



Where innovation
delivers performance

FERRO REPORTS FOURTH QUARTER AND FULL YEAR 2018 RESULTS

DELIVERS STRONG YEAR-OVER-YEAR PERFORMANCE; PROVIDES 2019 GUIDANCE

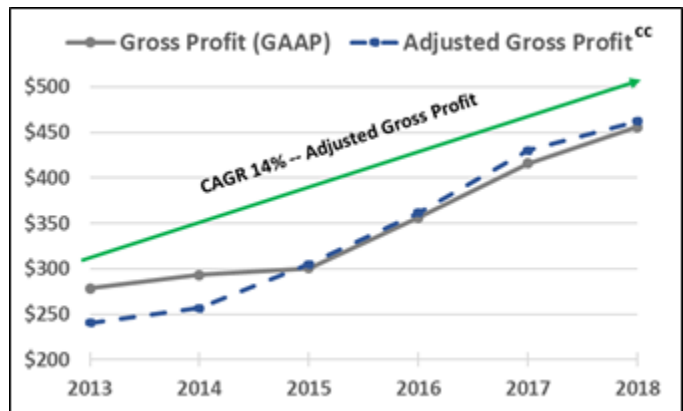
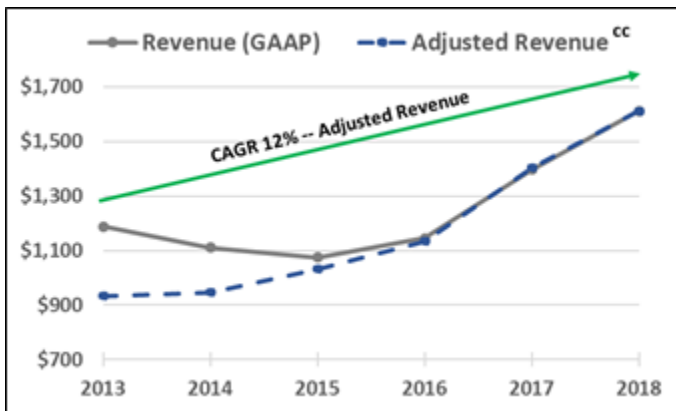
Fourth Quarter *

- Net Sales increased 4.7% to \$395.5M
- Organic sales^{cc} grew 3.6%
- GAAP diluted EPS improved to \$0.13 versus a loss of \$0.10
- Adjusted EPS increased 13.8% to \$0.33
- Net Income¹ improved to \$11.0M compared to a loss of \$8.7M
- Adjusted EBITDA grew 6.4% to \$56.1M
- Net Cash provided by Operating Activities increased 193.6% to \$147.1M
- Adjusted Free Cash Flow Conversion of 178.9%

Full Year *

- Net Sales increased 15.4% to \$1,612.4M
- Organic sales^{cc} grew 5.2%
- GAAP diluted EPS increased 40.3% to \$0.94
- Adjusted EPS increased 16.3% to \$1.50
- Net Income¹ increased 40.4% to \$80.1M
- Adjusted EBITDA grew 12.0% to \$259.1M
- Net Cash provided by Operating Activities increased 115.6% to \$182.8M
- Adjusted Free Cash Flow Conversion of 50.9%

Five years into its value creation strategy, Ferro delivers a sustained, strong rate of revenue and gross profit growth.



*Comparative information is relative to prior-year fourth quarter and full year.

¹ Net Income attributable to Ferro Corporation common shareholders.

^{cc} Constant Currency

“Ferro’s team delivered another year of strong performance, with revenue growth of 15%, adjusted EPS growth of 16% and adjusted EBITDA growth of 12%. The business continued to demonstrate strong cash generation, with adjusted free cash flow conversion at 51% for the year. We are very pleased with our full-year results, particularly given the challenges of elevated raw material prices, customer destocking, and order pattern anomalies encountered during the year.

For 2019, we remain focused on executing the Dynamic Innovation and Optimization phase of our strategy. We continue to leverage innovation and optimization to strengthen our business, drive sustainable growth and to generate cash. Our innovation initiatives feed our product pipeline and our cash generation provides us flexibility to invest in acquisitions, buy back shares and pay down debt.

Peter Thomas
Chairman, President and CEO, Ferro Corporation



Key Results * (amounts in millions, except EPS)

Sales and Gross Profits

	Q4 2018	% Change	2018	% Change
Net Sales	\$ 395.5	4.7%	\$ 1,612.4	15.4%
Net Sales ^{cc}	395.5	9.1%	1,612.4	14.9%
Gross Profit (GAAP)	105.1	-0.3%	455.9	9.5%
Adjusted Gross Profit ^{cc}	108.8	3.5%	462.3	7.4%

Net Income, EBITDA and EPS

	Q4 2018	% Change	2018	% Change
Net Income ¹	\$ 11.0	NM	\$ 80.1	40.4%
Adjusted EBITDA	56.1	6.4%	259.1	12.0%
GAAP diluted EPS	\$ 0.13	NM	\$ 0.94	40.3%
Adjusted EPS	0.33	13.8%	1.50	16.3%

Cash Flow

	Q4 2018	% Change	2018	% Change
Net Cash provided by operating activities (GAAP)	\$ 147.1	193.6%	\$ 182.8	115.6%
Adjusted Free Cash Flow ²	157.7	183.9%	189.1	118.9%

*Comparative information is relative to prior-year fourth quarter and full year.

^{cc} Constant Currency

¹ Note: Net Income attributable to Ferro Corporation common shareholders.

² Note: Adjusted Free Cash Flow is defined as GAAP Net Cash provided by operating activities, less Capex, plus cash used for restructuring, acquisition-related professional fees, divested businesses and assets, and certain optimization projects (including Capital Expenditures).

Fourth-Quarter and Full-Year Commentary

Net Sales in the fourth quarter of 2018 increased 4.7% to \$395.5 million, as Ferro completed another strong year of growth in revenue and profitability. The fourth quarter constituted the Company's tenth consecutive quarter of organic growth; since the third quarter of 2016, Ferro has delivered organic growth at a rate of approximately 6% per year.

As previously reported, margins came under pressure in the fourth quarter due to escalated destocking by higher-margin Tile customers within the Performance Coatings segment and order timing within the Performance Colors and Glass segment.

