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Financial Analysis and Valuation of H.B. Fuller Company

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H.B. Fuller Company
A Financial Analysis and Valuation Report

A Project Presented to
the Graduate Faculty of
Minnesota State University Moorhead

by

Kevin Timothy Laluyan

In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in
Accounting and Finance

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Moorhead, Minnesota

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EXECUTIVE SUMMARY

H.B. Fuller is an American manufacturing Company that formulates, develops, and supplies industrial adhesives. The Company operates in the Adhesives and Sealants industry, and its products are used in manufacturing various common industrial and consumer goods.

In September 2019, the Company announced that it will realign its business from five to three operating segments. The new structure will be effective as of December 1, 2019 and will be comprised of three Global Business Units (GBUs) that include Engineering Adhesives, Hygiene, Health and Consumable Adhesives, and Construction Adhesives. H.B. Fuller achieved solid financial performance in 2019, delivering constant currency EPS growth of 6 percent, margin improvement, strong cash flow, and for the 50th consecutive year, increased the dividend paid to its shareholders.

After further analysis of H.B. Fuller's annual financial statements, industry data, historical stock price performance, and other analyst' reports. I am giving a HOLD recommendation of the Company's stock. My analysis valued H.B. Fuller's stock price at USD 30.96 per share which is slightly below the current price of USD 32.58 at close as of April 1st, 2020.

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INTRODUCTION

The purpose of this report is to analyze and examine a company's performance by predicting the amount, timing, and the uncertainty of the company's future cash flows. Additionally, I will be assuming the role of a financial analyst in examining the firm's performance with the intent of issuing a common stock recommendation.

The basis for firm selection includes the following criteria:

- First, a public company that is either headquartered or incorporated in the Midwest region.
- Second, listed on the Russell 2000 Index (Small cap firms).

This report will firstly provide a background of H.B Fuller Company, the industry it operates in, its market, and other relevant information. Second, it separately analyzes the historical data and provides industry comparisons as applicable for each financial statement (income statement, balance sheet, and the statement of cash flows). Third, it summarizes significant findings from analysis of each financial statement section. Finally, it concludes about the Company's current financial state considering the topics discussed hereinafter and provides a recommendation on the Company's stock.

FIRM CHARACTERISTICS

History

The Fuller Manufacturing Company was founded in St. Paul, Minnesota as a one-man wallpaper-paste shop by Harvey Benjamin Fuller in 1887. In 1915 the Company reincorporated as H.B. Fuller Company. The Company experienced a difficult period between the 1920s and 1930s. However, with the development of new customized adhesives and formulas, Fuller products expanded and reached several dozen by the mid-1920s. The Company experienced steady growth and expansion from 1941 through 1968, when it held its first public stock offering. Trading of public stock moved to the New York Stock Exchange (NYSE) under the ticker FUL in 2002. The late twentieth century brought restructuring and substantial international growth to the Company. This more aggressive attitude toward acquisitions provided new market entries into Europe, Asia Pacific, and North America. Today, H.B Fuller is a leading global adhesives formulator, manufacturer, and marketer with subsidiaries worldwide with sales operations spanning 32 countries.

As of December 1, 2019, the Company realigned its business from five to three operating segments. The engineering adhesives segment focuses on the high highly specified markets of aerospace and automotive, electronics and energy, and general industries. The construction adhesives segment concentrates on commercial roofing, residential and commercial flooring, and utility and infrastructure markets. The hygiene, health and consumable adhesives is a new global business unit that was created to identify trends in sustainable packaging, beauty care, medical care, and disposable hygiene products. Through this restructuring, H.B. Fuller aims to have a clearer global alignment and improved accountability between market segment strategies and financial results, enabling the Company to accelerate and sustain growth.

Merger and Acquisition

The Company has utilized merger and acquisition as part of their growth strategy over the past decade. H.B. Fuller has acquired 15 companies, including five in the last five years. A total of 1 acquisition came from private equity firms. In addition, the Company has also divested four assets in the past ten years.

Table 1. Acquisitions History

Date	Acquisition	Location
2008-09-02	Egymelt LLC.	Egypt
2009-03-30	Nordic Adhesive Technology GmbH	Germany
2011-04-08	Liquamelt Corp	United States
2012-09-10	Engent, Inc.	United States
2013-06-06	Plexbond Química S/A	Brazil
2014-06-25	TONSAN Adhesive, Inc.	China
2014-12-23	Continental Products Ltd.	Kenya
2016-04-05	Advanced Adhesives Ltd.	New Zealand
2016-06-06	Cyberbond, LLC.	United States
2017-01-27	Wisdom Worldwide Adhesives	United States
2017-07-18	Adecoll Ind. Química Ltda.	Brazil
2017-09-04	Royal Adhesives & Sealants LLC	United States

Source: Company Annual Filings

H.B. Fuller's largest acquisition to date was in 2017, when it acquired Royal Adhesives & Sealants for \$1.6B. The Company's largest disclosed sale occurred in 2019, when it sold H.B. Fuller - Surfactants Thickeners & Dispersants Business to Tiarco Chemical for \$71M. H.B. Fuller has acquired in five different states, and nine countries. The Company's most targeted sectors include chemicals (87 percent) and building materials (7 percent).

A recent hot spot for merger and acquisition activity is the electronics and engineering adhesives segment. Highly engineered adhesives are experiencing growth rates of 5-10 percent annually, major suppliers are fighting for a position in this attractive market. We can expect H.B. Fuller to continue using merger and acquisition as a means of

increasing its market presence over the next few years. Foreign sales continue to be a vital part of operations as \$1.6 billion, or approximately 55 percent of the Company's net revenue was generated outside the United States in 2019. Additional major players in the engineering adhesives market, include Henkel, Lord and 3M.

