	\$ (28,927)	\$ 63,557	\$ (404)
Inventories	(28,165)	44,633	(21,549)
Prepaid expenses and other current assets	(31,921)	3,028	3,929
Income taxes payable	5,674	(12,420)	(18,174)
Accounts payable and accruals	66,591	(12,790)	(11,551)
Interest payable	371	430	62
Net change in working capital	<u>\$ (16,377)</u>	<u>\$ 86,438</u>	<u>\$ (47,687)</u>

See accompanying Notes to the Consolidated Financial Statements

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)

(Dollars in thousands, except share data)

	Issued Shares of Common Stock	Common Stock	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings (Accumulated Deficit)	Total Stockholders' Equity (Deficit)
Balance as of December 31, 2018	290,537,612	\$ 2,905	\$ 819,622	\$ (5,800)	\$ (1,893,496)	\$ (1,076,769)
Net income	—	—	—	—	744,602	744,602
Other comprehensive income (loss):						
Commodity derivatives income, net of tax of \$(3,418)	—	—	—	11,830	—	11,830
Commodity and foreign currency derivatives reclassification adjustments, net of tax of \$1,872	—	—	—	(7,020)	—	(7,020)
Foreign currency translation adjustments, net of tax of \$(67)	—	—	—	(6,371)	—	(6,371)
Total other comprehensive loss	—	—	—	(1,561)	—	(1,561)
Repurchase of common stock - related party	(19,047,619)	(190)	(53,524)	—	(196,286)	(250,000)
Repurchase of common stock - non-related party	(1,004,685)	(10)	(2,825)	—	(8,033)	(10,868)
Stock-based compensation	—	—	2,146	—	—	2,146
Dividends paid to related party (\$0.34 per share)	—	—	—	—	(78,010)	(78,010)
Dividends paid to non-related party (\$0.34 per share)	—	—	—	—	(20,613)	(20,613)
Balance as of December 31, 2019	270,485,308	\$ 2,705	\$ 765,419	\$ (7,361)	\$ (1,451,836)	\$ (691,073)
Net income	—	—	—	—	434,374	434,374
Other comprehensive (loss) income:						
Commodity and interest rate derivatives loss, net of tax of \$4,250	—	—	—	(15,594)	—	(15,594)
Commodity derivatives reclassification adjustments, net of tax of \$879	—	—	—	(3,254)	—	(3,254)
Foreign currency translation adjustments, net of tax of \$(162)	—	—	—	6,568	—	6,568
Total other comprehensive loss	—	—	—	(12,280)	—	(12,280)
Repurchase of common stock - non-related party	(3,328,574)	(33)	(9,700)	—	(20,366)	(30,099)
Stock-based compensation	42,411	—	2,665	—	—	2,665
Payments for taxes related to net share settlement of equity awards	(10,598)	—	(30)	—	(41)	(71)
Dividends paid to related party (\$0.115 per share)	—	—	—	—	(22,272)	(22,272)
Dividends paid to non-related party (\$0.115 per share)	—	—	—	—	(8,603)	(8,603)
Adoption of ASC 326	—	—	—	—	(2,026)	(2,026)
Balance as of December 31, 2020	267,188,547	2,672	758,354	(19,641)	(1,070,770)	(329,385)
Net income	—	—	—	—	388,330	388,330
Other comprehensive income (loss):						
Commodity and interest rate derivatives income, net of tax of \$(6,662)	—	—	—	24,525	—	24,525
Commodity derivatives and interest rate swap reclassification adjustments, net of tax of \$(1,970)	—	—	—	7,277	—	7,277
Foreign currency translation adjustments, net of tax of \$0	—	—	—	(19,605)	—	(19,605)
Total other comprehensive income	—	—	—	12,197	—	12,197
Repurchase of common stock - non-related party	(4,658,544)	(46)	(13,091)	—	(36,863)	(50,000)
Stock-based compensation	1,009,545	11	16,620	—	—	16,631
Options exercised	33,500	—	351	—	—	351
Payments for taxes related to net share settlement of equity awards	(317,340)	(4)	(822)	—	(3,251)	(4,077)
Dividends paid to related party (\$0.04 per share)	—	—	—	—	(3,206)	(3,206)
Dividends paid to non-related party (\$0.04 per share)	—	—	—	—	(7,439)	(7,439)
Balance as of December 31, 2021	263,255,708	\$ 2,633	\$ 761,412	\$ (7,444)	\$ (733,199)	\$ 23,402

See accompanying Notes to the Consolidated Financial Statements

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(Dollars in thousands, except as otherwise noted)

(1) Business and Summary of Significant Accounting Policies

Discussion of Business and Structure

GrafTech International Ltd. (the "Company") is a leading manufacturer of high-quality graphite electrode products essential to the production of electric arc furnace ("EAF") steel and other ferrous and non-ferrous metals. References herein to "GTI," "we," "our," or "us" refer collectively to the Company and its subsidiaries. On August 15, 2015, GTI became an indirect wholly owned subsidiary of Brookfield Asset Management Inc. (together with its affiliates, "Brookfield"). In April 2018, we completed our initial public offering ("IPO") of 38,097,525 shares of our common stock held by Brookfield at a price of \$15.00 per share. We did not receive any proceeds related to the IPO. Our common stock is listed on the NYSE under the symbol "EAF." Brookfield has since distributed a portion of its GrafTech common stock to the owners in the Brookfield consortium and sold shares of GrafTech common stock in public and private transactions, resulting in Brookfield's ownership of outstanding shares of GrafTech common stock decreasing to 55.3% as of December 31, 2020 and 24.3% as of December 31, 2021. See Note 14, "Stockholders Equity (Deficit)," for more information.

The Company's only reportable segment, Industrial Materials, is comprised of our two major product categories: graphite electrodes and needle coke products. Petroleum needle coke is a key raw material used in the production of graphite electrodes. The Company's vision is to provide highly engineered graphite electrode services, solutions and products to electric arc furnace operators.

Summary of Significant Accounting Policies

The Consolidated Financial Statements include the financial statements of the Company and its wholly owned subsidiaries. All intercompany transactions have been eliminated in consolidation.

Cash Equivalents

We consider all highly liquid financial instruments with original maturities of three months or less to be cash equivalents. Cash equivalents consist of certificates of deposit, money market funds and commercial paper.

Revenue Recognition

Revenue is recognized when a customer obtains control of promised goods. The amount of revenue recognized reflects the consideration to which the Company expects to be entitled to receive in exchange for these goods.

To achieve this core principle, the following five steps are performed: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) we satisfy a performance obligation.

The Company sells the majority of its products directly to steel manufacturers located in various jurisdictions. The Company's contracts consist of longer-term take-or-pay sales contracts of graphite electrodes with terms of up to five years and short-term purchase orders (deliveries within one year). Collectability is assessed based on the customer's ability and intention to pay, reviewing a variety of factors including the customer's historical payment experience and published credit and financial information. Additionally, for multi-year contracts, we may require the customer to post a bank guarantee, guarantee of a parent, a letter of credit or a significant pre-payment.

The promises of delivery of graphite electrodes represent the distinct performance obligations of our contracts. A small portion of our sales consist of deliveries of by-products of the manufacturing processes, such as graphite powders, naphtha and gasoil.

Given their nature, the Company's performance obligations are satisfied at a point in time when control of the products has been transferred to the customer. In most cases, control transfer is deemed to happen at the delivery point of the products defined under the incoterms, usually at time of loading the truck or the vessel. The Company has elected to treat the transportation activity as a fulfillment activity instead of as a distinct performance obligation, and outbound freight cost is accrued when the product delivery promises are satisfied.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The transaction price is determined based on the consideration to which the Company will be entitled in exchange for transferring goods to the customer. Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by the Company from a customer are excluded from the transaction price.

Variable consideration is included in the transaction price if, in the Company's judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. The estimated variable consideration is reflected through revenue reversal accruals that are based on the Company's experience as well as anticipated performance. Historically, these reversals have been insignificant. Additionally, when termination fees are invoiced under certain provisions of the LTAs, they are accounted for as an element of variable consideration that is constrained, i.e. not recognized, until collected.

Contracts that contain multiple distinct performance obligations require an allocation of the transaction price to each performance obligation based on a relative stand-alone selling price basis. The Company regularly reviews market conditions and internally approved pricing guidelines to determine stand-alone selling prices for the different types of its customer contracts. The stand-alone prices as known at contract inception are utilized as the basis to allocate the transaction price to the distinct performance obligations. The allocation of the transaction price to the performance obligations remains unchanged if stand-alone selling prices change after contract inception.

Changes to LTAs are reviewed to assess whether there has been a change in volume, price or both and whether any additional volumes are at their stand-alone selling price to determine whether the contract modification should be accounted for as (1) part of the existing contract, (2) the termination of the existing contract and the creation of a new contract or (3) a separate contract. Under the most commonly negotiated terms, the accounting is such that it treats these modified contracts as the termination of the existing contract and the creation of a new contract.

Inventories

Inventories are stated at the lower of cost or market. Cost is principally determined using the FIFO and average cost, which approximates FIFO, methods. Elements of cost in inventory include raw materials, energy costs, direct labor, manufacturing overhead and depreciation of manufacturing fixed assets.

We allocate fixed production overheads to the costs of conversion based on normal capacity of the production facilities. We recognize abnormal amounts of idle facility expense, freight, handling costs, and wasted materials (spoilage) as current period charges.

Property, Plant and Equipment

Expenditures for property, plant and equipment are recorded at cost. Maintenance and repairs of property and equipment are expensed as incurred. Expenditures for replacements and betterments are capitalized and the replaced assets are retired. Gains and losses from the sale of property are included in cost of sales or other (income) expense, net. We depreciate our assets using the straight-line method over the estimated useful lives of the assets. The ranges of estimated useful lives are as follows:

	Years
Buildings	25-40
Land improvements	20
Machinery and equipment	5-20
Furniture and fixtures	5-10

The carrying value of fixed assets is assessed when events and circumstances indicating impairment are present. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of the assets to future undiscounted net cash flows expected to be generated by the assets. If the assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or fair value less costs to sell.

Depreciation expense was \$55.0 million, \$51.5 million and \$49.7 million in 2021, 2020 and 2019, respectively. Accounts payable associated with capital expenditures totaled \$15.7 million and \$8.9 million as of December 31, 2021 and 2020, respectively.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Leases

The Company determines if an arrangement is a lease at inception. When an arrangement contains a lease, we then determine if it meets any of the criteria to be classified as a finance lease. Leases with a term of 12 months or less are not recorded on the balance sheet.

Right of Use ("RoU") assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. RoU assets and lease liabilities are recognized at the lease commencement date based on the present value of the lease payments over the lease term. In order to compute the lease liability, when the rate implicit in the lease is not readily determinable, we discount the lease payments using our estimated incremental borrowing rate for secured fixed rate debt over the same term, derived from information available at the lease commencement date. Our lease term includes the option to extend the lease when it is reasonably certain that we will exercise that option.

Lease and non-lease components are treated as a single lease component, except for leases of warehouse space where they will be accounted for separately. Leases may include variable lease and variable non-lease components costs, which are accounted for as variable lease expense in the income statement.

Accounts Receivable

Trade accounts receivable primarily arise from sales of goods to customers and distributors in the normal course of business.

Allowance for Doubtful Accounts

We recognize credit losses at the time the financial assets originate or are acquired using a lifetime of expected credit losses measurement. Our expected losses are adjusted each period for changes in expected lifetime credit losses.

Deferred Debt Issuance Costs

We defer debt issuance costs upon the incurrence of debt and record them as a direct reduction against our debt. We had deferred debt issuance costs of \$11.8 million and \$18.1 million as of December 31, 2021 and 2020, respectively. We amortize such amounts over the life of the respective debt instrument using the effective interest method. The estimated life may be adjusted upon the occurrence of a triggering event. Amortization of debt issuance costs amounted to \$8.6 million, \$9.2 million and \$4.1 million in 2021, 2020 and 2019, respectively. Debt issuance costs amortization is included in interest expense.

Derivative Financial Instruments

We do not use derivative financial instruments for trading purposes. They are used to manage well-defined commercial risks associated with commodity purchases, interest rates and currency exchange rate risks. On the date that a derivative contract for a hedging instrument is entered into, the Company designates the derivative as either (1) a hedge of the exposure to changes in the fair value of a recognized asset or liability or of an unrecognized firm commitment (a fair value hedge), (2) a hedge of the exposure of a forecasted transaction or of the variability in the cash flows of a recognized asset or liability (a cash flow hedge), (3) a hedge of a net investment in a foreign operation (a net investment hedge) or (4) a contract not designated as a hedging instrument.

For a fair value hedge, both the effective and ineffective portions of the change in the fair value of the derivative are recorded in earnings and reflected in the Consolidated Statement of Operations on the same line as the gain or loss on the hedged item attributable to the hedged risk. For a cash flow hedge, the effective portion of the change in the fair value of the derivative is recorded in accumulated other comprehensive loss in the Consolidated Balance Sheet. When the underlying hedged transaction is realized, the gain or loss included in accumulated other comprehensive loss is recorded in earnings and reflected in the Consolidated Statement of Operations on the same line as the gain or loss on the hedged item attributable to the hedged risk. For a net investment hedge, the effective portion of the change in the fair value of the derivative is recorded in cumulative translation adjustment, which is a component of accumulated other comprehensive loss in the Consolidated Balance Sheet and is de-recognized upon liquidation or sale of the entity.

We formally document our hedge relationships, including the identification of the hedging instruments and the related hedged items, as well as our risk management objectives and strategies for undertaking the hedge transaction. Derivatives are recorded at fair value in prepaid expenses and other current assets, other long-term assets, other current liabilities and other long-term obligations in the consolidated balance sheets. We also formally assess, both at inception and at least quarterly

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

thereafter, whether a derivative used in a hedging transaction is highly effective in offsetting changes in either the fair value or the cash flows of the hedged item. When it is determined that a derivative ceases to be highly effective or that the hedged transaction is no longer probable of occurring, we discontinue hedge accounting.

Foreign Currency Derivatives

We enter into foreign currency derivatives from time to time to manage exposure to changes in currency exchange rates. These instruments, which include, but are not limited to, forward exchange contracts and purchased currency options, attempt to hedge global currency exposures, relating to non-dollar denominated debt and identifiable foreign currency receivables, payables and commitments held by our foreign and domestic subsidiaries. Forward exchange contracts are agreements to exchange different currencies at a specified future date and at a specified rate. Purchased foreign currency options are instruments which give the holder the right, but not the obligation, to exchange different currencies at a specified rate at a specified date or over a range of specified dates. The result is the creation of a range in which a best and worst price is defined, while minimizing option cost. Forward exchange contracts and purchased currency options are carried at fair value.

These contracts may be designated as cash flow or fair value hedges to the extent that they are effective and are accounted for as described in section above ("Derivative Financial Instruments"). For derivatives that are not designated as a hedge, any gain or loss is immediately recognized in cost of sales on the Consolidated Statements of Operations. Derivatives used in this manner relate to risks resulting from assets or liabilities denominated in a foreign currency.

Commodity Contracts

We have entered into derivative contracts for refined oil products. These contracts are entered into to protect against the risk that eventual cash flows related to these products will be adversely affected by future changes in prices. All commodity contracts are carried at fair value and are treated as cash flow hedges to the extent they are effective. Changes in their fair values are included in accumulated other comprehensive loss in the Consolidated Balance Sheets until settlement. Realized gains and losses resulting from settlement are first recognized in accumulated other comprehensive loss and are recorded in cost of sales on the Consolidated Statements of Operations when the underlying hedged item is realized.