For the full year, Ferro increased GAAP EPS by 40.3% to \$0.94 and increased Adjusted EPS by 16.3% to \$1.50. Net Income improved 40.4% to \$80.1 million and Adjusted EBITDA increased 12.0% to \$259.1 million. Net Cash provided by Operating Activities was \$182.8 million with Cash Conversion of Net Income³ at 228.2% and Adjusted Free Cash Flow conversion of Adjusted EBITDA⁴ at 50.9%.

In 2018, the Company deployed approximately \$144.8 million in investments comprised of \$75.0 million for acquisitions, \$41.0 million in capital related to optimization projects and \$28.8 million for the purchase 1.5 million shares of Ferro common stock. Approximately \$11.8 million of the \$28.8 million in stock buybacks occurred in the fourth quarter. The Company finished the year with a Net Debt-to-Adjusted EBITDA ratio of 2.8 times.

³ Note: Cash Conversion of Net Income is defined as GAAP Net Cash Provided by Operating Activities, divided by Net Income.

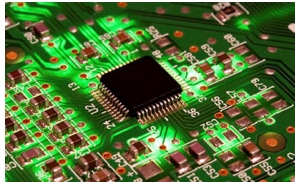
⁴ Note: Adjusted Free Cash Flow Conversion of Adjusted EBITDA is defined as Adjusted Free Cash Flow, divided by Adjusted EBITDA. See tables 9 and 11.

Segment Results * (amounts in millions, except EPS)



Performance Coatings

	Q4 2018	% Change	2018	% Change
Net Sales	\$ 179.9	6.1%	\$ 733.9	23.6%
Net Sales (Constant Currency)	179.9	12.8%	733.9	24.5%
Gross Profit (GAAP)	35.4	-3.3%	165.7	13.7%
Adjusted Gross Profit (Constant Currency)	36.5	-1.0%	166.7	10.7%



Performance Colors & Glass

	Q4 2018	% Change	2018	% Change
Net Sales	\$ 117.6	-5.1%	\$ 487.5	9.6%
Net Sales (Constant Currency)	117.6	-2.7%	487.5	8.1%
Gross Profit (GAAP)	38.7	-8.3%	167.4	6.3%
Adjusted Gross Profit (Constant Currency)	38.7	-7.1%	167.5	3.4%



Color Solutions

	Q4 2018	% Change	2018	% Change
Net Sales	\$ 97.9	16.4%	\$ 391.0	9.2%
Net Sales (Constant Currency)	97.9	19.4%	391.0	7.8%
Gross Profit (GAAP)	31.0	18.9%	124.9	9.8%
Adjusted Gross Profit (Constant Currency)	33.4	30.6%	129.0	9.6%

*Comparative information is relative to prior-year fourth quarter and full year.

Full Year 2019 Guidance

	Net Sales (% of PY Sales)	Adjusted Tax Rate	Adjusted EBITDA	Adjusted Diluted EPS	Adjusted Free Cash Flow from Operations Conversion
2018 Results	\$1,612.4M	23%	\$259.1M	\$1.50	50.9%
2019 Guidance	3.0% - 4.0%	26.5% -27.5%	\$280 - \$290M	\$1.55 - \$1.65	45% - 50%
YoY Change	3.0% to 4.0%	+350 bps to +450bps	+8% to +12%	+3% to +10%	
YoY Constant Change ¹	5.5% to 6.5%		+10% to +15%	+7% to +14%	

Ferro's 2019 guidance reflects robust year-on-year revenue and earnings growth. The Company's focus on innovation and optimization, which drove performance in 2018, is expected to continue driving growth and profitability in 2019.

The 2019 guidance assumes no acquisitions, divestitures, restructuring, acquisition-related professional fees, optimization programs spend, or repurchase of common stock.

¹ Remeasurement of 2018 reported and adjusted results using 2019 guidance exchange rates

Note: The full-year 2019 guidance uses foreign exchange rates as of December 31, 2018, which includes a USD/EUR exchange rate at 1.147.

Ferro is providing Adjusted Diluted EPS, Adjusted EBITDA and Adjusted Free Cash Flow from Operations Conversion guidance on a continuing operations basis. While it is likely that Ferro could incur charges for items excluded from Adjusted Diluted EPS, Adjusted EBITDA and Adjusted Free Cash Flow from Operations conversion such as mark-to-market adjustments of pension and other postretirement benefit obligations, restructuring and impairment charges, and legal and professional expenses related to certain business development activities, it is not possible, without unreasonable effort, to identify the amount or significance of these items or the potential for other transactions that may impact future GAAP net income and cash flow from operating activities. Management does not believe these items to be representative of underlying business performance. Management is unable to reconcile, without unreasonable effort, the Company's forecasted range of these adjusted non-GAAP financial measures to their most directly comparable GAAP financial measures.

Currency Exposure 2018 Weighting

EUR - Euro	40% to 45%
CNY -Yuan Renminbi	6% to 8%
MXN – Mexican Peso	4% to 6%
EGP – Egyptian Pound	3% to 5%

2019 Guidance FX sensitivity

% Change	Operating Profit
+1% all FX change	~ \$1.5 million to ~\$1.7 million
+1% Euro change	~\$1.1 million to ~\$1.3 million

Constant Currency

Constant currency results reflect the remeasurement of 2017 reported and adjusted local currency results using 2018 exchange rates, which produces constant currency comparative figures to 2018 reported and adjusted results. These non-GAAP financial measures should not be considered as a substitute for the measures of financial performance prepared in accordance with GAAP.

Conference Call

Ferro will conduct an investor teleconference at 8:00 a.m. EDT Thursday, February 28, 2019. Investors can access this conference via any of the following:

- Webcast can be accessed by clicking on the Investors link at the top of Ferro’s website at ferro.com.
- Live telephone: Call 800-698-9012 within the U.S. or +1 303-223-2691 outside the U.S. Please join the call at least 10 minutes before the start time.
- Webcast replay: Available on Ferro’s Investor website at ferro.com beginning at approximately 4:30 p.m. Eastern Time on February 28, 2019
- Telephone replay: Call 800-633-8284 within the U.S. or +1 402-977-9140 outside the U.S. (for both U.S. and outside the U.S. access code is 21916423).
- Presentation material and podcast: Earnings presentation material and podcasts can be accessed through the Investors portion of the Company’s Web site at ferro.com.

About Ferro Corporation

Ferro Corporation (www.ferro.com) is a leading global supplier of technology-based functional coatings and color solutions. Ferro supplies functional coatings for glass, metal, ceramic and other substrates and color solutions in the form of specialty pigments and colorants for a broad range of industries and applications. Ferro products are sold into the building and construction, automotive, electronics, industrial products, household furnishings and appliance markets. The Company’s reportable segments include: Performance Coatings (metal and ceramic coatings), Performance Colors and Glass (glass coatings), and Color Solutions. Headquartered in Mayfield Heights, Ohio, the Company has approximately 6,100 associates globally and reported 2018 sales of \$1.6 billion.

Cautionary Note on Forward-Looking Statements

Certain statements in this press release may constitute “forward-looking statements” within the meaning of federal securities laws. These statements are subject to a variety of uncertainties, unknown risks, and other factors concerning the Company’s operations and business environment. Important factors that could cause actual results to differ materially from those suggested by these forward-looking statements and that could adversely affect the Company’s future financial performance include the following:

- demand in the industries into which Ferro sells its products may be unpredictable, cyclical, or heavily influenced by consumer spending;
- the effectiveness of the Company’s efforts to improve operating margins through sales growth, price increases, productivity gains, and improved purchasing techniques;
- currency conversion rates and economic, social, political, and regulatory conditions in the U.S. and around the world;
- the availability of reliable sources of energy and raw materials at a reasonable cost;
- Ferro’s ability to successfully implement and/or administer its optimization initiatives, including its investment and restructuring programs, and to produce the desired results;
- Ferro’s ability to successfully introduce new products and services or enter into new growth markets;
- Ferro’s ability to identify suitable acquisition candidates, complete acquisitions, effectively integrate the acquired businesses and achieve the expected synergies, as well as the acquisitions being accretive and Ferro achieving the expected returns on invested capital;
- competitive factors, including intense price competition;
- the impact of damage to, or the interruption, failure or compromise of the Company’s information systems due to events including but not limited to aging information systems infrastructure, computer viruses and cyber security breaches;
- the implementation and operations of business information systems and processes;
- increased, and possibly inconsistent, domestic and foreign regulations of privacy and data security;
- restrictive covenants in the Company’s credit facilities could affect its strategic initiatives and liquidity;
- Ferro’s ability to access capital markets, borrowings or financial transactions;
- increasingly aggressive domestic and foreign governmental regulation of hazardous and other materials and regulations affecting health, safety and the environment;
- our ability to address safety, human health, product liability and environmental risks associated with our current and historical products, product life cycles and production processes;
- exposure to lawsuits, governmental investigations and proceedings relating to current and historical operations and products;
- sale of products and materials into highly regulated industries;
- limited or no redundancy for certain of the Company’s manufacturing facilities and possible interruption of operations at those facilities;
- Ferro’s ability to protect its intellectual property, including trade secrets, or to successfully resolve claims of infringement brought against it;
- Ferro’s multi-jurisdictional tax structure and its ability to reduce its effective tax rate, including the impact of the Company’s performance on its ability to utilize significant deferred tax assets;
- the impact of the Tax Cuts and Jobs Act on our business;
- Ferro’s borrowing costs could be affected adversely by interest rate increases;
- stringent labor and employment laws and relationships with the Company’s employees;
- management of Ferro’s general and administrative expenses;
- the impact of requirements to fund employee benefit costs, especially post-retirement costs;
- implementation of business processes and information systems, including the outsourcing of functions to third parties;
- risks associated with the manufacture and sale of material into industries making products for sensitive applications;
- our ability to attract and retain key personnel;

Cautionary Note on Forward-Looking Statements (continued)

- changes in U.S. and other governments' trade policies;
- risks and uncertainties associated with intangible assets;
- liens on the Company's assets by its lenders affect its ability to dispose of property and businesses;
- amount and timing of any repurchase of Ferro's common stock;
- challenges associated with a multi-national company such as Ferro competing lawfully with local competitors in certain regions of the world;
- the effectiveness of strategies to increase Ferro's return on invested capital, internal rate of return and other return metrics, and the short-term impact that acquisitions may have on such metrics; and
- other factors affecting the Company's business that are beyond its control, including disasters, accidents and governmental actions.

The risks and uncertainties identified above are not the only risks the Company faces. Additional risks and uncertainties not presently known to the Company or that it currently believes to be immaterial also may adversely affect the Company. Should any known or unknown risks and uncertainties develop into actual events, these developments could have material adverse effects on our business, financial condition and results of operations.

This release contains time-sensitive information that reflects management's best analysis only as of the date of this release. The Company does not undertake any obligation to publicly update or revise any forward-looking statements to reflect future events, information or circumstances that arise after the date of this release.

Additional information regarding these risks can be found in our Annual Report on Form 10-K for the year ended December 31, 2018.

Ferro Corporation

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Table 1
Ferro Corporation and Subsidiaries
Consolidated Statements of Operations

(Dollars in thousands, except per share amounts)

	Three Months Ended		Twelve Months Ended	
	December 31, (Unaudited)		December 31,	
	2018	2017	2018	2017
Net sales	\$ 395,474	\$ 377,543	\$ 1,612,408	\$ 1,396,742
Cost of sales	290,359	272,074	1,156,475	980,521
Gross profit	105,115	105,469	455,933	416,221
Selling, general and administrative expenses	71,006	77,050	278,566	265,418
Restructuring and impairment charges	2,860	3,696	13,295	11,409
Other expense (income):				
Interest expense	8,656	7,833	33,371	27,754
Interest earned	(177)	(345)	(674)	(901)
Foreign currency losses, net	1,133	979	8,187	6,554
Loss on extinguishment of debt	-	-	3,226	3,905
Miscellaneous expense (income), net	16,493	(4,761)	15,970	(8,436)
Income before income taxes	5,144	21,017	103,992	110,518
Income tax expense	(6,200)	29,564	23,046	52,750
Net income (loss)	11,344	(8,547)	80,946	57,768
Less: Net income attributable to noncontrolling interests	368	139	853	714
Net income (loss) attributable to Ferro Corporation common shareholders	\$ 10,976	\$ (8,686)	\$ 80,093	\$ 57,054
Earnings (loss) per share attributable to Ferro Corporation common shareholders:				
Basic earnings (loss) per share	\$ 0.13	\$ (0.10)	\$ 0.95	\$ 0.68
Diluted earnings (loss) per share	\$ 0.13	\$ (0.10)	\$ 0.94	\$ 0.67
Shares outstanding:				
Weighted-average basic shares	83,298	83,913	83,940	83,713
Weighted-average diluted shares	84,278	83,913	85,085	85,156
End-of-period basic shares	83,002	84,049	83,002	84,049