Interest Rate Swap Contracts

We have entered into interest rate swap contracts that are "pay fixed, receive variable" with maturities of either two or five years. The Company's risk management objective was to fix its cash flows associated with the risk in variability in the one-month USD LIBOR for a portion of our outstanding debt under the 2018 Term Loan Facility (as defined in Note 5, "Debt and Liquidity"). It is expected that these swaps will fix the cash flows associated with the forecasted interest payments on this notional amount of debt. All interest rate swaps are carried at their fair value and are treated as cash flow hedges. Changes in their fair value are included in accumulated other comprehensive loss on the Consolidated Balance Sheets until settlement. Realized gains and losses resulting from the settlement are recognized in interest expense in the period of settlement.

Income Taxes

We file a consolidated U.S. federal income tax return for GTI and its eligible domestic subsidiaries. Our non-U.S. subsidiaries file income tax returns in their respective local jurisdictions. We account for income taxes under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and tax benefit carry forwards. Deferred tax assets and liabilities at the end of each period are determined using enacted tax rates. A valuation allowance is established or maintained, when, based on currently available information and other factors, it is more likely than not that all or a portion of a deferred tax asset will not be realized.

Under the guidance on accounting for uncertainty in income taxes, we recognize the benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than fifty percent likelihood of being realized upon ultimate settlement. The guidance on accounting for uncertainty in income taxes also provides guidance on derecognition, classification, interest and penalties on income taxes, and accounting in interim periods.

The Company treats taxes due on future U.S. inclusions in taxable income related to Global Intangible Low Tax Income ("GILTI") as a current period expense when incurred. See Note 13, "Income Taxes" for more information.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Related Party Tax Receivable Agreement

On April 23, 2018, the Company entered into a Tax Receivable Agreement that provides Brookfield, as the sole pre-IPO stockholder, the right to receive future payments from us for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of certain tax assets attributable to periods prior to our IPO, including certain federal net operating losses ("NOLs"), previously taxed income under Section 959 of the Internal Revenue Code of 1986, as amended from time to time (the "Code"), foreign tax credits, and certain NOLs in Swissco (collectively, the "Pre-IPO Tax Assets"). In addition, we will pay interest on the payments we will make to Brookfield with respect to the amount of these cash savings from the due date (without extensions) of our tax return where we realize these savings to the payment date at a rate equal to LIBOR plus 1.00% per annum. The term of the Tax Receivable Agreement commenced on April 23, 2018 and will continue until there is no potential for any future tax benefit payments.

The Tax Receivable Agreement liability is recorded based on the best estimate of the utilization of Pre-IPO Tax Assets and is revised annually in the fourth quarter or earlier if and when significant changes in the forecast are identified.

Retirement Plans and Post-Employment Benefits

We use actuarial methods and assumptions to account for our defined benefit pension plans and our post-employment benefits. We recognize in earnings the change in the fair value of plan assets and net actuarial gains and losses annually in the fourth quarter of each year with a mark-to-market adjustment ("MTM Adjustment") and whenever a plan is remeasured (e.g., due to a significant curtailment, settlement, etc.). Pension and post-employment benefits expense includes the MTM Adjustment, actuarially computed cost of benefits earned during the current service period, the interest cost on accrued obligations, the expected return on plan assets and adjustments due to plan settlements and curtailments. Contributions to the qualified U.S. retirement plan are made in accordance with the requirements of the Employee Retirement Income Security Act of 1974.

Additional information with respect to benefits plans is set forth in Note 11, "Retirement Plans and Post-Employment Benefits."

Stock-based Compensation

The Company recognizes stock-based compensation expense based on the grant date fair value of the award over the period during which an employee is required to provide service in exchange for the award. Stock-based awards include stock options, restricted stock units ("RSUs") and deferred share units ("DSUs"). The fair value of RSUs and DSUs is primarily based on the closing market price of a share of the Company's common stock on the date of grant, modified as appropriate to take into account the features of such grants. Stock options are granted with an exercise price equal to the closing price of the Company's common shares on the date of grant. The fair value of stock options is determined using a Black-Scholes option-pricing model, which incorporates assumptions regarding the expected volatility, the expected option life, the risk-free interest rate, and the expected dividend yield. The Company accounts for forfeitures as they occur. See Note 3, "Stock-Based and Other Management Compensation" for additional information.

Environmental, Health and Safety Matters

Our operations are governed by laws addressing protection of the environment and worker safety and health. These laws provide for civil and criminal penalties and fines, as well as injunctive and remedial relief, for noncompliance and require remediation at sites where hazardous substances have been released into the environment.

We have been in the past, and may become in the future, the subject of formal or informal enforcement actions or proceedings regarding noncompliance with these laws or the remediation of company-related substances released into the environment. Historically, such matters have been resolved by negotiation with regulatory authorities resulting in commitments to compliance, abatement or remediation programs and in some cases payment of penalties. Historically, neither the commitments undertaken nor the penalties imposed on us have been material.

Environmental considerations are part of all significant capital expenditure decisions. Environmental remediation, compliance and management expenses were approximately \$16.9 million, \$11.1 million and \$11.6 million in 2021, 2020 and 2019, respectively. A charge to income is recorded when it is probable that a liability has been incurred and the cost can be reasonably estimated. When payments are fixed or determinable, the liability is discounted using a rate at which the payments could be effectively settled. The accrued liability relating to environmental remediation was \$4.9 million as of December 31, 2021 and 2020.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Our environmental liabilities do not take into consideration possible recoveries of insurance proceeds. Because of the uncertainties associated with environmental remediation activities at sites where we may be potentially liable, future expenses to remediate sites could be considerably higher than the accrued liability.

Foreign Currency Translation and Remeasurement

We translate the financial statements of foreign subsidiaries, whose local currency is their functional currency, to U.S. dollars using period-end exchange rates for assets and liabilities and average exchange rates for each period for revenues, expenses, gains and losses. Differences arising from exchange rate changes are included in accumulated other comprehensive loss on the Consolidated Balance Sheets until such time as the operations of such non-U.S. subsidiaries are sold or substantially or completely liquidated.

For our Mexican, Swiss, United Kingdom and Russian subsidiaries, whose functional currency is the U.S. dollar, we remeasure non-monetary balance sheet accounts and the related income statement accounts at historical exchange rates. Resulting gains and losses arising from the fluctuations in currency for monetary accounts are recognized in other (income) expense, net, in the Consolidated Statements of Operations. Gains and losses arising from fluctuations in currency exchange rates on transactions denominated in currencies other than the functional currency are recognized in earnings as incurred.

We have non-dollar denominated intercompany loans between some of our foreign subsidiaries. These loans are subject to remeasurement gains and losses due to changes in currency exchange rates. One of these loans has been deemed to be essentially permanent prior to settlement and, as a result, remeasurement gains and losses on this loan were recorded as a component of accumulated other comprehensive loss in the stockholders' equity (deficit) section of the Consolidated Balance Sheets. The remaining loans are deemed to be temporary and, as a result, remeasurement gains and losses on these loans are recorded as currency (gains) losses in other (income) expense, net, on the Consolidated Statements of Operations.

Goodwill and Other Intangible Assets

Goodwill is the excess of the acquisition cost of businesses over the fair value of the identifiable net assets acquired. We do not recognize deferred income taxes for the difference between the assigned value and the tax basis related to nondeductible goodwill. Goodwill is not amortized; however, impairment testing is performed annually or more frequently if circumstances indicate that impairment may have occurred. We perform the annual goodwill impairment test at December 31.

The annual goodwill impairment testing may begin with a qualitative assessment of potential impairment indicators in order to determine whether it is necessary to perform the quantitative goodwill impairment test.

Other amortizable intangible assets, which consist primarily of trademarks and trade names, customer-related intangibles and technological know-how, are amortized over their estimated useful lives using the straight line or sum-of-the-years digits method. The estimated useful lives for each major category of amortizable intangible assets are:

	Years
Trade name	5-20
Technology and know-how	5-14
Customer related intangible	5-15

Additional information about goodwill and other intangibles is set forth in Note 6, "Goodwill and Other Intangible Assets."

Major Maintenance and Repair Costs

We perform scheduled major maintenance of the storage and processing units at our Seadrift plant (referred to as "overhaul"). Time periods between overhauls vary by unit. We also perform significant maintenance and repair shutdown of the plant (referred to as "turnaround") every other year.

Costs of overhauls and turnarounds include plant personnel, contract services, materials and rental equipment. We defer these costs when incurred and use the straight-line method to amortize them over the period of time estimated to lapse until the next scheduled overhaul of the applicable storage or processing unit. Under this policy, \$0.7 million was deferred in 2021 and \$10.2 million of costs were deferred in 2020. Amortization of deferred maintenance costs totaled \$4.6 million, \$6.0 million and \$5.1 million in 2021, 2020 and 2019, respectively.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Earnings per share

The calculation of basic earnings per share is based on the weighted average number of common shares outstanding. Diluted earnings per share recognizes the dilution that would occur if stock options or restricted shares were exercised or converted into common shares. See Note 15, "Earnings per Share".

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("GAAP") requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities at the date of the Consolidated Financial Statements and the reported amounts of revenue and expenses. Significant estimates and assumptions are used for, but are not limited to inventory valuation, pension and other post-employment benefits, allowance for doubtful accounts, contingent liabilities, accruals and valuation allowances, asset impairment, and environmental-related accruals. Actual results could differ from our estimates.

Reclassifications and Adjustments

Certain items previously reported in specific financial statement captions within the Consolidated Statements of Cash Flows have been reclassified between lines within cash flow from operations to conform to the current presentation.

Subsequent Events

We evaluate events that occur after the balance sheet date but before financial statements are issued to determine if a material event requires our amending the financial statements or disclosing the event. See Note 17, "Subsequent Events" for further details.

Recently Adopted Accounting Standards

In January 2021, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2021-01, *Reference Rate Reform (Topic 848): Scope*, which amended Topic 848 reference rate reform to clarify the scope and availability of expedients for certain derivative instruments affected by reference rate reform. We have elected various optional expedients in Topic 848 related to hedging relationships and expect to make future elections related to contract modifications and other hedging relationships. The future election and application of these expedients are not expected to have a material impact on our financial position, results of operations and cash flows.

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. ASU 2019-12 is intended to improve consistent application of Topic 740 and simplify the accounting for income taxes. This pronouncement removes certain exceptions to the general principles in Topic 740 and clarifies and amends existing guidance. ASU 2019-12 is effective for annual and interim reporting periods beginning after December 15, 2020, with early adoption permitted. The Company adopted ASU 2019-12 on January 1, 2021, with an immaterial effect on our financial position, results of operations and cash flows.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments-Credit Losses (Topic 326)*, which introduces the Current Expected Credit Losses ("CECL") accounting model. CECL requires earlier recognition of credit losses, while also providing additional transparency about credit risk. CECL utilizes a lifetime expected credit loss measurement objective for the recognition of credit losses at the time the financial asset is originated or acquired. The expected credit losses are adjusted each period for changes in expected lifetime credit losses. ASU No. 2016-13 was effective for the Company on January 1, 2020. The adoption of ASU No. 2016-13 resulted in a cumulative-effect adjustment of \$2.0 million included as an adjustment to our accounts receivable reserve and to retained earnings on January 1, 2020.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(2) Revenue from Contracts with Customers

Disaggregation of Revenue

The following table provides information about disaggregated revenue by type of product and contract:

	For the Year Ended December 31,		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Graphite Electrodes - LTAs	\$ 1,040,214	\$ 1,069,772	\$ 1,437,354
Graphite Electrodes - Non-LTAs	258,426	123,845	260,979
By-products and other	47,148	30,744	92,460
Total Revenues	\$ 1,345,788	\$ 1,224,361	\$ 1,790,793

The Graphite Electrodes revenue categories include only graphite electrodes manufactured by GrafTech. The revenue category "By-products and other" also includes re-sales of low-grade electrodes purchased from third-party suppliers, which represent a minimal contribution to our profitability.

Contract Balances

Substantially all the Company's receivables relate to contracts with customers. Accounts receivables are recorded when the right to consideration becomes unconditional. Payment terms on invoices range from 30 to 120 days depending on the customary business practices of the jurisdictions in which we do business.

Certain short-term and longer-term sales contracts require up-front payments prior to the Company's fulfillment of any performance obligation. These contract liabilities are recorded as current or long-term deferred revenue, depending on the lag between the pre-payment and the expected delivery of the related products. Additionally, deferred revenue or contract assets originate from contracts where the allocation of the transaction price to the performance obligations based on their relative stand-alone selling prices results in the timing of revenue recognition being different from the timing of the invoicing. In this case, deferred revenue is amortized into revenue based on the transaction price allocated to the remaining performance obligations and contract assets are realized through the contract invoicing.

Contract assets as of December 31, 2021 were \$1.2 million, which are included in "Prepaid expenses and other current assets", on the Consolidated Balance Sheets. Contract assets as of December 31, 2020 were \$2.7 million, of which \$1.5 million and \$1.2 million are included in "Prepaid expenses and other current assets" and "Other assets," respectively, on the Consolidated Balance Sheets.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following table provides information about deferred revenue from contracts with customers. Current deferred revenue is included in "Other accrued liabilities" and long-term deferred revenue is included in "Other long-term obligations" on the Consolidated Balance Sheets.

	Current deferred revenue	Long-Term deferred revenue
	<i>(Dollars in thousands)</i>	
Balance as of December 31, 2019	\$ 11,776	\$ 3,858
Increases due to cash received	10,110	—
Revenue recognized	(6,270)	—
Reclassification between long-term and current	(1,804)	1,804
Foreign currency impact	(756)	—
Balance as of December 31, 2020	13,056	5,662
Increases due to cash received	32,466	—
Revenue recognized	(37,030)	—
Reclassification between long-term and current	1,359	(1,359)
Foreign currency impact	(11)	—
Balance as of December 31, 2021	\$ 9,840	\$ 4,303

Transaction Price Allocated to the Remaining Performance Obligations

The following table presents estimated revenues expected to be recognized in the future related to performance obligations that are unsatisfied (or partially unsatisfied) at the end of reporting period. The estimated revenues do not include contracts with original duration of one year or less. The remaining revenue associated with our LTAs is expected to be approximately as follows:

	2022	2023 through 2024
Estimated LTA revenue	\$910-\$1,010	\$350-\$450 ⁽¹⁾

⁽¹⁾ Includes expected termination fees from a few customers that have failed to meet certain obligations under their LTAs.

The majority of the LTAs are defined as pre-determined fixed annual volume contracts while a small portion are defined with a specified volume range. For the year 2022 and beyond, the contractual revenue amounts above are based upon the minimum volume for those contracts with specified ranges. The actual revenue realized from these contracted volumes may vary in timing and total due to contract non-performance, arbitrations, credit risk associated with certain customers facing financial challenges and customer demand related to contracted volume ranges.

In addition to the expected remaining revenue to be recognized with the LTAs, the Company recorded \$1,040.2 million, \$1,069.8 million and \$1,437.4 million of revenue pursuant to these contracts in the year ended December 31, 2021, 2020 and 2019, respectively.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(3) Stock-Based and Other Management Compensation

Our Omnibus Equity Incentive Plan permits the granting of options and other stock-based awards (including restricted stock units ("RSUs") and deferred share units ("DSUs")). As of December 31, 2021, the aggregate number of shares authorized under the plan since its initial adoption was 15.0 million. Shares issued upon vesting of awards or exercise of options are new share issuances. Upon the vesting or payment of stock awards, an employee may elect receipt of the full share amount and either pay the resulting taxes or have the Company withhold shares to cover the tax obligation. At December 31, 2021, 12.1 million common stock shares were available for future issuance.