Table 2
Ferro Corporation and Subsidiaries
Segment Net Sales and Gross Profit (unaudited)

(Dollars in thousands)

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Segment Net Sales				
Performance Coatings	\$ 179,890	\$ 169,480	\$ 733,926	\$ 594,029
Performance Colors and Glass	117,646	123,920	487,455	444,653
Color Solutions	97,938	84,143	391,027	358,060
Total segment net sales	\$ 395,474	\$ 377,543	\$ 1,612,408	\$ 1,396,742
Segment Gross Profit				
Performance Coatings	\$ 35,389	\$ 36,592	\$ 165,708	\$ 145,797
Performance Colors and Glass	38,661	42,159	167,446	157,544
Color Solutions	30,988	26,052	124,852	113,694
Other costs of sales	77	666	(2,073)	(814)
Total gross profit	\$ 105,115	\$ 105,469	\$ 455,933	\$ 416,221
Selling, general and administrative expenses				
Strategic services	39,115	39,470	157,020	138,551
Functional services	25,199	28,062	104,629	102,516
Incentive compensation	3,468	4,649	8,476	12,581
Stock-based compensation	3,224	4,869	8,441	11,770
Total selling, general and administrative expenses	\$ 71,006	\$ 77,050	\$ 278,566	\$ 265,418

Table 3
Ferro Corporation and Subsidiaries
Consolidated Balance Sheets

(Dollars in thousands)

	December 31, 2018	December 31, 2017
ASSETS		
Current assets		
Cash and cash equivalents	\$ 104,301	\$ 63,551
Accounts receivable, net	306,882	354,416
Inventories	356,998	324,180
Other receivables	91,143	67,137
Other current assets	23,960	16,448
Total current assets	883,284	825,732
Other assets		
Property, plant and equipment, net	381,341	321,742
Goodwill	216,464	195,369
Intangible assets, net	184,953	187,616
Deferred income taxes	103,488	108,025
Other non-current assets	42,930	43,718
Total assets	<u>\$ 1,812,460</u>	<u>\$ 1,682,202</u>
LIABILITIES AND EQUITY		
Current liabilities		
Loans payable and current portion of long-term debt	\$ 10,260	\$ 25,136
Accounts payable	256,573	211,711
Accrued payrolls	39,989	48,201
Accrued expenses and other current liabilities	77,995	70,151
Total current liabilities	384,817	355,199
Other liabilities		
Long-term debt, less current portion	811,137	726,491
Postretirement and pension liabilities	173,046	166,680
Other non-current liabilities	57,611	77,152
Total liabilities	1,426,611	1,325,522
Equity		
Total Ferro Corporation shareholders' equity	376,631	344,814
Noncontrolling interests	9,218	11,866
Total liabilities and equity	<u>\$ 1,812,460</u>	<u>\$ 1,682,202</u>

Table 4
Ferro Corporation and Subsidiaries
Condensed Consolidated Statements of Cash Flows

(Dollars in thousands)

	Three Months Ended		Twelve Months Ended	
	December 31, (Unaudited)		December 31,	
	2018	2017	2018	2017
Cash flows from operating activities				
Net income (loss)	\$ 11,344	\$ (8,547)	\$ 80,946	\$ 57,768
(Gain) loss on sale of assets	(321)	362	164	(852)
Depreciation and amortization	13,736	14,045	53,974	50,085
Interest amortization	893	1,121	3,577	3,496
Restructuring and impairment charges	(193)	3,964	4,084	7,593
Loss on extinguishment of debt	—	—	3,226	3,905
Accounts receivable	56,324	19,100	19,885	(25,852)
Inventories	24,911	(15,583)	(33,922)	(46,962)
Accounts payable	24,784	25,569	35,887	26,150
Other current assets and liabilities, net	16,051	(17,842)	(1,280)	(29,497)
Other adjustments, net	(422)	27,910	16,252	38,956
Net cash provided by operating activities	147,107	50,099	182,793	84,790
Cash flows from investing activities				
Capital expenditures for property, plant and equipment and other long-lived assets	(16,465)	(20,418)	(80,619)	(50,552)
Proceeds from sale of equity method investment	—	—	—	2,268
Collections of financing receivables	7,020	—	7,020	—
Business acquisitions, net of cash acquired	(27,152)	(59,264)	(74,954)	(131,194)
Other investing activities	—	16	37	567
Net cash (used in) investing activities	(36,597)	(79,666)	(148,516)	(178,911)
Cash flows from financing activities				
Net (repayments) under loan payable	(1,895)	(8,831)	(19,077)	(19,634)
Proceeds from revolving credit facility - 2014 Credit Facility	—	—	—	15,628
Principal payments on revolving credit facility - 2014 Credit Facility	—	—	—	(327,183)
Proceeds from term loan facility - Credit Facility	—	—	—	623,827
Principal payments on term loan facility - 2014 Credit Facility	—	—	—	(243,250)
Principal payments on term loan facility - Credit Facility	—	(1,640)	(304,060)	(4,872)
Principal payments on term loan facility - Amended Credit Facility	(2,050)	—	(6,150)	—
Proceeds from term loan facility - Amended Credit Facility	—	—	466,075	—
Proceeds from revolving credit facility - Credit Facility	—	110,818	134,950	180,605
Principal payments on revolving credit facility - Credit Facility	—	(60,205)	(212,950)	(102,605)
Proceeds from revolving credit facility - Amended Credit Facility	72,012	—	240,035	—
Principal payments on revolving credit facility - Amended Credit Facility	(183,945)	—	(240,035)	—
Principal payments on other long-term debt	—	(993)	—	(3,971)
Proceeds from other long-term debt	—	—	—	2,700
Payment of debt issuance costs	—	—	(3,466)	(12,927)
Acquisition related contingent consideration payment	—	—	(9,464)	(1,315)
Purchase of treasury stock	(11,808)	—	(28,807)	—
Other financing activities	(4,168)	1,178	(7,684)	1,360
Net cash (used in) provided by financing activities	(131,854)	40,327	9,367	108,363
Effect of exchange rate changes on cash and cash equivalents	(633)	580	(2,894)	3,727
(Decrease) increase in cash and cash equivalents	(21,977)	11,340	40,750	17,969
Cash and cash equivalents at beginning of period	126,278	52,211	63,551	45,582
Cash and cash equivalents at end of period	\$ 104,301	\$ 63,551	\$ 104,301	\$ 63,551
Cash paid during the period for:				
Interest	\$ 9,053	\$ 6,256	\$ 33,910	\$ 26,850
Income taxes	\$ 19,212	\$ 9,043	\$ 36,789	\$ 25,662