Stock-based compensation expense was \$16.6 million, \$2.7 million and \$2.1 million in 2021, 2020 and 2019, respectively. A majority of the expense, \$14.6 million in 2021, \$2.3 million in 2020 and \$1.9 million in 2019 was recorded as selling and administrative expenses in the Consolidated Statement of Operations, with the remaining expenses incurred as cost of sales. Stock-based compensation expense for 2021 includes \$14.7 million, recorded in the second quarter of 2021, due to the Change in Control accelerated vesting provisions of certain of our awards. For the purpose of these grants, a Change in Control occurred when Brookfield and any affiliates thereof ceased to own stock of the Company that constitutes at least thirty percent (30%) or thirty-five percent (35%), as applicable, of the total fair market value or total voting power of the stock of the Company. Out of the \$14.7 million recorded with the Change in Control, \$0.9 million accelerated at the 35% ownership level and the remaining \$13.8 million accelerated at the 30% ownership level.

The Company derives a tax deduction measured by the excess of the market value over the grant price at the date stock-based compensation awards are exercised or vest. We recognized \$1.8 million of tax benefits in 2021, compared to \$0.5 million of tax benefits in both 2020 and 2019 relating to the issuance of common stock for the exercise/vesting of equity awards.

Stock Options. Non-qualified stock options may be granted to our employees and directors. Stock options vest over a five year period, with one-fifth of the award vesting on the anniversary date of the grant in each of the next five years and expire 10 years from the date of grant. Option exercises are satisfied through the issuance of common shares. Compensation expense for stock options is based on the estimated fair value of the option on the date of the grant. We calculate the estimated fair value of the option using the Black-Scholes option-pricing model. The weighted average assumptions used in our Black-Scholes option pricing model for options granted in 2021, 2020 and 2019 were as follows:

	2021	2020	2019
Dividend yield	0.32% - 0.35%	0.44% - 3.77%	2.39% - 3.05%
Expected volatility	62 %	50 %	50 %
Risk-free interest rate	1.1% - 1.21%	0.37% - 1.22%	1.79% - 2.63%
Expected term in years	6.5 years	6.5 years	6.5 years

Dividend Yield. Our dividend yield estimate is based on our expected dividends and the stock price on the grant date.

Expected Volatility. For 2021 and 2020, we estimated the volatility of our common stock at the date of grant based on the historical volatility of the Company's stock. The volatility factor we use is based on our historical closing prices since our stock has been publicly traded. For 2019, we estimated the volatility of our common stock at the date of grant based on the historical volatility of comparable companies over the most recent period commensurate with the expected life of the award.

Risk-Free Interest Rate. We base the risk-free interest rate on the implied yield currently available on U.S. Treasury zero-coupon issues with an equivalent remaining term equal to the expected life of the award.

Expected Term In Years. The expected life of awards granted represents the time period that the awards are expected to be outstanding. We determined the expected term of the grants using the "simplified" method as described by the SEC, since we do not have a history of stock option awards to provide a reliable basis for estimating such term.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following table summarizes activity related to stock options during 2021:

	Number of Options	Weighted- Average Exercise Price Per Share	Aggregate Intrinsic Value (thousands)	Weighted Average Remaining Term (Years)
Outstanding at December 31, 2020	1,248,935	\$ 13.66		
Granted	479,500	\$ 11.49		
Exercised	(39,700)	\$ 10.67		
Forfeited or expired	(72,015)	\$ 14.02		
Outstanding at December 31, 2021	1,616,720	\$ 13.08	\$ 972,123	7.6 years
Vested and Expected to vest as of December 31, 2021	1,616,720	\$ 13.08	\$ 972,123	7.6 years
Exercisable at December 31, 2021	1,500,800	\$ 12.79	\$ 972,123	7.6 years

Outstanding options have exercise prices ranging from \$7.28 per share to \$20.00 per share.

A summary of the status and changes of stock options and the related average price per share follows:

	Number of Options	Weighted- Average Grant Date Fair Value
Outstanding unvested as of December 31, 2020	906,361	\$ 4.94
Granted	479,500	6.50
Vested	(1,227,592)	5.38
Forfeited	(42,349)	5.09
Outstanding unvested as of December 31, 2021	115,920	\$ 6.64

We recognized stock-based compensation expense of \$5.9 million, \$1.1 million and \$1.2 million in 2021, 2020 and 2019, respectively, relating to stock options. As of December 31, 2021, there was \$0.5 million of total unrecognized compensation cost related to unvested stock options, which is expected to be amortized over a weighted average period of 1.4 years. The total fair value of shares vested was \$6.6 million in 2021 and \$1.1 million in both 2020 and 2019. There were 39,700 options exercised during 2021. No options were exercised during 2020 or 2019. Cash received from option exercises during 2021 was \$0.4 million.

RSUs. RSUs constitute an agreement to deliver shares of common stock to the participant at the end of a vesting period. Compensation expense for RSUs is based on the closing price of our common stock on the date of grant, less forfeitures or cancellations of awards throughout the vesting period. RSUs vest over a five year period, with one-fifth of the award vesting on the anniversary date of the grant in each of the next five years. A summary of the status and changes of shares subject to RSU awards for employees and the related average price per share follows:

	Number of Shares	Weighted- Average Grant Date Fair Value
Outstanding unvested as of December 31, 2020	502,770	\$ 10.28
Granted	515,960	11.49
Cancelled	(16,795)	10.78
Vested	(999,239)	10.88
Outstanding unvested as of December 31, 2021	2,696	\$ 13.96

During 2021, 2020 and 2019, we recognized stock-based compensation expense of \$10.0 million, \$1.0 million and \$0.5 million, respectively, relating to RSU awards for employees. The total fair value of RSU awards vested during 2021 and 2020 was \$10.8 million and \$0.6 million, respectively. No RSUs vested in 2019. As of December 31, 2021, less than

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

\$0.1 million of expense with respect to non-vested RSUs has yet to be recognized and will be amortized into expense over a weighted-average period of approximately 1.3 years.

DSUs. DSUs are granted to our independent directors in lieu of cash retainers and vest immediately upon grant. All whole DSUs will be settled in shares of our common stock after the Director's termination of service on the Board and any fractional shares will be settled in cash. During 2021, we granted 61,351 DSUs to our independent directors with a weighted-average grant date fair value of \$11.48 per share. During 2021, 2020 and 2019, we recognized stock-based compensation expense of \$0.7 million, \$0.6 million and \$0.4 million, respectively, relating to DSU awards. The total fair value of DSU awards vested during 2021, 2020 and 2019 was \$1.0 million, \$0.5 million and \$0.4 million, respectively.

Annual Cash Incentive Plan

We have a global annual cash incentive program for the majority of our worldwide salaried and hourly employees, the Short-Term Incentive Program (the "STIP"). In 2021, the STIP is based primarily on the performance metric of adjusted EBITDA, a non-GAAP financial measure. See Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in this Annual Report for additional information, as well as a reconciliation of adjusted EBITDA to net income, the most directly comparable financial measure calculated and presented in accordance with GAAP. The balance of our accrued liability for the STIP was \$10.9 million at December 31, 2021 and \$8.9 million as of December 31, 2020.

(4) Segment Reporting

Our Industrial Materials segment, our only reportable segment, manufactures high-quality graphite electrodes essential to the production of EAF steel and other ferrous and non-ferrous metals. Petroleum needle coke, a crystalline form of carbon derived from decant oil, is a key raw material used in the production of graphite electrodes. We utilize substantially all the needle coke that we produce internally to manufacture our graphite electrodes and as a result approximately 96% of our revenues from external customers are derived from the sale of graphite electrodes. In 2021, no customer accounted for more than 10% of our net sales.

The following tables summarize information as to our operations in different geographic areas:

	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Net sales:			
United States	\$ 285,710	\$ 260,867	\$ 403,916
Americas (excluding the United States)	241,442	187,779	348,670
Asia Pacific	154,084	127,415	172,439
Europe, Middle East, Africa	664,552	648,300	865,768
Total	<u>\$ 1,345,788</u>	<u>\$ 1,224,361</u>	<u>\$ 1,790,793</u>
	At December 31,		
	2021	2020	
	<i>(Dollars in thousands)</i>		
Long-lived assets (a):			
United States	\$ 179,003	\$ 169,208	
Mexico	123,997	132,867	
Brazil	4,090	4,309	
France	93,579	92,805	
Spain	100,248	106,467	
Other countries	556	561	
Total	<u>\$ 501,473</u>	<u>\$ 506,217</u>	

(a) Long-lived assets represent fixed assets, net of accumulated depreciation.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(5) Debt and Liquidity

The following table presents our long-term debt:

	As of December 31, 2021	As of December 31, 2020
	<i>(Dollars in thousands)</i>	
2018 Term Loan Facility	\$ 543,708	\$ 943,708
2020 Senior Secured Notes	500,000	500,000
Other Debt	429	615
Unamortized debt discount and issuance costs	(14,449)	(24,192)
Total Debt	1,029,688	1,420,131
Less: Short-term Debt	(127)	(131)
Long-term Debt	\$ 1,029,561	\$ 1,420,000

2018 Term Loan and 2018 Revolving Credit Facility

In February 2018, the Company entered into a credit agreement (the “2018 Credit Agreement”), which provides for (i) a \$2,250 million senior secured term facility (the “2018 Term Loan Facility”) after giving effect to the June 2018 amendment (the “First Amendment”) that increased the aggregate principal amount of the 2018 Term Loan Facility from \$1,500 million to \$2,250 million and (ii) a \$250 million senior secured revolving credit facility (the “2018 Revolving Credit Facility” and, together with the 2018 Term Loan Facility, the “Senior Secured Credit Facilities”). GrafTech Finance Inc. (“GrafTech Finance”) is the sole borrower under the 2018 Term Loan Facility while GrafTech Finance, GrafTech Switzerland SA (“Swissco”) and GrafTech Luxembourg II S.à.r.l. (“Luxembourg Holdco”) and, together with GrafTech Finance and Swissco, the “Co-Borrowers”) are co-borrowers under the 2018 Revolving Credit Facility. The 2018 Term Loan Facility and the 2018 Revolving Credit Facility mature on February 12, 2025 and February 12, 2023, respectively. As of December 31, 2021 and 2020, there was no debt outstanding on the 2018 Revolving Credit Facility and there was \$3.3 million and \$3.6 million of letters of credit drawn against the 2018 Revolving Credit Facility, respectively.

The 2018 Term Loan Facility bears interest, at our option, at a rate equal to either (i) the Adjusted LIBO Rate (as defined in the 2018 Credit Agreement), plus an applicable margin equal to 3.00% per annum following an amendment in February 2021 (the “Second Amendment”) that decreased the Applicable Rate (as defined in the 2018 Credit Agreement) by 0.50% for each pricing level or (ii) the ABR Rate (as defined in the 2018 Credit Agreement), plus an applicable margin equal to 2.00% per annum following the Second Amendment, in each case with one step down of 25 basis points based on achievement of certain public ratings of the 2018 Term Loan Facility. The Second Amendment also decreased the interest rate floor from 1.0% to 0.50% for the 2018 Term Loan Facility.

The 2018 Revolving Credit Facility bears interest, at our option, at a rate equal to either (i) the Adjusted LIBO Rate, plus an applicable margin initially equal to 3.75% per annum or (ii) the ABR Rate, plus an applicable margin initially equal to 2.75% per annum, in each case with two 25 basis point step downs based on achievement of certain senior secured first lien net leverage ratios. In addition, we are required to pay a quarterly commitment fee on the unused commitments under the 2018 Revolving Credit Facility in an amount equal to 0.25% per annum.

The Senior Secured Credit Facilities are guaranteed by each of our domestic subsidiaries, subject to certain customary exceptions, and by GrafTech Luxembourg I S.à.r.l., a Luxembourg société à responsabilité limitée and an indirect wholly owned subsidiary of GrafTech, Luxembourg HoldCo, and Swissco (collectively, the “Guarantors”) with respect to all obligations under the 2018 Credit Agreement of each of our foreign subsidiaries that is a Controlled Foreign Corporation (within the meaning of Section 956 of the Internal Revenue Code of 1986, as amended from time to time (the “Code”)).

All obligations under the 2018 Credit Agreement are secured, subject to certain exceptions, by: (i) a pledge of all of the equity securities of each domestic Guarantor and of each other direct, wholly owned domestic subsidiary of GrafTech and any Guarantor, (ii) a pledge on no more than 65% of the equity interests of each subsidiary that is a Controlled Foreign Corporation (within the meaning of Section 956 of the Code), and (iii) security interests in, and mortgages on, personal property and material real property of each domestic Guarantor, subject to permitted liens and certain exceptions specified in the 2018 Credit Agreement. The obligations of each foreign subsidiary of GrafTech that is a Controlled Foreign Corporation under the 2018 Revolving Credit Facility are secured by (i) a pledge of all of the equity securities of each Guarantor that is a Controlled Foreign Corporation and of each direct, wholly owned subsidiary of any Guarantor that is a Controlled Foreign Corporation,

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

and (ii) security interests in certain receivables and personal property of each Guarantor that is a Controlled Foreign Corporation, subject to permitted liens and certain exceptions specified in the 2018 Credit Agreement.

The 2018 Term Loan Facility amortizes at a rate of \$112.5 million a year payable in equal quarterly installments, with the remainder due at maturity. The Co-Borrowers are permitted to make voluntary prepayments at any time without premium or penalty. GrafTech Finance is required to make prepayments under the 2018 Term Loan Facility (without payment of a premium) with (i) net cash proceeds from non-ordinary course asset sales (subject to customary reinvestment rights and other customary exceptions and exclusions), and (ii) commencing with the Company's fiscal year ended December 31, 2019, 75% of Excess Cash Flow (as defined in the 2018 Credit Agreement), subject to step-downs to 50% and 0% of Excess Cash Flow based on achievement of a senior secured first lien net leverage ratio greater than 1.25 to 1.00 but less than or equal to 1.75 to 1.00 and less than or equal to 1.25 to 1.00, respectively. Scheduled quarterly amortization payments of the 2018 Term Loan Facility during any calendar year reduce, on a dollar-for-dollar basis, the amount of the required Excess Cash Flow prepayment for such calendar year, and the aggregate amount of Excess Cash Flow prepayments for any calendar year reduce subsequent quarterly amortization payments of the 2018 Term Loan Facility as directed by GrafTech Finance. As of December 31, 2021, we have satisfied all required amortization installments through the maturity date.

The 2018 Credit Agreement contains customary representations and warranties and customary affirmative and negative covenants applicable to GrafTech and restricted subsidiaries, including, among other things, restrictions on indebtedness, liens, investments, fundamental changes, dispositions, and dividends and other distributions. The 2018 Credit Agreement contains a financial covenant that requires GrafTech to maintain a senior secured first lien net leverage ratio not greater than 4.00:1.00 when the aggregate principal amount of borrowings under the 2018 Revolving Credit Facility and outstanding letters of credit issued under the 2018 Revolving Credit Facility (except for undrawn letters of credit in an aggregate amount equal to or less than \$35 million), taken together, exceed 35% of the total amount of commitments under the 2018 Revolving Credit Facility. The 2018 Credit Agreement also contains customary events of default.

2020 Senior Secured Notes

In December 2020, GrafTech Finance issued \$500 million aggregate principal amount of 4.625% senior secured notes due 2028 (the "2020 Senior Secured Notes") in a private offering. The 2020 Senior Secured Notes and related guarantees are secured on a pari passu basis by the collateral securing the Senior Secured Credit Facilities. All of the proceeds from the 2020 Senior Secured Notes were used to partially repay borrowings under our 2018 Term Loan Facility.

The 2020 Senior Secured Notes pay interest in arrears on June 15 and December 15 of each year, with the principal due in full on December 15, 2028. Prior to December 15, 2023, up to 40% of the 2020 Senior Secured Notes may be redeemed with the net cash proceeds of certain equity offerings at a price equal to 104.625% of the principal amount thereof, together with accrued and unpaid interest, if any. The 2020 Senior Secured Notes may be redeemed, in whole or in part, at any time prior to December 15, 2023 at a price equal to 100% of the principal amount of the notes redeemed plus a premium together with accrued and unpaid interest, if any, to, but not including, the redemption date. Thereafter, the 2020 Senior Secured Notes may be redeemed, in whole or in part, at various prices depending on the date redeemed.

The indenture governing the 2020 Senior Secured Notes (the "Indenture") contains certain covenants that, among other things, limit the Company's ability, and the ability of certain of its subsidiaries, to incur or guarantee additional indebtedness or issue preferred stock, pay distributions on, redeem or repurchase capital stock or redeem or repurchase subordinated debt, incur or suffer to exist liens securing indebtedness, make certain investments, engage in certain transactions with affiliates, consummate certain asset sales and effect a consolidation or merger, or sell, transfer, lease or otherwise dispose of all or substantially all assets. Pursuant to the Indenture, if our pro forma consolidated first lien net leverage ratio is no greater than 2.00 to 1.00, we can make restricted payments so long as no default or event of default has occurred and is continuing. If our pro forma consolidated first lien net leverage ratio is greater than 2.00 to 1.00, we can make restricted payments pursuant to certain baskets.

The Indenture contains events of default customary for agreements of its type (with customary grace periods, as applicable) and provides that, upon the occurrence of an event of default arising from certain events of bankruptcy or insolvency with respect to the Company or GrafTech Finance, all outstanding 2020 Senior Secured Notes will become due and payable immediately without further action or notice. If any other type of event of default occurs and is continuing, then the trustee or the holders of at least 30% in principal amount of the then outstanding 2020 Senior Secured Notes may declare all of the 2020 Senior Secured Notes to be due and payable immediately.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(6) Goodwill and Other Intangible Assets

We are required to review goodwill and indefinite-lived intangible assets annually for impairment. Goodwill impairment is tested at the reporting unit level on an annual basis and between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. For the years ended December 31, 2021 and 2020, an assessment for potential impairment was performed and an impairment adjustment was not required. There has been no change in the carrying value of goodwill for the years 2020 and 2021.

The following table summarizes acquired intangible assets with determinable useful lives by major category which are included in "Other assets" on our Consolidated Balance Sheets:

	As of December 31, 2021			As of December 31, 2020		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
<i>(Dollars in thousands)</i>						
Trade name	\$ 22,500	\$ (13,935)	\$ 8,565	\$ 22,500	\$ (11,932)	\$ 10,568
Technology and know-how	55,300	(38,486)	16,814	55,300	(34,091)	21,209
Customer related intangible	64,500	(28,195)	36,305	64,500	(23,848)	40,652
Total finite-lived intangible assets	<u>\$ 142,300</u>	<u>\$ (80,616)</u>	<u>\$ 61,684</u>	<u>\$ 142,300</u>	<u>\$ (69,871)</u>	<u>\$ 72,429</u>

Amortization expense of intangible assets was \$10.7 million, \$11.4 million and \$12.2 million in 2021, 2020 and 2019, respectively. Estimated annual amortization expense for the next five years will approximate \$10.1 million in 2022, \$9.2 million in 2023, \$8.0 million in 2024, \$7.3 million in 2025 and \$6.7 million in 2026.

(7) Interest Expense

The following table presents an analysis of interest expense:

	For the Year Ended December 31		
	2021	2020	2019
<i>(Dollars in thousands)</i>			
Interest incurred on debt	\$ 56,731	\$ 83,555	\$ 121,010
Accretion of original issue discount on 2018 Term Loan Facility	3,387	5,340	2,196
Amortization of debt issuance and modification costs	8,642	9,179	4,125
Total interest expense	<u>\$ 68,760</u>	<u>\$ 98,074</u>	<u>\$ 127,331</u>

Interest rates

The 2020 Senior Secured Notes carry a fixed interest rate of 4.625%. The 2018 Term Loan Facility had an interest rate of 3.50% as of December 31, 2021, 4.50% as of December 31, 2020 and 5.30% as of December 31, 2019. See Note 5, "Debt and Liquidity" for details of these transactions.

In 2021 we made prepayments for a total of \$400 million under our 2018 Term Loan Facility. In connection with this, we recorded \$2.3 million of accelerated accretion of the original issue discount and we recorded \$3.7 million of accelerated amortization of the debt issuance costs. We also recorded \$1.6 million of modification costs related to the 2018 Term Loan Facility repricing in the first quarter of 2021. See Note 5, "Debt and Liquidity" for details of the Second Amendment.

In December 2020, the proceeds from the issuance of the \$500 million 2020 Senior Secured Notes were used to repay \$500 million of principal on the 2018 Term Loan Facility. The repayment of the 2018 Term Loan Facility was accounted for as a partial debt extinguishment and triggered \$3.2 million of accelerated accretion of the original issue discount and \$5.2 million of accelerated amortization of the debt issuance costs. The 2020 Senior Secured Notes were accounted for as new debt and the related debt issuance costs were deferred.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The Company has several interest rate swap contracts to fix our cash flows associated with the risk in variability in the one-month U.S. London Interbank Offered Rate ("USD LIBOR") for a portion of our outstanding debt. See Note 8, "Fair Value Measurements and Derivative Instruments" for details of these transactions.

(8) Fair Value Measurements and Derivative Instruments

Fair Value Measurements

Depending on the inputs, we classify each fair value measurement as follows:

- Level 1 – based upon quoted prices for *identical* instruments in active markets,
- Level 2 – based upon quoted prices for *similar* instruments, prices for identical or similar instruments in markets that are not active, or model-derived valuations of all of whose significant inputs are observable, and
- Level 3 – based upon one or more significant unobservable inputs.

The following section describes key inputs and assumptions used in valuation methodologies of our assets and liabilities measured at fair value on a recurring basis:

Cash and cash equivalents, short-term notes and accounts receivable, accounts payable and other current payables – The carrying amount approximates fair value because of the short maturity of these instruments.

Debt – The fair value of our debt as of December 31, 2021 and 2020 was \$1,051.6 million and \$1,453.1 million, respectively. The fair values were determined using Level 3 inputs.

Foreign currency derivatives – Foreign currency derivatives are carried at fair value using Level 2 inputs. We had an outstanding gain of \$0.4 million as of December 31, 2021 and an outstanding loss of \$0.1 million as of December 31, 2020.

Commodity derivative contracts – Commodity derivative contracts are carried at fair value. We determine the fair value using observable, quoted refined oil product prices that are determined by active markets and therefore classify the commodity derivative contracts as Level 2. We had outstanding unrealized gains of \$8.5 million as of December 31, 2021, outstanding unrealized gains of \$0.6 million and outstanding unrealized losses of \$2.8 million as of December 31, 2020.

Interest rate swap contracts – Interest rate swap contracts are carried at fair value. We determine the fair value using the income approach to value the derivatives, using observable Level 2 market expectations at the measurement date and standard valuation techniques to convert future amounts to a single discounted present amount reflecting current market expectations about those future amounts. We had outstanding unrealized gains of \$6.1 million and outstanding unrealized losses of \$0.1 million as of December 31, 2021. We had no outstanding unrealized gains and outstanding unrealized losses of \$11.9 million as of December 31, 2020.

Additional fair value information related to our pension funds' assets can be found in Note 11, "Retirement Plans and Post-Employment Benefits".

Derivative Instruments

We use derivative instruments as part of our overall foreign currency and commodity risk management strategies to manage the risk of exchange rate movements that would reduce the value of our foreign cash flows and to minimize commodity price volatility. Foreign currency exchange rate movements create a degree of risk by affecting the value of sales made and costs incurred in currencies other than the U.S. dollar.

Certain of our derivative contracts contain provisions that require us to provide collateral. Since the counterparties to these financial instruments are large commercial banks and similar financial institutions, we do not believe that we are exposed to material counterparty credit risk. We do not anticipate nonperformance by any of the counterparties to our instruments.

Foreign currency derivatives

We enter into foreign currency derivatives from time to time to attempt to manage exposure to changes in currency exchange rates. These foreign currency instruments, which include, but are not limited to, forward exchange contracts and purchased currency options, attempt to hedge global currency exposures such as foreign currency denominated debt, sales, receivables, payables, and purchases.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

We had no foreign currency cash flow hedges outstanding as of December 31, 2021 and December 31, 2020 and, therefore, no unrealized gains or losses reported under accumulated other comprehensive loss.

As of December 31, 2021, we had outstanding Mexican peso, South African rand, euro, Swiss franc and Japanese yen currency contracts, with aggregate notional amounts of \$99.3 million. As of December 31, 2020, we had outstanding Mexican peso, South African rand, euro, Swiss franc and Japanese yen currency contracts, with aggregate notional amounts of \$71.0 million. The foreign currency derivatives outstanding as of December 31, 2021 had maturity dates from January 2022 to April 2022, and were not designated as hedging instruments.

Commodity derivative contracts

We have entered into commodity derivative contracts for refined oil products. These contracts are entered into to protect against the risk that eventual cash flows related to these products will be adversely affected by future changes in prices. In the fourth quarter of 2017, we began to enter into LTAs, which are three- to five-year take-or-pay contracts, with many of our customers and began to hedge the cash flows related to these contracts. As of December 31, 2021, we had outstanding commodity derivative contracts with a notional amount of \$19.5 million and maturities from January 2022 to June 2022. As of December 31, 2020, we had outstanding commodity derivative contracts with a notional amount of \$61.3 million with maturities from January 2021 to June 2022. Within accumulated other comprehensive loss, we had a net unrealized pre-tax gain of \$8.5 million and a net unrealized pre-tax loss of \$2.2 million as of December 31, 2021 and 2020, respectively. The fair value of these contracts was determined using Level 2 inputs.

In connection with de-designated commodity derivative contracts, we recognized no unrealized gains or losses in cost of sales in 2021 and a \$0.4 million unrealized gain in 2020 as a result of the variation in fair value from the de-designation date. This resulted from a small portion of our commodity derivative contracts that ceased to qualify for hedge accounting.

Interest rate swap contracts

During the third quarter of 2019, the Company entered into interest rate swap contracts. The contracts are "pay fixed, receive variable" with notional amounts of \$500 million maturing in two years and another \$500 million maturing in five years. The Company's risk management objective was to fix its cash flows associated with the risk in variability in the one-month USD LIBOR for a portion of our outstanding debt. It was expected that these swaps would fix the cash flows associated with the forecasted interest payments on this notional amount of debt to an effective fixed interest rate of 5.1%, which could be lowered to 4.85% depending on credit ratings. In December 2020, in connection with the \$500 million principal repayment of the 2018 Term Loan Facility, we de-designated one interest rate swap contract of \$250 million notional maturing in the third quarter of 2021, and in February 2021, we closed the contract and recorded a \$0.9 million charge in interest expense.

Additionally, in February 2021, the Company modified the three remaining swaps with notional amounts of \$250 million that matured in the third quarter 2021 and \$500 million maturing in the third quarter 2024 in order to align their terms to the amended 2018 Term Loan Facility (see Note 5, "Debt and Liquidity" for details of the February 2021 repricing of the 2018 Term Loan Facility). It is expected that these swaps will fix the cash flows associated with the forecasted interest payments on this notional amount of debt to an effective fixed interest rate of 4.2%, which could be lowered to 3.95% depending on credit ratings. The modification triggered the de-designation and re-designation of the swaps. Because the modified swaps contained an other-than-insignificant financing element at re-designation date, they are considered hybrid instruments composed of a debt host and an embedded derivative and the associated cash (outflows)/inflows are classified as financing (use)/source of cash. The debt host portion amounted to a liability of \$7.0 million as of December 31, 2021 with \$2.6 million included in "Other accrued liabilities" and \$4.4 million in "Other long-term obligations." The corresponding loss is accounted for in "Accumulated other comprehensive loss" and is amortized over the remaining life of the swaps. The embedded derivative is treated as a cash flow hedge.

Within accumulated other comprehensive loss, we recorded a net unrealized pre-tax gain of \$5.9 million and a net unrealized pre-tax loss of \$11.9 million as of December 31, 2021 and 2020, respectively. The fair value of these contracts was determined using Level 2 inputs.

The change in the fair value of the de-designated interest rate swap contract from the de-designation date to December 31, 2020, was recorded in interest expense and was immaterial.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The fair value of all derivatives is recorded as assets or liabilities on a gross basis in our Consolidated Balance Sheets. At December 31, 2021 and 2020, the fair value of our derivatives and their respective balance sheet locations are presented in the following table:

	Asset Derivatives		Liability Derivatives	
	Location	Fair Value	Location	Fair Value
As of December 31, 2021				
<i>(Dollars in thousands)</i>				
Derivatives designated as cash flow hedges:				
Commodity derivative contracts	Prepaid and other current assets	\$ 8,469	Other accrued liabilities	\$ —
	Other assets	—	Other long-term obligations	—
Interest rate swap contracts	Prepaid and other current assets	\$ —	Other accrued liabilities	\$ 140
	Other assets	6,060	Other long-term obligations	—
Total fair value		\$ 14,529		\$ 140

As of December 31, 2020				
Commodity derivative contracts	Prepaid and other current assets	\$ 518	Other accrued liabilities	\$ 888
	Other assets	63	Other long-term obligations	1,898
Interest rate swap contracts	Prepaid and other current assets	\$ —	Other accrued liabilities	\$ 4,080
	Other assets	—	Other long-term obligations	6,903
Total fair value		\$ 581		\$ 13,769

	Asset Derivatives		Liability Derivatives	
	Location	Fair Value	Location	Fair Value
As of December 31, 2021				
<i>(Dollars in Thousands)</i>				
Derivatives not designated as hedges:				
Foreign currency derivatives	Prepaid and other current assets	\$ 388	Other accrued liabilities	\$ 2
Total fair value		\$ 388		\$ 2

As of December 31, 2020				
Derivatives not designated as hedges:				
Foreign currency derivatives	Prepaid and other current assets	\$ 6	Other accrued liabilities	\$ 111
Interest rate swap contracts	Prepaid and other current assets	—	Other accrued liabilities	952
Total fair value		\$ 6		\$ 1,063