Table 5
Ferro Corporation and Subsidiaries
Supplemental Information
Reconciliation of Reported Income to Adjusted Income
For the Three Months Ended December 31 (unaudited)

(Dollars in thousands, except per share amounts)	Cost of sales	Selling general and administrative expenses	Restructuring and impairment charges	Other expense, net	Income tax expense ⁵	Net income (loss) attributable to common shareholders	Diluted earnings (loss) per share
2018							
As reported	\$ 290,359	\$ 71,006	\$ 2,860	\$ 26,105	\$ (6,200)	\$ 10,976	\$ 0.13
Adjustments:							
Restructuring	—	—	(2,860)	—	—	2,860	0.03
Pension ¹	—	—	—	(18,300)	—	18,300	0.22
Acquisition related costs ²	(1,794)	(1,731)	—	2,143	—	1,382	0.02
Costs related to optimization projects	(1,863)	(2,617)	—	—	—	4,480	0.05
Costs related to divested businesses and assets	—	(286)	—	(1,946)	—	2,232	0.03
Other ⁴	—	—	—	492	—	(492)	(0.01)
Tax on adjustments	—	—	—	—	11,781	(11,781)	(0.14)
Total adjustments ⁶	(3,657)	(4,634)	(2,860)	(17,611)	11,781	16,981	0.20
As adjusted	\$ 286,702	\$ 66,372	\$ —	\$ 8,494	\$ 5,581	\$ 27,957	\$ 0.33
2017							
As reported	\$ 272,074	\$ 77,050	\$ 3,696	\$ 3,706	\$ 29,564	\$ (8,686)	\$ (0.10)
Adjustments:							
Restructuring	—	—	(3,696)	—	—	3,696	0.04
Pension ¹	—	—	—	3,852	—	(3,852)	(0.05)
Acquisition related costs ³	(2,191)	(5,099)	—	(254)	—	7,544	0.09
Costs related to optimization projects	(950)	(1,511)	—	—	—	2,461	0.03
Costs related to divested businesses and assets	—	(544)	—	(155)	—	699	0.01
Tax on adjustments	—	—	—	—	(22,702)	22,702	0.27
Total adjustments ⁶	(3,141)	(7,154)	(3,696)	3,443	(22,702)	33,250	0.39
As adjusted	\$ 268,933	\$ 69,896	\$ —	\$ 7,149	\$ 6,862	\$ 24,564	\$ 0.29

(1) The adjustments relate to pension and other postretirement benefit mark-to-market adjustments and settlements.

(2) The adjustments to "Cost of Sales" primarily include the amortization of purchase accounting adjustments related to our recent acquisitions. The adjustments to "Selling, general and administrative expenses" primarily include legal, professional and other expenses related to acquisition costs. The adjustments to "Other expense, net" primarily relate to earn out adjustments related to acquisitions that are beyond the measurement period.

(3) The adjustments to "Cost of Sales" primarily include the amortization of purchase accounting adjustments related to our recent acquisitions. The adjustments to "Selling, general and administrative expenses" primarily include legal, professional and other expenses related to acquisition costs. The adjustments to "Other expense, net" primarily relate other costs required to complete the acquisition of Endeka.

(4) The adjustments to "Other expense, net" primarily related to a gain on asset sales.

(5) Income tax expense reflects the reported expense, adjusted for adjustments being tax effected at the respective statutory rate where the item originated, as well as the impacts associated with the Tax Cuts and Jobs Act that were recorded in 2018 and 2017 and the impact associated with a rate change in Colombia.

(6) Due to rounding, total earnings per share related to adjustments does not always add to the total adjusted earnings per share.

It should be noted that adjusted net income, earnings per share and other adjusted items referred to above are financial measures not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). These Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP, and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 6
Ferro Corporation and Subsidiaries
Supplemental Information
Reconciliation of Reported Income to Adjusted Income
For the Twelve Months Ended December 31 (unaudited)

(Dollars in thousands, except per share amounts)	Cost of sales	Selling general and administrative expenses	Restructuring and impairment charges	Other expense, net	Income tax expense ⁶	Net income attributable to common shareholders	Diluted earnings per share
2018							
As reported	\$ 1,156,475	\$ 278,566	\$ 13,295	\$ 60,080	\$ 23,046	\$ 80,093	\$ 0.94
Adjustments:							
Restructuring	—	—	(13,295)	—	—	13,295	0.16
Pension ¹	—	—	—	(18,300)	—	18,300	0.22
Acquisition related costs ²	(3,535)	(13,210)	—	1,289	—	15,456	0.18
Costs related to optimization projects	(2,812)	(7,491)	—	—	—	10,303	0.12
Costs related to divested businesses and assets	—	(670)	—	(2,234)	—	2,904	0.03
Other ⁴	—	—	—	(2,056)	—	2,056	0.02
Tax on adjustments	—	—	—	—	14,643	(14,643)	(0.17)
Total adjustments ⁷	(6,347)	(21,371)	(13,295)	(21,301)	14,643	47,671	0.56
As adjusted	\$ 1,150,128	\$ 257,195	\$ —	\$ 38,779	\$ 37,689	\$ 127,764	\$ 1.50
2017							
As reported	\$ 980,521	\$ 265,418	\$ 11,409	\$ 28,876	\$ 52,750	\$ 57,054	\$ 0.67
Adjustments:							
Restructuring	—	—	(11,409)	—	—	11,409	0.13
Pension ¹	—	—	—	3,852	—	(3,852)	(0.05)
Acquisition related costs ³	(7,508)	(16,359)	—	(1,975)	—	25,842	0.30
Costs related to optimization projects	(1,196)	(2,528)	—	—	—	3,724	0.04
Costs related to divested businesses and assets	(70)	(2,693)	—	3,953	—	(1,190)	(0.01)
Other ⁵	—	—	—	(5,448)	—	5,448	0.06
Tax on adjustments	—	—	—	—	(11,780)	11,780	0.14
Total adjustments ⁷	(8,774)	(21,580)	(11,409)	382	(11,780)	53,161	0.62
As adjusted	\$ 971,747	\$ 243,838	\$ —	\$ 29,258	\$ 40,970	\$ 110,215	\$ 1.29