The realized (gains) losses resulting from the settlement of commodity derivative contracts designated as hedges remain in "Accumulated other comprehensive loss" until they are recognized in the Statement of Operations when the hedged item impacts earnings, which is when the finished product is sold. As a result of the settlement of commodity derivative contracts, as of December 31, 2021 and December 31, 2020, net realized pre-tax gain of \$11.5 million and net realized pre-tax loss of \$7.4 million, respectively, were reported in accumulated other comprehensive income (loss) and will be (were) released to earnings within the following 12 months. See the table below for amounts recognized in the Statement of Operations.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The realized (gains) losses on derivatives are recognized in the Statements of Operations when the hedged item impacts earnings and are as follows for the years ended December 31, 2021, 2020 and 2019:

		Amount of (Gain)/Loss Recognized		
		2021	2020	2019
Derivatives designated as cash flow hedges:		(Dollars in thousands)		
Commodity derivative contracts	Cost of sales	\$ 6,440	\$ (4,134)	\$ (8,892)
Interest rate swaps	Interest expense (income)	1,846	4,390	(1,050)
		Amount of (Gain)/Loss Recognized		
		2021	2020	2019
Derivatives not designated as hedges:		(Dollars in thousands)		
Foreign currency derivatives	Cost of sales, Other (income) expense, net	\$ 3,895	\$ (2,671)	\$ (506)
Commodity derivative contracts	Cost of sales	(1,399)	(530)	(223)
Interest rate swap contracts	Interest expense	866	—	—

In addition, the loss deferred to "Accumulated other comprehensive loss" in the first quarter of 2021 as a result of the portion of the interest rate swaps qualifying as a debt host is amortized to interest expense over the term of the swaps. The amount of the amortization is as follows for 2021:

		Amount of (Gain)/Loss Recognized		
		2021	2020	2019
Derivatives not designated as hedges:		(Dollars in thousands)		
Interest rate swap contracts	Interest expense	2,807	—	—

The balance of the deferred pre-tax loss is \$7.0 million as of December 31, 2021, reported in "Accumulated other comprehensive loss", of which \$2.6 million will be released to earnings within the next 12 months.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(9) Supplementary Balance Sheet Detail

The following tables present supplementary balance sheet details:

	As of December 31, 2021	As of December 31, 2020
	<i>(Dollars in thousands)</i>	
Inventories:		
Raw materials and supplies	\$ 132,113	\$ 101,098
Work in process	127,127	110,331
Finished goods	30,192	54,535
	<u>\$ 289,432</u>	<u>\$ 265,964</u>
Prepaid expenses and other current assets:		
Prepaid expenses	\$ 8,193	\$ 9,242
Value-added tax and other indirect taxes receivable*	40,861	10,666
Spare parts inventory	12,408	11,825
Other current assets	11,902	3,381
	<u>\$ 73,364</u>	<u>\$ 35,114</u>
Property, plant and equipment:		
Land and improvements	\$ 49,201	\$ 50,285
Buildings	79,660	80,041
Machinery and equipment and other	621,808	621,478
Construction in progress	64,629	33,098
	<u>\$ 815,298</u>	<u>\$ 784,902</u>
Other accrued liabilities:		
Payrolls (including incentive programs)	\$ 16,904	\$ 13,159
Employee benefits	7,272	7,128
Deferred revenue	9,840	13,056
Other	22,389	23,158
	<u>\$ 56,405</u>	<u>\$ 56,501</u>
Other long-term obligations:		
Post-employment benefits	\$ 14,597	\$ 15,669
Pension and related benefits	31,139	37,847
Other	22,921	27,962
	<u>\$ 68,657</u>	<u>\$ 81,478</u>

*Included in "Value-added tax and other indirect taxes receivable" is the recognition of the Brazil value-added tax credit of \$11.5 million (see Note 16, "Other (Income) Expense, net").

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following table presents an analysis of the allowance for doubtful accounts:

	2021	2020	2019
Balance at beginning of year	\$ 8,243	\$ 5,474	\$ 1,129
Charge to retained earnings - ASC 326 adoption impact	—	2,026	—
(Credit) charge to income	(1,266)	1,458	4,636
Deductions	(142)	(715)	(291)
Balance at end of year	<u>\$ 6,835</u>	<u>\$ 8,243</u>	<u>\$ 5,474</u>

(10) Leases

We lease certain transportation and mobile manufacturing equipment such as railcars and forklifts, as well as real estate.

Components of lease expense are as follows:

	For the Year Ended December 31,		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Operating lease cost	\$ 5,399	\$ 6,138	\$ 4,816
Short-term lease cost	408	159	14
Variable lease cost	453	429	227
Total lease cost	<u>\$ 6,260</u>	<u>\$ 6,726</u>	<u>\$ 5,057</u>

Supplemental cash-flow and other information related to leases is as follows:

	For the Year Ended December 31,		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
RoU assets obtained in exchange for new operating lease liabilities (non-cash)	5,584	5,262	4,995
Cash payments for operating leases	(5,466)	(6,177)	(4,724)

Supplemental balance sheet information related to leases is as follows:

		As of December 31,	
		2021	2020
		<i>(Dollars in thousands)</i>	
Location			
Operating RoU lease assets	Other assets	\$ 7,646	\$ 7,164
Current operating lease liabilities	Other accrued liabilities	4,109	4,102
Non-current operating lease liabilities	Other long-term obligations	3,528	3,195
Total operating lease liabilities		<u>\$ 7,637</u>	<u>\$ 7,297</u>
Weighted average remaining lease term (in years)		2.3	2.7
Weighted average discount rate		4.31 %	5.82 %

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

As of December 31, 2021, lease commitments under non-cancelable operating leases extending for one year or more will require the following future payments:

<i>(Dollars in thousands)</i>		
2022		4,200
2023		2,238
2024		969
2025		451
2026 and after		152
Total lease payments	\$	8,010
Less: Imputed interest		(373)
Present value of lease payments	\$	7,637

As of December 31, 2021, we have not entered into any additional operating lease commitments that have yet to commence.

(11) Retirement Plans and Post-Employment Benefits

Retirement Plans

On February 26, 1991, we formed our own retirement plan covering substantially all our U.S. employees. Under our plan, covered employees earned benefit payments based primarily on their service credits and wages subsequent to February 26, 1991.

Prior to that date, substantially all our U.S. employees were participants in the U.S. retirement plan of Union Carbide Corporation ("Union Carbide"). While service credit was frozen, covered employees continued to earn benefits under the Union Carbide plan based on their final average wages through February 26, 1991, adjusted for salary increases (not to exceed six percent per annum) through January 26, 1995, the date Union Carbide ceased to own a minimum 50% of the equity of GTI. The Union Carbide plan is responsible for paying retirement and death benefits earned as of February 26, 1991.

Effective January 1, 2002, we established a defined contribution plan for U.S. employees. Certain employees had the option to remain in our defined benefit plan for an additional period of up to five years. Employees not covered by this option had their benefits under our defined benefit plan frozen as of December 31, 2001, and began participating in the defined contribution plan.

Effective March 31, 2003, we curtailed our qualified benefit plan and the benefits were frozen as of that date for the U.S. employees who had the option to remain in our defined benefit plan. We also closed our non-qualified U.S. defined benefit plan for the participating salaried workforce. The employees began participating in the defined contribution plan as of April 1, 2003.

Pension coverage for employees of foreign subsidiaries is provided, to the extent deemed appropriate, through separate plans. Obligations under such plans are systematically provided for by depositing funds with trustees, under insurance policies or by book reserves.

The components of our consolidated net pension costs are set forth in the following table:

	For the Year Ended December 31,					
	2021		2020		2019	
	U.S.	Foreign	U.S.	Foreign	U.S.	Foreign
<i>(Dollars in thousands)</i>						
Service cost	\$ 1,328	\$ 1,349	\$ 1,322	\$ 1,183	\$ 1,297	\$ 624
Interest cost	2,962	111	3,949	174	5,070	275
Expected return on assets	(4,213)	(545)	(4,730)	(401)	(5,026)	(424)
Mark-to-market (gain) loss	(2,428)	(1,327)	613	2,596	205	3,302
Pension (benefits) costs	\$ (2,351)	\$ (412)	\$ 1,154	\$ 3,552	\$ 1,546	\$ 3,777

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The mark-to-market gain in 2021 was the result of a favorable change in the discount rate and favorable foreign currency translation, as well as a better than expected return on plan assets, particularly for the U.S. plans. The mark-to-market loss in 2020 was the result of the unfavorable change in the discount rate, new employee obligations and unfavorable foreign currency translation, partially offset by better than expected return on plan assets, particularly for the U.S. plans. The mark-to-market loss in 2019 was the result of the unfavorable change in the discount rate, partially offset by better than expected return on plan assets, particularly for the U.S. plans.

The reconciliation of the beginning and ending balances of our pension plans' benefit obligations, fair value of assets, and funded status at December 31, 2021 and 2020 are:

	As of December 31, 2021		As of December 31, 2020	
	U.S.	Foreign	U.S.	Foreign
	<i>(Dollars in thousands)</i>			
Changes in Benefit Obligation:				
Net benefit obligation at beginning of period	\$ 140,254	\$ 38,716	\$ 135,810	\$ 28,903
Service cost	1,328	1,349	1,322	1,183
Interest cost	2,962	111	3,949	174
Participant contributions	—	580	—	470
Foreign currency exchange changes	—	(1,318)	—	2,869
Actuarial (gain) loss	(4,316)	(1,104)	9,583	2,683
Benefits paid*	(10,322)	237	(10,410)	2,434
Net benefit obligation at end of period	<u>\$ 129,906</u>	<u>\$ 38,571</u>	<u>\$ 140,254</u>	<u>\$ 38,716</u>
Changes in Plan Assets:				
Fair value of plan assets at beginning of period	\$ 115,568	\$ 25,082	\$ 107,832	\$ 18,980
Actual return on plan assets	2,325	799	13,700	488
Foreign currency exchange rate changes	—	(746)	—	1,893
Employer contributions	2,390	961	4,446	817
Participant contributions	—	580	—	470
Benefits paid*	(10,322)	237	(10,410)	2,434
Fair value of plan assets at end of period	<u>\$ 109,961</u>	<u>\$ 26,913</u>	<u>\$ 115,568</u>	<u>\$ 25,082</u>
Funded status (underfunded):	<u>\$ (19,945)</u>	<u>\$ (11,658)</u>	<u>\$ (24,686)</u>	<u>\$ (13,634)</u>
Amounts recognized in the statement of financial position:				
Non-current assets	\$ —	\$ —	\$ —	\$ 13
Current liabilities	(420)	(44)	(423)	(50)
Non-current liabilities	(19,525)	(11,614)	(24,263)	(13,597)
Net amount recognized	<u>\$ (19,945)</u>	<u>\$ (11,658)</u>	<u>\$ (24,686)</u>	<u>\$ (13,634)</u>

- For certain international jurisdictions, the amount reported under "Benefits paid" include obligations and assets that have been transferred into our plans in connection with personnel hired during the year.

The accumulated benefit obligation for all defined benefit pension plans was \$166.1 million and \$176.3 million as of December 31, 2021 and 2020, respectively.

Plan Assets

The accounting guidance on fair value measurements specifies a hierarchy based on the observability of inputs used in valuation techniques (Level 1, 2 and 3). See Note 8, "Fair Value Measurements and Derivative Instruments" for a discussion of the fair value hierarchy.

The following describes the methods and significant assumptions used to estimate the fair value of the investments:

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Cash and cash equivalents – Valued at cost. Cash equivalents are valued at net asset value as provided by the administrator of the fund.

Foreign government bonds – Valued by the trustees using various pricing services of financial institutions.

Equity securities – Valued at the closing price reported on the active market on which the security is traded.

Fixed insurance contract – Valued at the present value of the guaranteed payment streams.

Investment contracts – Valued at the total cost of annuity contracts purchased, adjusted for market differences from the date of purchase to year-end.

Collective trusts – Valued at the net asset value provided by the administrator of the fund (the practical expedient). The net asset value is primarily based on quoted market prices of the underlying securities for which quoted market prices of the underlying securities of the funds. Some of the underlying investments include securities for which quoted market prices are not available and are valued using data obtained by the trustee from the best available source or market value. This method may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although we believe its valuation method is appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

The fair value of other plan assets by category is summarized below (dollars in thousands):

	As of December 31, 2021			
	Level 1	Level 2	Level 3	Total
U.S. Plan Assets				
Cash and cash equivalents	\$ 715	\$ —	\$ —	\$ 715
International Plan Assets				
Foreign government bonds	—	910	—	910
Fixed insurance contracts	—	—	26,003	26,003
Total assets in the fair value hierarchy	\$ —	\$ 910	\$ 26,003	\$ 26,913
U.S. Plan - Investments measured at net asset value				\$ 109,246
Total	\$ 715	\$ 910	\$ 26,003	\$ 136,874

	As of December 31, 2020			
	Level 1	Level 2	Level 3	Total
U.S. Plan Assets				
Cash and cash equivalents	\$ 1,850	\$ —	\$ —	\$ 1,850
International Plan Assets				
Foreign government bonds	\$ —	\$ 995	\$ —	\$ 995
Fixed insurance contracts	—	—	24,087	24,087
Total assets in the fair value hierarchy	\$ —	\$ 995	\$ 24,087	\$ 25,082
U.S. Plan - Investments measured at net asset value				\$ 113,718
Total	\$ 1,850	\$ 995	\$ 24,087	\$ 140,650

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The following table presents the changes for those financial instruments classified within Level 3 of the valuation hierarchy for international plan pension assets for the years ended December 31, 2020 and 2021 (dollars in thousands):

	Fixed Insurance Contracts
Balance at December 31, 2019	\$ 17,985
Gain / contributions / currency impact	6,149
Distributions	(16)
Balance at December 31, 2020	24,118
Gain / contributions / currency impact	1,900
Distributions	(15)
Balance at December 31, 2021	\$ 26,003

We annually re-evaluate assumptions and estimates used in projecting pension assets, liabilities and expenses. These assumptions and estimates may affect the carrying value of pension assets, liabilities and expenses in our Consolidated Financial Statements. Assumptions used to determine net pension costs and projected benefit obligations are:

Pension Benefit Obligations Key Assumptions

	As of December 31,	
	2021	2020
Weighted average assumptions to determine benefit obligations:		
Discount rate	2.14 %	1.78 %
Rate of compensation increase	1.46 %	1.46 %

Pension Cost Key Assumptions

Weighted average assumptions to determine net cost:

Discount rate	1.78 %	2.59 %
Expected return on plan assets	3.48 %	4.14 %
Rate of compensation increase	1.46 %	1.50 %

We adjust our discount rate annually in relation to the rate at which the benefits could be effectively settled. Discount rates are set for each plan in reference to the yields available on AA-rated corporate bonds of appropriate currency and duration. The appropriate discount rate is derived by developing an AA-rated corporate bond yield curve in each currency. The discount rate for a given plan is the rate implied by the yield curve for the duration of that plan's liabilities. In certain countries, where little public information is available on which to base discount rate assumptions, the discount rate is based on government bond yields or other indices and approximate adjustments to allow for the differences in weighted durations for the specific plans and/or allowance for assumed credit spreads between government and AA-rated corporate bonds.

The expected return on assets assumption represents our best estimate of the long-term return on plan assets and generally was estimated by computing a weighted average return of the underlying long-term expected returns on the different asset classes, based on the target asset allocations. The expected return on assets assumption is a long-term assumption that is expected to remain the same from one year to the next unless there is a significant change in the target asset allocation, the fees and expenses paid by the plan or market conditions.

The rate of compensation increase assumption is generally based on salary increases.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Plan Assets. The following table presents our retirement plan weighted average asset allocations at December 31, 2021, by asset category:

	Percentage of Plan Assets as of December 31, 2021			
	U.S.		Foreign	
Equity securities and return seeking assets	20	%	—	%
Fixed income, debt securities, or cash	80	%	100	%
Total	100	%	100	%

Investment Policy and Strategy. The investment policy and strategy of the U.S. plan is to invest approximately 20% in equities and return seeking assets and approximately 80% in fixed income securities. Rebalancing is undertaken monthly. To the extent we maintain plans in other countries, target asset allocation is 100% fixed income investments. For each plan, the investment policy is set within both asset return and local statutory requirements.

Information for our pension plans with an accumulated benefit obligation in excess of plan assets at December 31, 2020 and 2021 follows:

	2021		2020	
	U.S.	Foreign	U.S.	Foreign
	<i>(Dollars in thousands)</i>			
Accumulated benefit obligation	\$ 129,906	\$ 35,247	\$ 140,254	\$ 35,316
Fair value of plan assets	109,961	26,003	115,568	24,118

Information for our pension plans with a projected benefit obligation in excess of plan assets at December 31, 2021 and 2020 follows:

	2021		2020	
	U.S.	Foreign	U.S.	Foreign
	<i>(Dollars in thousands)</i>			
Projected benefit obligation	\$ 129,906	\$ 37,412	\$ 140,254	\$ 37,734
Fair value of plan assets	109,961	26,003	115,568	24,118

Following is our projected future pension plan cash flow by year:

	U.S.	Foreign
	<i>(Dollars in thousands)</i>	
Expected contributions in 2022:		
Expected employer contributions	\$ 420	\$ 958
Expected employee contributions	—	—
Estimated future benefit payments reflecting expected future service for the years ending December 31:		
2022	9,224	1,352
2023	9,186	1,503
2024	9,067	2,916
2025	9,015	1,581
2026	8,914	2,663
2027-2031	40,997	12,312

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Post-Employment Benefit Plans

We have legacy post-employment medical coverage and life insurance benefits for eligible retired employees in the U.S. and in certain foreign jurisdictions. Effective December 31, 2005, all U.S. post-employment medical coverage plans were frozen.

The post-employment benefit plans are un-funded and our periodic contributions correspond to the amount of benefits paid in the period. Our funding contributions were \$1.4 million and \$1.3 million in 2021 and 2020, respectively.

The estimated liability for post-employment benefit plans was \$16.0 million and \$17.2 million as of December 31, 2021 and 2020, respectively. The expense recognized in the Consolidated Statement of Operations for post-employment benefits was \$0.5 million, \$0.7 million and \$1.6 million for 2021, 2020 and 2019, respectively. Included in post-employment benefit expense are mark-to-market gains of \$0.1 million and less than \$0.1 million for 2021 and 2020, respectively, and a mark-to-market loss of \$0.6 million in 2019.

Savings Plan

Our employee savings plan provides eligible employees the opportunity for long-term savings and investment. The plan allows employees to contribute up to 5% of pay as a basic contribution and an additional 45% of pay as supplemental contribution. In 2021, 2020 and 2019, the Company's matching contributions to our savings plan were \$2.5 million, \$2.2 million and \$2.1 million, respectively.

(12) Commitments and Contingencies

Legal Proceedings

We are involved in various investigations, lawsuits, claims, demands, environmental compliance programs and other legal proceedings arising out of or incidental to the conduct of our business. While it is not possible to determine the ultimate disposition of each of these matters, we do not believe that their ultimate disposition will have a material adverse effect on our financial position, results of operations or cash flows. Additionally, we are involved in the following legal proceedings described below.

We are involved in various arbitrations, sometimes as claimants and other times as respondents/counterclaimants, pending before the International Chamber of Commerce with several customers who, among other things, have failed to perform under their LTAs and in certain instances are seeking to modify or frustrate their contractual commitments to us. In particular, Aperam South America LTDA, Aperam Sourcing S.C.A., ArcelorMittal Sourcing S.C.A., and ArcelorMittal Brasil S.A. (collectively, the "Claimants") initiated a single arbitration proceeding against two of the Company's subsidiaries in the International Chamber of Commerce in June 2020. In June 2021, the Claimants filed their statement of claim, seeking approximately \$61 million plus interest in monetary relief and/or reimbursement in respect of several fixed price LTAs that were executed between such subsidiaries and the Claimants in 2017 and 2018. The Claimants argue, among other things, that they should no longer be required to comply with the terms of the LTAs that they signed due to an alleged drop in market prices for graphite electrodes in January 2020. Alternatively, the Claimants argue that they should not be required to comply with the LTAs that they signed due to alleged market circumstances at the time of execution. We believe we have valid defenses to these claims. We intend to vigorously defend them and enforce our rights under the LTAs.

Pending litigation in Brazil has been brought by employees seeking to recover additional amounts and interest thereon under certain wage increase provisions applicable in 1989 and 1990 under collective bargaining agreements to which employers in the Bahia region of Brazil were a party (including our subsidiary in Brazil). Companies in Brazil have settled claims arising out of these provisions and, in May 2015, the litigation was remanded by the Brazilian Supreme Court in favor of the employees union. After denying an interim appeal by the Bahia region employers on June 26, 2019, the Brazilian Supreme Court finally ruled in favor of the employees union on September 26, 2019. The employers union has determined not to seek annulment of such decision. Separately, on October 1, 2015, a related action was filed by current and former employees against our subsidiary in Brazil to recover amounts under such provisions, plus interest thereon, which amounts together with interest could be material to us. If the Brazilian Supreme Court proceeding above had been determined in favor of the employers union, it would also have resolved this proceeding in our favor. In the first quarter of 2017, the state court initially ruled in favor of the employees. We appealed this state court ruling, and the appellate court issued a decision in our favor on May 19, 2020. The employees have further appealed and, on December 16, 2020, the court upheld the decision in favor of GrafTech Brazil. On February 22, 2021, the employees filed a further appeal and, on April 28, 2021, the court rejected the employees' appeal in

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

favor of GrafTech Brazil. The employees filed a further appeal and we intend to vigorously defend our position. As of December 31, 2021, we are unable to assess the potential loss associated with these proceedings as the claims do not currently specify the number of employees seeking damages or the amount of damages being sought.

Product Warranties

We generally sell products with a limited warranty. We accrue for known warranty claims if a loss is probable and can be reasonably estimated. We also accrue for estimated warranty claims incurred based on a historical claims charge analysis. Claims accrued but not yet paid and the related activity within the reserve for 2020 and 2021 are as follows:

	<i>(Dollars in thousands)</i>	
Balance as of December 31, 2019	\$	1,835
Product warranty charges/adjustments		1,220
Payments and settlements		(1,058)
Balance as of December 31, 2020	\$	1,997
Product warranty charges/adjustments		1,183
Payments and settlements		(2,092)
Balance as of December 31, 2021	\$	1,088

Related Party Tax Receivable Agreement

On April 23, 2018, the Company entered into the Tax Receivable Agreement that provides Brookfield, as the sole Pre-IPO stockholder, the right to receive future payments from us for 85% of the amount of cash savings, if any, in U.S. federal income tax and Swiss tax that we and our subsidiaries realize as a result of the utilization of the pre-IPO Tax Assets. In addition, we will pay interest on the payments we will make to Brookfield with respect to the amount of these cash savings from the due date (without extensions) of our tax return where we realize these savings to the payment date at a rate equal to LIBOR plus 1.00% per annum. The term of the Tax Receivable Agreement commenced on April 23, 2018 and will continue until there is no potential for any future tax benefit payments.

As of December 31, 2020, total Tax Receivable Agreement liability was \$40.9 million, of which \$21.8 million was classified as current liability "Related party payable - Tax Receivable Agreement" on the Consolidated Balance Sheets, as we expected this portion to be settled within 12 months, and \$19.1 million of the liability remained as a long-term liability in "Related party payable - Tax Receivable Agreement long-term" on the Consolidated Balance Sheets. The 2020 current liability was settled in the first quarter of 2021.

In 2021, the Tax Receivable Agreement liability increased \$0.2 million as a result of revised U.S. income estimates affecting the future usage of our U.S. tax attributes and related interest. The increase was recorded in "Related Party Tax Receivable Agreement Expense (Benefit)" on the Consolidated Statement of Operations. As of December 31, 2021, the total Tax Receivable Agreement liability is \$19.3 million, of which \$3.8 million is classified as a current liability "Related party payable - Tax Receivable Agreement" on the Consolidated Balance Sheets, as we expect this portion to be settled within 12 months, and \$15.5 million of the liability remains as a long-term liability in "Related party payable - Tax Receivable Agreement long-term" on the Consolidated Balance Sheets.

Long-term Incentive Plan

The long-term incentive plan ("LTIP") was adopted by the Company in August 2015 and amended and restated in March 2018. The purpose of the plan was to retain senior management of the Company, to incentivize them to make decisions with a long-term view and to influence behavior in a way that is consistent with maximizing value for the pre-IPO stockholder of the Company in a prudent manner. Each participant was allocated a number of profit units, with a maximum of 30,000 profit units ("Profit Units") available under the plan. Awards of Profit Units generally vested in equal increments over a five-year period beginning on the first anniversary of the grant date of the Profit Units, subject to continued employment with the Company through each vesting date. If a participant ceased to provide services prior to any applicable vesting date for any reason, other than a termination for cause, then the participant forfeited all unvested Profit Units and any vested Profit Units remained outstanding. If a participant had been terminated for cause, both vested and unvested Profit Units would have been forfeited. Upon a Change in Control (as defined in the LTIP), the Profit Units entitled the participant to a payment based on a

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

percentage of the sum of (i) all net "Sale Proceeds" (as defined in the LTIP) received by Brookfield Capital IV L.P. and its affiliates ("Brookfield Capital IV") less (ii) the "Threshold Value" (as defined in the LTIP), with such payment amount being determined by the Company's Board of Directors in its sole discretion. In the event that, in connection with a Change in Control, Brookfield Capital IV disposes of less than 100% of its ownership interest in the Company, the amount of the Sale Proceeds in excess of the Threshold Value shall be determined on a pro-rata basis by reference to the percentage of ownership interest disposed, as determined by the Board of Directors of the Company.

The May 2021 secondary offering of our common stock by Brookfield Capital IV constituted a Change in Control under the LTIP. A Change in Control under the LTIP is defined as, among other things, a transaction or series of transactions (including, without limitation, the consummation of a combination, share purchases, recapitalization, redemption, issuance of capital stock, consolidation, reorganization or otherwise) pursuant to which following a public offering of the Company's stock, Brookfield Capital IV ceases to have a beneficial ownership interest in at least 30% of the Company's outstanding voting securities (effective on the first of such date). Upon completion of the May 2021 secondary offering, Brookfield beneficially owned approximately 24% of the Company's outstanding voting securities. Accordingly, the Company settled the vested Profit Units in lump sum payments within 30 days following the Change in Control. In the second quarter 2021, the settlement of the Profit Units resulted in the recording of a pre-tax charge of \$73.4 million, of which \$30.7 million was recorded in cost of sales and \$42.7 million was recorded in selling and administrative expense. As of December 31, 2021, \$71.4 million of the charges have been settled in cash by the Company while the remainder of the liability, related to payroll taxes, is expected to be paid in subsequent quarters, which will satisfy all obligations under the LTIP.

(13) Income Taxes

The following table summarizes the U.S. and non-U.S. components of income before provision for income taxes:

	For the Year Ended December 31,		
	2021	2020	2019
	(Dollars in thousands)		
U.S.	\$ (69,087)	\$ 51,672	\$ 85,365
Non-U.S.	525,493	458,373	757,462
Income before provision for income taxes	<u>\$ 456,406</u>	<u>\$ 510,045</u>	<u>\$ 842,827</u>

Provision for income taxes consists of the following:

	For the Year Ended December 31,		
	2021	2020	2019
U.S. income taxes:			
Current	\$ 645	\$ (7,660)	\$ 16,589
Deferred	2,132	27,822	5,690
	<u>2,777</u>	<u>20,162</u>	<u>22,279</u>
Non-U.S. income taxes:			
Current	71,088	63,092	64,134
Deferred	(5,789)	(7,583)	11,812
	<u>65,299</u>	<u>55,509</u>	<u>75,946</u>
Provision for income taxes	<u>\$ 68,076</u>	<u>\$ 75,671</u>	<u>\$ 98,225</u>

Provision for income taxes in 2021 was \$68.1 million on income before taxes of \$456.4 million. In 2020, provision for income taxes was \$75.7 million on income before taxes of \$510.0 million, and in 2019, provision for income taxes was \$98.2 million on income before taxes of \$842.8 million. The change in tax expense from year to year is primarily due to the reduction in pre-tax income, the mix of worldwide earnings from various countries taxed at different rates and the U.S. taxation of GILTI. The years 2019 and 2021 also included the partial release of a valuation allowance recorded against the deferred tax asset related to certain foreign, U.S. federal and state tax attributes.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Provision for income taxes differed from the amount computed by applying the U.S. federal income tax rate of 21% for the years ended December 31, 2021, 2020 and 2019 to income before the provision for income taxes as set forth in the following table:

	For the Year Ended December 31,		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Tax at statutory U.S. federal rate	\$ 95,845	\$ 107,109	\$ 176,994
Impact of U.S. Tax Cuts and Jobs Act of 2017 - GILTI	51,016	45,539	65,531
Impact of Tax Receivable Agreement	49	(4,429)	713
Valuation allowance	(2,208)	(980)	(14,548)
State taxes, net of federal tax benefit	1,414	3,591	4,231
U.S. tax impact of foreign earnings (net of foreign tax credits)	537	2,113	2,181
Establishment/resolution of uncertain tax positions	(48)	(78)	(1,293)
Adjustment for foreign income taxed at different rates	(38,530)	(38,464)	(76,922)
Foreign tax credits	(43,821)	(37,280)	(56,171)
Change-in-Control-related compensation	10,626	—	—
Other	(6,804)	(1,450)	(2,491)
Provision for income taxes	<u>\$ 68,076</u>	<u>\$ 75,671</u>	<u>\$ 98,225</u>

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

The tax effects of temporary differences that give rise to significant components of the deferred tax assets and deferred tax liabilities at December 31, 2021 and 2020 are set forth in the following table:

	As of December 31,	
	2021	2020
	(Dollars in thousands)	
Deferred tax assets:		
Post-employment and other employee benefits	\$ 17,375	\$ 18,202
Foreign tax credit and other carryforwards	32,452	37,101
Capitalized research and experimental costs	1,935	3,897
Environmental reserves	1,133	1,111
Inventory adjustments	10,545	7,381
Long-term contract option amortization	982	1,031
Provision for rationalization charges	71	96
Mark-to-market hedges	—	3,552
Previously taxed income	5,229	2,163
Other	2,175	1,483
Total gross deferred tax assets	71,897	76,017
Less: valuation allowance	(10,550)	(12,773)
Total deferred tax assets	61,347	63,244
Deferred tax liabilities:		
Fixed assets	\$ 51,595	\$ 54,485
Inventory	8,834	8,573
Goodwill and acquired intangibles	9,502	7,552
Mark-to-market hedges	2,824	—
Other	3,079	3,254
Total deferred tax liabilities	75,834	73,864
Net deferred tax (liability)	\$ (14,487)	\$ (10,620)

Net deferred tax assets are separately stated as deferred income taxes in the amount of \$61.3 million as of December 31, 2021 and \$63.2 million as of December 31, 2020. Net deferred tax liabilities are separately stated as deferred income taxes in the amount of \$75.8 million at December 31, 2021 and \$73.9 million at December 31, 2020.