(1) The adjustments relate to pension and other postretirement benefit mark-to-market adjustments and settlements.

(2) The adjustments to "Cost of Sales" primarily include the amortization of purchase accounting adjustments related to our recent acquisitions. The adjustments to "Selling, general and administrative expenses" primarily include legal, professional and other expenses related to acquisition costs. The adjustments to "Other expense, net" primarily relate to earn out adjustments related to acquisitions that are beyond the measurement period.

(3) The adjustments to "Cost of Sales" primarily include the amortization of purchase accounting adjustments related to our recent acquisitions. The adjustments to "Selling, general and administrative expenses" primarily include legal, professional and other expenses related to acquisition costs. The adjustments to "Other expense, net" primarily relate to earn out adjustments related to acquisitions that are beyond the measurement period and other costs required to complete the acquisition of Endeka.

(4) The adjustments to "Other expense, net" primarily relate to impacts of currency related items in Argentina, debt extinguishment charges, fees expensed associated with the Amended Credit Facility and a gain recognized on increasing our ownership interest in FMU.

(5) The adjustments to "Other expense, net" primarily relate to the foreign exchange loss incurred on our Euro-denominated term loan, an impairment on an equity method investment, gains and losses on asset sales, debt extinguishment charges, and the gain recognized on increasing our ownership interest in Gardenia.

(6) Income tax expense reflects the reported expense, adjusted for adjustments being tax effected at the respective statutory rate where the item originated, as well as the impacts associated with the Tax Cuts and Jobs Act that were recorded in 2018 and 2017 and the impact associated with a rate change in Colombia.

(7) Due to rounding, total earnings per share related to adjustments does not always add to the total adjusted earnings per share.

It should be noted that adjusted net income, earnings per share and other adjusted items referred to above are financial measures not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). These Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP, and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 7
Ferro Corporation and Subsidiaries
Supplemental Information
Constant Currency Schedule of Adjusted Operating Profit (unaudited)

(Dollars in thousands)	Three Months Ended December 31,			
	2017	Adjusted 2017 ¹	2018	2018 vs Adjusted 2017
Segment net sales				
Performance Coatings	\$ 169,480	\$ 159,512	\$ 179,890	\$ 20,378
Performance Colors and Glass	123,920	120,968	117,646	(3,322)
Color Solutions	84,143	82,007	97,938	15,931
Total segment net sales	<u>\$ 377,543</u>	<u>\$ 362,487</u>	<u>\$ 395,474</u>	<u>\$ 32,987</u>
Segment adjusted gross profit				
Performance Coatings	\$ 38,688	\$ 36,875	\$ 36,519	\$ (356)
Performance Colors and Glass	42,699	41,676	38,713	(2,963)
Color Solutions	26,150	25,540	33,352	7,812
Other costs of sales	1,073	1,047	188	(859)
Total adjusted gross profit ²	<u>\$ 108,610</u>	<u>\$ 105,138</u>	<u>\$ 108,772</u>	<u>\$ 3,634</u>
Adjusted gross profit percentage		29.0%	27.5%	
Adjusted selling, general and administrative expenses				
Strategic services	39,298	37,046	38,720	1,674
Functional services	21,080	21,282	20,960	(322)
Incentive compensation	4,649	4,555	3,468	(1,087)
Stock-based compensation	4,869	4,869	3,224	(1,645)
Total adjusted selling, general and administrative expenses ³	<u>\$ 69,896</u>	<u>\$ 67,752</u>	<u>\$ 66,372</u>	<u>\$ (1,380)</u>
Adjusted operating profit	\$ 38,714	\$ 37,386	\$ 42,400	\$ 5,014
Adjusted operating profit as a % of net sales	10.3%	10.3%	10.7%	

- (1) Reflects the remeasurement of 2017 reported and adjusted local currency results using 2018 exchange rates, resulting in constant currency comparative figures to 2018 reported and adjusted results. See Table 5 for Non-GAAP adjustments applicable to the three month period.
- (2) Refer to Table 5 for the reconciliation of adjusted gross profit for the three months ended December 31, 2018 and 2017, respectively.
- (3) Refer to Table 5 for the reconciliation of adjusted SG&A expenses for the three months ended December 31, 2018 and 2017, respectively.

It should be noted that adjusted net sales, gross profit, SG&A expenses, and operating profit are financial measures not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). These Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures are presented within this table, as well as Table 5. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 8
Ferro Corporation and Subsidiaries
Supplemental Information
Constant Currency Schedule of Adjusted Operating Profit (unaudited)