At each reporting period, we assess the need for valuation allowances against deferred tax assets based on determinations of whether it is more likely than not that deferred tax benefits will be realized through the generation of future taxable income. Appropriate consideration is given to all available evidence, both positive and negative, in assessing the need for a valuation allowance. Examples of positive evidence would include a strong earnings history, an event or events that would increase our taxable income through a continued reduction of expenses, and tax planning strategies that would indicate an ability to realize deferred tax assets. Examples of negative evidence would include cumulative losses in recent years and history of tax attributes expiring unused. In circumstances where the significant positive evidence does not outweigh the negative evidence in our assessment, we have established and maintained valuation allowances on those net deferred tax assets. However, the recognition of the valuation allowance does not result in or limit the Company's ability to utilize these tax assets in the future.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Valuation allowance activity for the years ended December 31, 2021, 2020 and 2019 is as follows:

	<i>(Dollars in thousands)</i>	
Balance as of December 31, 2018	\$	58,446
Credited to income		(14,548)
Changes attributable to write-off of underlying assets		(30,138)
Translation adjustment		(24)
Balance as of December 31, 2019	\$	13,736
Credited to income		(980)
Translation adjustment		17
Balance as of December 31, 2020	\$	12,773
Credited to income		(2,208)
Translation adjustment		(15)
Balance as of December 31, 2021	\$	10,550

During 2018, we determined that sufficient positive evidence existed that allowed us to conclude that a full valuation allowance was no longer required to be recorded against the deferred tax assets related the U.S. tax attributes. This positive evidence was primarily supplied by the Company exiting a cumulative loss period in the United States as well as sufficient U.S. current and forecasted taxable income that would utilize the U.S. tax attributes. As a result, a partial release (to reflect only the economic benefit of the attributes) of the valuation allowance against federal net operating losses and state losses was recorded in 2018, while a full release of the valuation allowance against the federal foreign tax credit carryforward, other federal deferred tax assets was also recorded. A valuation allowance of \$35.8 million is included in the December 31, 2018 balance reflected above as there was not sufficient positive evidence that the deferred tax asset related to the U.S. federal net operating loss would generate more than its estimated economic benefit. This valuation allowance and the related deferred tax asset were subsequently released to the income statement in 2019. In 2020, the reduction in the valuation allowance resulted primarily from expirations of NOLs upon which a valuation allowance was previously recorded. In 2021, the decrease in valuation allowance was mainly attributable to changes in expected future utilization, state law changes and expiration of U.S. state NOL carryforward during the year.

As of December 31, 2021, we have a total foreign tax credit carryforward of \$13.1 million. These tax credit carryforwards begin to expire in 2027. In addition, we have state net operating loss carryforwards of \$239.6 million (net of federal benefit), which can be carried forward from five to 20 years. These state net operating loss carryforwards result in a deferred tax asset of \$14.3 million as of December 31, 2021. We also have U.S. state tax credits of \$0.1 million as of December 31, 2021. Our foreign loss carryforwards on a gross basis are \$6.8 million and may be carried forward indefinitely.

As of December 31, 2021, we had unrecognized tax benefits of \$0.1 million, which, if recognized, would have a favorable impact on our effective tax rate. No material amounts of accrued interest or penalties have been recorded as of December 31, 2021 or 2020. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	<i>(Dollars in thousands)</i>	
Balance as of December 31, 2019	\$	184
Settlements		(75)
Foreign currency impact		16
Balance as of December 31, 2020	\$	125
Lapse of statutes of limitations		(45)
Foreign currency impact		(7)
Balance as of December 31, 2021	\$	73

It is reasonably possible that a reduction of unrecognized tax benefits of up to \$0.1 million may occur within 12 months due to settlements and the expiration of statutes of limitation.

We file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. All U.S. federal tax years prior to 2018 are generally closed by statute or have been audited and settled with the applicable domestic tax authorities. Other jurisdictions are generally closed for years prior to 2016.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

As of December 31, 2021, the Company has accumulated undistributed earnings generated by our foreign subsidiaries of approximately \$1.2 billion. Because \$1.1 billion of such earnings have previously been subject to taxation by way of the transition tax on foreign earnings required by the Tax Cuts and Jobs Act of 2017, as well as the current and previous years' GILTI inclusion, any additional taxes due with respect to such earnings or the excess of the amount for financial reporting over the tax basis of our foreign investments would generally be limited to foreign withholding and state taxes. We intend, however, to indefinitely reinvest these earnings and expect future U.S. cash generation to be sufficient to meet future U.S. cash needs.

GrafTech has considered the tax impact of COVID-19 legislation, including the American Rescue Plan Act, and has concluded that there is no material tax impact. The Company continues to monitor the tax effects of any legislative changes.

(14) Stockholders' Equity (Deficit)

The following information should be read in conjunction with the Consolidated Statement of Stockholders' Equity (Deficit).

Follow-on Offerings and Common Stock Repurchases

On December 5, 2019, GrafTech announced two separate transactions. The first was a Rule 144 secondary block trade in which Brookfield sold 11,175,927 shares of GrafTech common stock at a price of \$13.125 per share to a broker-dealer who placed the shares with institutional and other investors. Separately, GrafTech entered into a share repurchase agreement with Brookfield to repurchase \$250 million of stock from Brookfield at the arm's length price of \$13.125 per share, set by the competitive bidding process of the secondary block trade. As a result, GrafTech repurchased 19,047,619 shares of common stock, reducing total shares outstanding at the time by approximately 7%.

Brookfield has since distributed a portion of its GrafTech common stock to the owners in the Brookfield consortium and sold shares of GrafTech common stock in public and private transactions, resulting in Brookfield's ownership of outstanding shares of GrafTech common stock decreasing to 55.3% as of December 31, 2020 and 24.3% as of December 31, 2021.

We announced on July 31, 2019, that our Board of Directors authorized a program to repurchase up to \$100 million of our outstanding common stock. We may purchase shares from time to time on the open market, including under Rule 10b5-1 and/or Rule 10b-18 plans. The amount and timing of repurchases are subject to a variety of factors including liquidity, stock price, applicable legal requirements, other business objectives and market conditions. On November 4, 2021, we announced that our Board of Directors approved an additional \$150 million open market stock repurchase authorization. The stock repurchase program does not have an expiration date.

We repurchased 1,004,685 shares for \$10.9 million in 2019, 3,328,574 shares for \$30.1 million in 2020 and 4,658,544 shares for \$50.0 million in 2021, under the stock repurchase program.

As of December 31, 2021, we are authorized to repurchase up to \$159 million in shares of our common stock under the stock repurchase program, inclusive of the amount remaining under the previous authorization.

Dividends

The Company paid regular quarterly dividends of \$0.085 through the first quarter of 2020. Effective in the second quarter of 2020, the regular quarterly dividend was reduced to \$0.01 per share.

Accumulated other comprehensive loss

The balance in our Accumulated other comprehensive loss is set forth in the following table:

	As of December 31, 2021	As of December 31, 2020
	<i>(Dollars in thousands)</i>	
Foreign currency translation adjustments, net of tax	\$ (22,330)	\$ (2,725)
Commodities and interest rate derivatives, net of tax	14,886	(16,916)
Total accumulated other comprehensive loss	<u>\$ (7,444)</u>	<u>\$ (19,641)</u>

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(15) Earnings per Share

The following table shows the information used in the calculation of our basic and diluted earnings per share calculation as of December 31, 2021, 2020 and 2019. See Note 14, "Stockholders' Equity (Deficit)" for details of our common stock repurchases in 2021, 2020 and 2019.

	For the Year Ended December 31,		
	2021	2020	2019
Weighted average common shares outstanding for basic calculation	266,251,097	267,916,483	289,057,356
Add: Effect of equity awards	66,097	14,161	17,245
Weighted average common shares outstanding for diluted calculation	266,317,194	267,930,644	289,074,601

Basic earnings per common share are calculated by dividing net income by the weighted average number of common shares outstanding, which includes 130,624, 73,320 and 32,981 shares of participating securities in 2021, 2020 and 2019, respectively. Diluted earnings per share are calculated by dividing net income by the sum of the weighted average number of common shares outstanding plus the additional common shares that would have been outstanding if potentially dilutive securities had been issued.

The weighted average common shares outstanding for the diluted earnings per share calculation excludes consideration of 1,499,128, 1,667,325 and 1,082,113 equivalent shares in 2021, 2020 and 2019, respectively, as these shares are anti-dilutive.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(16) Other (Income) Expense, net

The following table presents the details of other (income) expense:

	For the Year Ended December 31		
	2021	2020	2019
	<i>(Dollars in thousands)</i>		
Brazil value-added tax credit	\$ (11,511)	\$ —	\$ —
Pension and post-employment non-service cost	(5,298)	3,584	4,382
Bank charges	1,098	962	1,173
Other	(740)	(1,216)	(352)
Total other (income) expense, net	<u>\$ (16,451)</u>	<u>\$ 3,330</u>	<u>\$ 5,203</u>

In May 2021, the Brazilian Supreme Court ruled definitely to exclude the ICMS (state value-added tax) from the basis of calculation of certain federal value-added taxes, specifically the tax relative to the program of social integration ("PIS") and to the contribution for the financing of social security ("COFINS"), and confirmed the methodology for calculating the PIS-COFINS tax credit to which taxpayers are entitled. The Company's Brazilian subsidiary had previously filed a legal claim on this matter and is entitled to receive tax credits and interests dating back to five years preceding the date of the claim. The overpayments, plus interests, of PIS-COFINS related to the period from June 2005 to August 2021 represent \$11.5 million, net of legal fees. In the fourth quarter of 2021, the Company's subsidiary obtained the approval by the Brazilian Tax Authorities to start offsetting the PIS-COFINS credit against the current federal value-added tax payable and recorded the one-time credit as a realizable gain. As of December 31, 2021, the Company had offset \$1.2 million of the credit. The balance of the PIS-COFINS credit is expected to be utilized within the next 12 months and is reported within "Prepaid expenses and other current assets" on the Consolidated Balance Sheet.

Pension and post-employment non-service costs include the components of pension and post-employment costs other than service cost. The income in 2021 was due to a \$3.8 million mark-to-market gain, compared to mark-to-market losses of \$3.2 million and \$3.5 million recorded in 2020 and 2019, respectively. See Note 11, "Retirement Plans and Post-Employment Benefits" for further discussion.

GRAFTECH INTERNATIONAL LTD. AND SUBSIDIARIES
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(17) Subsequent Events

Dividend declaration

On February 2, 2022, the Board of Directors declared a dividend of \$0.01 per share of common stock to stockholders of record as of the close of business on February 28, 2022, to be paid on March 31, 2022.

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

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

Management is responsible for establishing and maintaining adequate disclosure controls and procedures at the reasonable assurance level. Disclosure controls and procedures are designed at the reasonable assurance level to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to management, including our Chief Executive Officer and the Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2021. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that these controls and procedures were effective at the reasonable assurance level as of December 31, 2021.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act as a process, designed by, or under the supervision of, the chief executive officer and chief financial officer and effected by the board of directors, management and other personnel of a company, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, and includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets of the company;
- 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 the board of directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets of the company that could have a material effect on its financial statements.

Internal control over financial reporting has inherent limitations which 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 because the level of compliance with related policies or procedures may deteriorate.

Management, with the participation of our Chief Executive Officer and Chief Financial Officer, has conducted an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2021 using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework (2013)*. Based on that assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2021. The effectiveness of the Company's internal control over financial reporting as of December 31, 2021 has been audited by Deloitte & Touche LLP, our independent registered public accounting firm, as stated in their report, which is presented elsewhere in this Annual Report.

Changes in Internal Control over Financial Reporting

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

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information regarding our executive officers is set forth in the Supplemental Item to Part I of this Report under the caption "Supplemental Item. Information about our Executive Officers" and is incorporated herein by reference.

We adopted a Code of Conduct and Ethics that applies to our employees, directors and officers, including our Chief Executive Officer and President our Chief Financial Officer, Vice President Finance and Treasurer. A copy of the Code of Conduct and Ethics is publicly available on our website at <https://www.graftech.com/investors/default.aspx#governance>. Any waiver or amendment of the Code of Conduct and Ethics for executive officers or directors (i) may be made only by the Audit Committee, (ii) will be promptly disclosed as required by applicable U.S. federal securities laws and the listing standards of the NYSE and (iii) will be available in the "Investors" section of our website, www.graftech.com.

The remaining information required by this Item is incorporated herein by reference from the sections entitled "Proposal 1 Elect Four Directors for a Three-Year Term and One Director for a One-Year Term or Until Their Successors are Elected and Qualified" and "Committees of the Board of Directors" in our Proxy Statement for the Annual Meeting of Stockholders expected to be held on or about May 12, 2022.

We will provide disclosure of delinquent Section 16(a) reports, if any, in our Proxy Statement in the section entitled "Delinquent Section 16(a) Reports," and such disclosure, if any, is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this item is incorporated by reference from the sections entitled "Compensation Discussion and Analysis," "Compensation Tables and Related Information," "CEO Pay Ratio," "Director Compensation Program," "Risk Oversight," "Compensation Committee Report" and "Compensation Committee Interlocks and Insider Participation" in the Proxy Statement.

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

The information required by this item is incorporated by reference from the section entitled "Security Ownership of Certain Beneficial Owners and Management" in the Proxy Statement.

Equity Compensation Plan Information

The following table provides information about our common stock that may be issued under our Omnibus Equity Incentive Plan at December 31, 2021.

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	1,813,046 ⁽¹⁾	\$13.08 ⁽²⁾	12,101,498
Equity compensation plans not approved by security holders	—	—	—
Total	1,813,046 ⁽¹⁾	\$13.08 ⁽²⁾	12,101,498

(1) This amount represents 1,616,720 shares of common stock subject to outstanding stock options, 2,696 shares of common stock subject to outstanding restricted stock units and 193,630 shares of stock subject to outstanding deferred share units.

(2) The weighted-average exercise price does not take into account shares of common stock subject to outstanding restricted stock units or outstanding deferred share units.

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

The information required by this item is incorporated by reference from the sections entitled "Certain Relationships and Related Party Transactions," "Director Independence" and "Committees of the Board of Directors" in the Proxy Statement.

Item 14. Principal Accountant Fees and Services

The information required by this item is incorporated by reference from the sections entitled "Proposal 2 Ratify the Selection of Deloitte & Touche LLP as our Independent Registered Public Accounting Firm for 2022" and "Independent Auditor Fees and Other Matters" in the Proxy Statement.

PART IV

Item 15. Exhibit and Financial Statement Schedules

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

(1) Financial Statements

The following financial statements are set forth under Part II, Item 8 of this Annual Report:

- Report of Independent Registered Public Accounting Firm;
- Consolidated Balance Sheets as of December 31, 2021 and December 31, 2020;
- Consolidated Statements of Operations and Comprehensive Income (Loss) for the fiscal years ended December 31, 2021, December 31, 2020 and December 31, 2019;
- Consolidated Statements of Cash Flows for the fiscal years ended December 31, 2021, December 31, 2020 and December 31, 2019;
- Consolidated Statements of Stockholders' Equity (Deficit) for the fiscal years ended December 31, 2021, December 31, 2020 and December 31, 2019; and
- Notes to the Consolidated Financial Statements.