(Dollars in thousands)	Twelve Months Ended December 31,			
	2017	Adjusted 2017 ¹	2018	2018 vs Adjusted 2017
Segment net sales				
Performance Coatings	\$ 594,029	\$ 589,713	\$ 733,926	\$ 144,213
Performance Colors and Glass	444,653	450,938	487,455	36,517
Color Solutions	358,060	362,700	391,027	28,327
Total segment net sales	\$ 1,396,742	\$ 1,403,351	\$ 1,612,408	\$ 209,057
Segment adjusted gross profit				
Performance Coatings	\$ 148,932	\$ 150,538	\$ 166,705	\$ 16,167
Performance Colors and Glass	159,622	161,918	167,502	5,584
Color Solutions	116,456	117,724	129,013	11,289
Other costs of sales	(15)	87	(940)	(1,027)
Total adjusted gross profit²	\$ 424,995	\$ 430,267	\$ 462,280	\$ 32,013
Adjusted gross profit percentage		30.7%	28.7%	
Adjusted selling, general and administrative expenses				
Strategic services	137,272	138,591	155,713	17,122
Functional services	82,215	82,108	84,572	2,464
Incentive compensation	12,581	12,654	8,469	(4,185)
Stock-based compensation	11,770	11,770	8,441	(3,329)
Total adjusted selling, general and administrative expenses³	\$ 243,838	\$ 245,123	\$ 257,195	\$ 12,072
Adjusted operating profit	\$ 181,157	\$ 185,144	\$ 205,085	\$ 19,941
Adjusted operating profit as a % of net sales	13.0%	13.2%	12.7%	

(1) Reflects the remeasurement of 2017 reported and adjusted local currency results using 2018 exchange rates, resulting in constant currency comparative figures to 2018 reported and adjusted results. See Table 6 for Non-GAAP adjustments applicable to the twelve month period.

(2) Refer to Table 6 for the reconciliation of adjusted gross profit for the twelve months ended December 31, 2018 and 2017, respectively.

(3) Refer to Table 6 for the reconciliation of adjusted SG&A expenses for the twelve months ended December 31, 2018 and 2017, respectively.

It should be noted that adjusted net sales, gross profit, SG&A expenses, and operating profit are financial measures not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). These Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures are presented within this table, as well as Table 6. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 9
Ferro Corporation and Subsidiaries
Supplemental Information
Reconciliation of Net income (loss) attributable to Ferro Corporation
common shareholders to Adjusted EBITDA (unaudited)

(Dollars in thousands)

	Three Months Ended December 31,		Twelve Months Ended December 31,	
	2018	2017	2018	2017
Net income (loss) attributable to Ferro Corporation common shareholders	\$ 10,976	\$ (8,686)	\$ 80,093	\$ 57,054
Less: Net income attributable to noncontrolling interests	368	139	853	714
Restructuring and impairment charges	2,860	3,696	13,295	11,409
Other expense (income), net	17,449	(4,127)	26,709	1,122
Interest expense	8,656	7,833	33,371	27,754
Income tax expense	(6,200)	29,564	23,046	52,750
Depreciation and amortization	14,629	15,166	57,551	53,581
Less: interest amortization expense and other	(893)	(1,121)	(3,577)	(3,496)
Cost of sales adjustments ¹	3,657	3,141	6,347	8,774
SG&A adjustments ¹	4,634	7,154	21,371	21,580
Adjusted EBITDA	<u>\$ 56,136</u>	<u>\$ 52,759</u>	<u>\$ 259,059</u>	<u>\$ 231,242</u>
Net sales	\$ 395,474	\$ 377,543	\$ 1,612,408	\$ 1,396,742
Adjusted EBITDA as a % of net sales	14.2%	14.0%	16.1%	16.6%

(1) For details of Non-GAAP adjustments, refer to Table 5 and Table 6 for the reconciliation of adjusted cost of sales and adjusted SG&A for the three and twelve months ended December 31, 2018 and 2017, respectively.

It should be noted that adjusted EBITDA is a financial measure not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). This Non-GAAP financial measure should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of this financial measure to the most comparable U.S. GAAP financial measure is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 10
Ferro Corporation and Subsidiaries
Supplemental Information
Change in Net Debt (unaudited)

(Dollars in thousands)

	Three Months Ended		Twelve Months Ended	
	December 31,		December 31,	
	2018	2017	2018	2017
Beginning of period				
Gross debt	\$ 938,340	\$ 699,684	\$ 759,078	\$ 578,205
Cash	126,278	52,211	63,551	45,582
Debt, net of cash	812,062	647,473	695,527	532,623
Unamortized debt issuance costs	5,063	7,743	7,451	3,720
Debt, net of cash and unamortized debt issuance costs	806,999	639,730	688,076	528,903
End of period				
Gross debt	826,224	759,078	826,224	759,078
Cash	104,301	63,551	104,301	63,551
Debt, net of cash	721,923	695,527	721,923	695,527
Unamortized debt issuance costs	4,827	7,451	4,827	7,451
Debt, net of cash and unamortized debt issuance costs	717,096	688,076	717,096	688,076
Change from FX on Euro term loan	-	(5,005)	(5,657)	(33,883)
Unamortized debt issuance costs	(236)	(292)	(2,624)	3,731
FX on cash	(633)	580	(2,894)	3,727
Assumption of debt from acquisitions	(6,014)	(15,431)	(6,014)	(23,406)
Period decrease (increase) in debt, net of cash, unamortized debt issuance costs, FX, and assumption of debt from acquisitions	\$ 96,786	\$ (28,198)	\$ (11,831)	\$ (109,342)
Period decrease (increase) in debt, net of cash and unamortized debt issuance costs	\$ 89,903	\$ (48,346)	\$ (29,020)	\$ (159,173)

It should be noted that the change in net debt is a financial measure not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). This Non-GAAP financial measure should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of this financial measure to the most comparable U.S. GAAP financial measure is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.

Table 11
Ferro Corporation and Subsidiaries
Supplemental Information
Reconciliation of Net Cash Provided by Operating Activities (GAAP) to
Adjusted Free Cash Flow from Continuing Operations (Non-GAAP) (unaudited)

(Dollars in thousands)