(2) Financial Statement Schedules

All schedules have been omitted because the required information is included in the consolidated financial statements or the notes thereto, or because it is not required.

(3) Exhibits

The exhibits listed in the following table have been filed or furnished, as applicable, with this Annual Report, or have been incorporated herein by reference.

Exhibit Number	Description of Exhibit
2.1	Agreement and Plan of Merger dated as of May 17, 2015 among GrafTech International Ltd., BCP IV GrafTech Holdings LP and Athena Acquisition Subsidiary, Inc. (incorporated herein by reference to Exhibit 2.1 to GrafTech International Ltd.'s Current Report on Form 8-K filed May 18, 2015).
3.1	Amended and Restated Certificate of Incorporation of GrafTech International Ltd. (incorporated herein by reference to Exhibit 3.1 to GrafTech International Ltd.'s Quarterly Report on Form 10-Q filed May 1, 2019).
3.2	Amended and Restated By-Laws of GrafTech International Ltd. (incorporated herein by reference to Exhibit 3.2 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 13, 2018).

- 4.1 Registration Rights Agreement by and between GrafTech International Ltd. and BCP GrafTech Holdings LP (incorporated herein by reference to Exhibit 4.1 to GrafTech International Ltd.'s Form 10-Q filed on August 3, 2018).
- 4.2 Stockholder Rights Agreement by and between GrafTech International Ltd. and BCP IV GrafTech Holdings LP (incorporated herein by reference to Exhibit 4.2 to GrafTech International Ltd.'s Form 10-Q filed on August 3, 2018).
- 4.3 Amendment No. 1 to Stockholder Rights Agreement, dated November 6, 2019 by and between GrafTech International Ltd. and BCP IV GrafTech Holdings LP (incorporated herein by reference to Exhibit 4.3 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 21, 2020).
- 4.4 Description of securities (incorporated herein by reference to Exhibit 4.4 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 21, 2020).
- 4.5 Indenture, dated as of December 22, 2020, among GrafTech Finance Inc., as issuer, GrafTech International Ltd., as a guarantor, the subsidiary guarantors party thereto, and U.S. Bank National Association, as trustee and collateral agent, relating to GrafTech Finance Inc.'s 4.625% Senior Secured Notes due 2028 (incorporated herein by reference to Exhibit 4.1 to GrafTech International Ltd.'s Current Report on Form 8-K filed December 23, 2020).
- 4.6 Form of 4.625% Senior Secured Notes due 2028 of GrafTech Finance Inc. (included in Exhibit 4.5) (incorporated herein by reference to Exhibit 4.2 to GrafTech International Ltd.'s Current Report on Form 8-K filed December 23, 2020).
- 10.1 Credit Agreement, dated February 12, 2018, among GrafTech International Ltd., GrafTech Finance Inc., GrafTech Switzerland SA and GrafTech Luxembourg II S.À.R.L., as co-borrowers, the lenders and issuing banks party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent and Collateral Agent (incorporated herein by reference to Exhibit 10.1 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.2 First Amendment to the Credit Agreement, dated June 15, 2018, among GrafTech International Ltd., GrafTech Finance Inc., GrafTech Switzerland SA, GrafTech Luxembourg II S.À.R.L. as co-borrowers, the lenders and issuing banks party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent and Collateral Agent (incorporated herein by reference to Exhibit 10.1 to GrafTech International Ltd.'s Quarterly Report on Form 10-Q filed on August 3, 2018).
- 10.3 Guarantee Agreement, dated February 12, 2018, among GrafTech International Ltd., GrafTech Finance Inc., the other subsidiaries of GrafTech International Ltd. from time to time party thereto and JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.2 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.4 Collateral Agreement, dated as of February 12, 2018, among GrafTech International Ltd., GrafTech Finance Inc., the other grantors party thereto and JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.3 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.5 European Guarantee and Luxembourg Security Agreement, dated as of February 12, 2018, by GrafTech Luxembourg I S.À.R.L., GrafTech Luxembourg II S.À.R.L., GrafTech Switzerland SA in favor of JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.4 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.6 Pledge Agreement, dated as of February 12, 2018, by GrafTech Switzerland SA in favor of JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.5 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.7 Pledge Agreement, dated as of February 12, 2018, by GrafTech Luxembourg I S.À.R.L. in favor of JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.6 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.8 Pledge Agreement, dated as of February 12, 2018, by GrafTech Luxembourg II S.À.R.L. in favor of JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.7 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.9 Patent Security Agreement, dated as of February 12, 2018, among GrafTech International Holdings Inc., as Grantor, and JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.8 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.10 Trademark Security Agreement, dated as of February 12, 2018, among GrafTech International Holdings Inc., as Grantor, and JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.9 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.11 Copyright Security Agreement, dated as of February 12, 2018, among GrafTech International Holdings, Inc., as Grantor, and JPMorgan Chase Bank, N.A., as Collateral Agent (incorporated herein by reference to Exhibit 10.10 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).

- 10.12 Share Pledge Agreement, dated February 12, 2018, between GrafTech Luxembourg I S.À.R.L., as Pledgor, and JPMorgan Chase Bank, N.A., as Collateral Agent, in the presence of GrafTech Luxembourg II S.À.R.L. (incorporated herein by reference to Exhibit 10.11 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.13 Share Pledge Agreement, dated as of February 12, 2018, between GrafTech International Holdings Inc., as Pledgor, and JPMorgan Chase Bank, N.A., as Collateral Agent, in the presence of GrafTech Luxembourg I S.À.R.L. (incorporated herein by reference to Exhibit 10.12 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.14 Swiss Security Agreement, dated as of February 12, 2018, by GrafTech Switzerland SA and JPMorgan Chase Bank, N.A., as the Assignee and Collateral Agent (incorporated herein by reference to Exhibit 10.13 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.15 Form of Tax Receivable Agreement between GrafTech International Ltd. and Brookfield Capital Partners IV GP, Ltd. (incorporated herein by reference to Exhibit 10.14 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.16+ Form of Indemnification Agreement with Directors and Executive Officers (incorporated herein by reference to Exhibit 10.15 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed March 26, 2018).
- 10.17+ GrafTech International Holdings Inc. Compensation Deferral Program as amended and restated (January 1, 2005) (incorporated herein by reference to Exhibit 10.10 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 27, 2009).
- 10.18+ Employment Agreement, effective March 1, 2018, between GrafTech International Holdings Inc. and David J. Rintoul (incorporated herein by reference to Exhibit 10.20 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.19+ GrafTech International Ltd. Incentive Compensation Plan (incorporated herein by reference to Exhibit 10.21 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.20+ GrafTech International Ltd. Long Term Incentive Plan, amended and restated as of March 15, 2018 (incorporated herein by reference to Exhibit 10.23 to GrafTech International Ltd.'s Registration Statement on Form S-1 (Registration No. 333-223791) filed March 20, 2018).
- 10.21+ GrafTech International Ltd. Omnibus Equity Incentive Plan (incorporated herein by reference to Exhibit 10.24 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 4, 2018).
- 10.22+ Form of Stock Option Agreement for the GrafTech International Ltd. Omnibus Equity Incentive Plan (incorporated herein by reference to Exhibit 10.25 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 4, 2018).
- 10.23+ Form of Stock Option Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan for David Rintoul (incorporated herein by reference to Exhibit 10.26 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 4, 2018).
- 10.24+ Form of Deferred Share Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan for Non-Employee Directors (incorporated herein by reference to Exhibit 10.27 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 4, 2018).
- 10.25+ Form of Deferred Share Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan for David Rintoul (incorporated herein by reference to Exhibit 10.28 to GrafTech International Ltd.'s Registration Statement on Form S-1/A (Registration No. 333-223791) filed April 4, 2018).
- 10.26+ Amendment to Deferred Share Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan for David Rintoul (incorporated herein by reference to Exhibit 10.32 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 22, 2019).
- 10.27+ Amended and Restated GrafTech International Ltd. Director Deferred Fee Plan, amended as of November 1, 2018 (incorporated herein by reference to Exhibit 10.33 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 22, 2019).
- 10.28+ Form of Deferred Share Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan for Non-Employee Directors (adopted November 1, 2018) (incorporated herein by reference to Exhibit 10.34 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 22, 2019).
- 10.29+ Summary of Modifications to Employment Agreement, effective March 1, 2018, between GrafTech International Holdings Inc. and David J. Rintoul (incorporated herein by reference to Exhibit 10.35 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 22, 2019).
- 10.30+ Form of Restricted Stock Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan (incorporated herein by reference to Exhibit 10.1 to GrafTech International Ltd.'s Quarterly Report on Form 10-Q filed May 1, 2019).

10.31+	Form of Stock Option Grant Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan (incorporated herein by reference to Exhibit 10.2 to GrafTech International Ltd.'s Quarterly Report on Form 10-Q filed May 1, 2019).
10.32+	Form of Restricted Stock Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan (incorporated herein by reference to Exhibit 10.39 to GrafTech International Ltd.'s Annual Report on Form 10-K filed February 21, 2020).
10.33	Collateral Agreement, dated as of December 22, 2020, among GrafTech Finance Inc., GrafTech International Ltd., the other subsidiary grantors party thereto, and U.S. Bank National Association, as collateral agent (incorporated herein by reference to Exhibit 10.1 to GrafTech International Ltd.'s Current Report on Form 8-K filed December 23, 2020).
10.34	Second Amendment to the Credit Agreement, dated February 17, 2021, among GrafTech International Ltd., GrafTech Finance Inc., GrafTech Luxembourg II S.A.R.L., GrafTech Switzerland SA, JPMorgan Chase Bank, N.A., as Administrative Agent, and the lenders and issuing banks party thereto (incorporated herein by reference to Exhibit 10.1 to GrafTech International Ltd.'s Current Report on Form 8-K filed on February 19, 2021).
10.35*+	GrafTech International Ltd. Short-Term Incentive Plan.
10.36*+	Form of Restricted Stock Unit Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan (2022 Version).
10.37*+	Form of Stock Option Grant Agreement under the GrafTech International Ltd. Omnibus Equity Incentive Plan (2022 Version).
21.1*	List of subsidiaries of GrafTech International Ltd.
23.1*	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm.
31.1*	Certification pursuant to Rule 13a-14(a) under the Exchange Act by David J. Rintoul, Chief Executive Officer and President (Principal Executive Officer).
31.2*	Certification pursuant to Rule 13a-14(a) under the Exchange Act by Timothy K. Flanagan, Chief Financial Officer, Vice President and Treasurer (Principal Financial Officer).
32.1**	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 by David J. Rintoul, Chief Executive Officer and President (Principal Executive Officer).
32.2**	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 by Timothy K. Flanagan, Chief Financial Officer, Vice President Finance and Treasurer (Principal Financial Officer).
101	The following financial information from GrafTech International Ltd.'s Annual Report on Form 10-K for the year ended December 31, 2021 formatted in Inline XBRL (Extensible Business Reporting Language) includes: (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations and Comprehensive Income (Loss), (iii) the Consolidated Statements of Cash Flows, (v) the Consolidated Statements of Stockholders' Equity (Deficit), and (vi) Notes to the Consolidated Financial Statements.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Filed herewith

** Furnished herewith

+ Indicates management contract or compensatory plan or arrangement

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

GRAFTECH INTERNATIONAL LTD.

February 22, 2022

By: /s/ David J. Rintoul

David J. Rintoul

Title: Chief Executive Officer and President

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

<u>Signatures</u>	<u>Title</u>	<u>Date</u>
<u>/s/ David J. Rintoul</u> David J. Rintoul	Chief Executive Officer and President and Director (Principal Executive Officer)	February 22, 2022
<u>/s/ Timothy K. Flanagan</u> Timothy K. Flanagan	Chief Financial Officer, Vice President Finance and Treasurer (Principal Financial and Accounting Officer)	February 22, 2022
<u>/s/ Denis A. Turcotte</u> Denis A. Turcotte	Chairman and Director	February 22, 2022
<u>/s/ Brian L. Acton</u> Brian L. Acton	Director	February 22, 2022
<u>/s/ Catherine L. Clegg</u> Catherine L. Clegg	Director	February 22, 2022
<u>/s/ Michel J. Dumas</u> Michel J. Dumas	Director	February 22, 2022
<u>/s/ Leslie D. Dunn</u> Leslie D. Dunn	Director	February 22, 2022
<u>/s/ Debra Fine</u> Debra Fine	Director	February 22, 2022
<u>/s/ Jean-Marc Germain</u> Jean-Marc Germain	Director	February 22, 2022
<u>/s/ David Gregory</u> David Gregory	Director	February 22, 2022
<u>/s/ Henry R. Keizer</u> Henry R. Keizer	Director	February 22, 2022
<u>/s/ Anthony R. Taccone</u> Anthony R. Taccone	Director	February 22, 2022

[THIS PAGE INTENTIONALLY LEFT BLANK]

[THIS PAGE INTENTIONALLY LEFT BLANK]

CORPORATE AND INVESTOR RELATIONS

Board of Directors



Denis A. Turcotte

Chairman, GrafTech International Ltd.
Managing Partner and Chief Operating Officer - Private Equity Group,
Brookfield Asset Management Inc.



Brian L. Acton

President, Pac Basin Resources LLC, Sierra Minerals LLC
and Px Carbon LLC



Catherine L. Clegg

Former Vice President, Workforce Strategy, Global Human Resources,
General Motors Company



Michel J. Dumas

Former Executive Vice President, Finance, and Chief Financial
Officer, Tembec Inc.



Leslie D. Dunn

Former Senior Vice President of Business Development
and General Counsel, Cole National Corporation



Debra Fine

Chair and Founder, Fine Capital Partners



Jean-Marc Germain

Chief Executive Officer, Constellium SE



David Gregory

Managing Partner, Investments - Private Equity Group,
Brookfield Asset Management Inc.



Henry R. Keizer

Former Deputy Chairman and Chief Operating Officer, KPMG



David J. Rintoul

Chief Executive Officer and President, GrafTech International Ltd.



Anthony R. Taccone

Founding Partner and Co-Owner, First River LLC

Investor Relations

Michael Dillon

Vice President, Investor Relations and Corporate Communications
216.676.2000 | investor.relations@graftech.com

Stock Exchange Listing

Our common stock is listed on the NYSE under the symbol EAF.

Transfer Agent

Computershare

PO BOX 505000

Louisville, Kentucky 40233

800.736.3001 | +1.781.575.3100

computershare.com/investor

Annual Meeting

May 12, 2022

8:00 AM Eastern Time

Meeting URL: meetnow.global/M47ANTU

Stockholder Contact and Form 10-K

Stockholders, prospective investors and other interested parties are welcome to call or write us with questions. A copy of the annual report filed with the SEC on Form 10-K for the year ended December 31, 2021 (excluding exhibits) is available, without charge, upon written request to Michael Dillon, Vice President, Investor Relations and Corporate Communications, at the Company's Corporate Headquarters.

Independent Registered Public Accounting Firm

Deloitte & Touche LLP

Forward-Looking Statements

Statements in this Annual Report regarding the Company that are not historical facts are "forward-looking statements" that involve risks and uncertainties. Certain of the risks and uncertainties to which the Company is subject are described in the "Cautionary Note Regarding Forward-Looking Statements" and "Risk Factors" in the enclosed Form 10-K and the Company's other applicable filings with the Securities and Exchange Commission. See pages 4-5 and 16-28 of the enclosed Form 10-K.



GrafTech International Ltd.
982 Keynote Circle
Brooklyn Heights, Ohio 44131

www.graftech.com