	Three Months Ended December 31		Twelve Months Ended December 31	
	2018	2017	2018	2017
Cash flows from operating activities				
Net income (loss)	\$ 11,344	\$ (8,547)	\$ 80,946	\$ 57,768
(Gain) loss on sale of assets	(321)	362	164	(852)
Depreciation and amortization	13,736	14,045	53,974	50,085
Interest amortization	893	1,121	3,577	3,496
Restructuring and impairment charges	(193)	3,964	4,084	7,593
Loss on extinguishment of debt	-	-	3,226	3,905
Accounts receivable	56,324	19,100	19,885	(25,852)
Inventories	24,911	(15,583)	(33,922)	(46,962)
Accounts payable	24,784	25,569	35,887	26,150
Other current assets and liabilities, net	16,051	(17,842)	(1,280)	(29,497)
Other adjustments, net	(422)	27,910	16,252	38,956
Net cash provided by operating activities (GAAP)	\$ 147,107	\$ 50,099	\$ 182,793	\$ 84,790
Less: Capital Expenditures	(16,465)	(20,418)	(80,619)	(50,552)
Plus: Cash (remitted) collected for AR securitization	7,020	-	7,020	-
Free Cash Flow provided by Continuing Operations (Non-GAAP)	137,662	29,681	109,194	34,238
Plus: cash used for restructuring	3,053	(268)	9,211	3,816
Plus: cash used for capital expenditures related to optimization projects ⁽¹⁾	9,227	8,428	41,014	16,303
Plus: Cash used for net working capital investment related to optimization projects ⁽²⁾	3,001	6,994	8,424	8,128
Plus: Cash used for acquisition related professional fees ⁽³⁾	1,330	8,905	11,627	18,702
Plus: Cash used for optimization projects ⁽³⁾	3,172	1,265	8,995	2,528
Plus: Cash used for divested businesses and assets ⁽³⁾	286	544	670	2,693
Adjusted Free Cash Flow from Continuing Operations (Non-GAAP)	157,731	55,549	189,135	86,408
Net Income (Loss) Attributable to Ferro Corporation Common Shareholders	10,976	(8,686)	80,093	57,054
Net Cash Provided by Operating Activities Conversion of Net Income (Loss) Attributable to Ferro Corporation Common Shareholders	1340.3%	-576.8%	228.2%	148.6%
Adjusted EBITDA (Non-GAAP) - From Table 9	56,136	52,759	259,059	231,242
Adjusted Free Cash Flow Conversion of Adjusted EBITDA from Continuing Operations (Non-GAAP)	281.0%	105.3%	73.0%	37.4%
Adjusted Free Cash Flow Conversion of Adjusted EBITDA from Continuing Operations, adjusted for AR Securitization impact (Non-GAAP) ⁽⁴⁾	178.9%	105.3%	50.9%	37.4%

- (1) The adjustment to capital expenditures represents capital spend for certain optimization projects that are not expected to recur in the long-term at the current rate. See Table 10 for the reconciliation of period change in debt, net of cash, unamortized debt issuance costs, FX, and assumption of debt from acquisitions.
- (2) The adjustment to net working capital represents spend for the build in inventory related to the optimization project noted in (1) above. This build in inventory is considered to be outside of the normal operations of the underlying business, and expected to be temporary in nature.
- (3) The adjustment represents those cash outlays for (a) acquisition related professional fees, (b) costs related to certain optimization projects, and (c) costs related to divested businesses and assets, as detailed in the description of Non-GAAP adjustments in Table 5 and Table 6 for the three and twelve months ended December 31, 2018 and 2017, respectively.
- (4) Adjusted free cash flow conversation of adjusted EBITDA from continuing operations adjusted for the cash proceeds from the AR Securitization of \$57.3 million.

It should be noted that adjusted free cash flow from continuing operations is a financial measure not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). The Non-GAAP financial measure should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance. Additionally, certain elements of these measures are used in the calculation of certain incentive compensation programs for management.

Table 12
Ferro Corporation and Subsidiaries
Supplemental Information
Reconciliation of Net Sales and Gross Profit (GAAP) to
Adjusted Net Sales and Gross Profit (Non-GAAP) (unaudited)

(Dollars in thousands)	2018	
	Net Sales	Gross Profit
As Reported (GAAP)	\$ 1,612,408	\$ 455,933
Non-GAAP Adjustments ¹	-	6,347
Constant Currency FX Impact ²	-	-
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 1,612,408	\$ 462,280
	2017	
As Reported (GAAP)	\$ 1,396,742	\$ 416,221
Non-GAAP Adjustments ¹	-	8,774
Constant Currency FX Impact ²	6,609	5,272
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 1,403,351	\$ 430,267
	2016	
As Reported (GAAP)	\$ 1,145,292	\$ 356,378
Non-GAAP Adjustments ¹	-	3,792
Constant Currency FX Impact ²	(11,049)	1,556
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 1,134,243	\$ 361,726
	2015	
As Reported (GAAP)	\$ 1,075,341	\$ 300,522
Non-GAAP Adjustments ¹	-	8,270
Sold Business Venezuela ¹	(8,400)	700
Constant Currency FX Impact ²	(34,376)	(4,413)
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 1,032,565	\$ 305,079
	2014	
As Reported (GAAP)	\$ 1,111,626	\$ 293,089
Non-GAAP Adjustments ¹	-	(422)
Sold Business Venezuela ¹	(19,793)	(3,385)
Constant Currency FX Impact ²	(146,092)	(32,837)
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 945,741	\$ 256,445
	2013	
As Reported (GAAP)	\$ 1,188,582	\$ 278,569
Non-GAAP Adjustments ¹	-	4,015
Sold Business Venezuela and Metal Powders & Solar product lines ¹	(102,007)	(9,559)
Constant Currency FX Impact ²	(152,917)	(32,409)
As Adjusted from Continuing Operations (Non-GAAP measure)	\$ 933,658	\$ 240,616

1. For 2018 and 2017, refer to Table 6 for a description of the Non-GAAP adjustments that were recorded in "Cost of Sales". For 2016, 2015, 2014 and 2013, the Non-GAAP adjustments relate to acquisitions related costs, costs related to certain optimization projects, and costs related to divested businesses and assets.

2. Reflects the remeasurement of 2017, 2016, 2015, 2014 and 2013 reported and adjusted results using 2018 average exchange rates, resulting in a constant currency comparative figures to 2018 reported and adjusted results.

It should be noted that adjusted net sales and adjusted gross profit referred to above are financial measures not required by, or presented in accordance with, accounting principles generally accepted in the United States (U.S. GAAP). These Non-GAAP financial measures should be considered as a supplement to, and not as a substitute for, the financial measures prepared in accordance with U.S. GAAP and a reconciliation of these financial measures to the most comparable U.S. GAAP financial measures is presented. We believe this data provides investors with additional useful information on the underlying operations and trends of the business and enables period-to-period comparability of financial performance.