Management and Corporate Governance

As President and Chief Executive Officer at the Company, the annual total compensation of James J. Owens was \$7,308,158. Of this total \$1,167,813 was received as base salary, \$956,994 was received as a bonus, \$2,194,071 was received in stock options, \$2,595,195 was awarded as stock and \$350,655 came from all other types of compensation.

As of the fiscal year ended November 30, 2019, the median of the annual total compensation of all the Company's employees was reasonably estimated to be \$57,370. Based on this data, the ratio of the annual total compensation of the CEO to the median of the annual total compensation of all other employees is estimated to be 127 to 1.

The executive leadership team of H.B. Fuller consists of the following members:

Table 2. Summary of Compensation

Executive	Position(s)	Total Compensation (\$)
James J. Owens	President and Chief Executive Officer	7,308,158
John Corkrean	Executive VP and Chief Financial Officer	1,820,536
Zhiwei Cai	Executive VP, Engineering Adhesives	1,450,160
Andrew Tometich	Executive VP, Hygiene, Health and Consumable Adhesives	1,423,347
Traci L. Jensen	Senior VP, Global Construction Adhesives	1,268,041
Heather A. Campe	VP, General Counsel and Corporate Secretary	1,789,423

Source: Company Annual Filings

The Company uses four main elements in determining executive compensation. Base salary, a short-term incentive plan with cash awards (STIP), a long-term incentive plan with equity grants (LTIP), as well as benefits, utilized to attract and motivate executive officers to achieve results that increase shareholder value. The Company generally aligns with the market median for base salary, short-term and long-term incentive, which comprise of total compensation.

Short-term incentive plan success is measured primarily by the Company-wide financial metrics that consist of Adjusted Net Revenue, AOI, adjusted Earnings before Interest, and Taxes and Depreciation (EBITDA). For fiscal year 2019, the Company replaced the revenue metric with Adjusted Net Revenue to better align with the financial statements. Additionally, for the long-term incentive plan Company uses ROIC as the performance metric for performance-based restricted stock units, which account for 25 percent of the equity awards granted to executives including the CEO. ROIC was selected as the long-term incentive plan performance metric because how efficiently a Company is using the capital that has been invested in it to generate income. These elements are reviewed annually. The emphasis on short-term and long-term incentive compensation also reflects the Company's pay-for-performance philosophy.

The Company's Board of Directors is currently composed of ten directors and is divided into three classes. Generally, each year one class of directors stands for election for a three-year term. In its April 2020 annual meeting, the Company held an election of three directors. Mr. Florness and Mr. Mitau are being nominated to serve an additional three-year term of office until 2023 and until their successors are elected and qualified. Mr.

Van Sant is being nominated as a Class I director for a one-year term of office until 2021 and until his successor is elected and qualified.

Table 3. Remaining Directors

Executive	Position	Committees	Other Board Membership(s)
Thomas W. Handley	Independent Director since 2010	Audit, Compensation	Republic Services, Inc.
Maria Teresa Hilado	Independent Director since 2013	Compensation, Corporate Governance and Nominating	Campbell Soup Company, Zimmer Biomet Holdings, Inc
Ruth S. Kimmelshue	Independent Director since 2017	Audit, Compensation	N/A
James J. Owens	Director since 2010	N/A	Donaldson Company, Inc.
Dante C. Parrini	Independent Director since 2012	Compensation, Corporate Governance and Nominating	P.H. Glatfelter Company
John C. van Roden, Jr.	Independent Director since 2003	Audit (Chair), Corporate Governance and Nominating	Airgas, Inc.

Source: Company Annual Filings

The Company believes that membership in its Board of Directors should reflect a diversity of experience, skills, geography, gender, and ethnicity. The Company has low diversity in terms of gender with only two directors being female. Age diversity is relatively moderate, with ages ranging between 55 to 81. Additionally, the Company's Institutional Shareholder Services (ISS) Governance QualityScore as of December 4, 2019 is 2. The pillar scores are Audit: 1; Board: 1; Shareholder Rights: 5; Compensation: 2. Scores indicate decile rank relative to index or region. A score of 1 indicates lower governance risk, while a 10 indicates higher governance risk.

Market Risk

The main identifiable market risks faced by the Company include changes in interest rates, foreign currency rates, and prices of raw materials. Exposure to changes in interest rates results primarily from borrowing activities used to fund the Company's operations. Management believes that probable near-term changes in interest rates would not materially affect financial condition, results of operations, or cash flows.

The Company is at risk of exposure to market risks from changes in foreign currency exchange rates due to the nature of its business as a global enterprise. International sales make up a big part of the Company's revenue. Approximately 55 percent of net revenue was generated outside of the United States in 2019. As of November 30, 2019, it was determined that there were no material effects due to foreign currency exchange rates on the Company's results of operations.

As a manufacturing company, raw materials are an essential part of operations. The principal raw materials used to manufacture the Company's products include resins, polymers, synthetic rubbers, and plasticizers. Unexpected supplier production outages may lead to disruptions in the supply chain for several key raw materials such as ethylene and propylene, several polymers and other petroleum derivatives. Purchases of raw materials is the Company's largest expenditure. Most of the raw materials are purchased on the open market or under contracts that limit the frequency but not the magnitude of price increases. The Company leverages the risk of price increases by having substitute raw materials approved for use wherever possible. The Company's objective is to purchase raw materials that meet both quality of standards and production needs at the lowest available cost. In 2019, \$1.5 billion was approximately spent for raw materials worldwide of which approximately \$807.4 million was purchased outside the United States.

INDUSTRY CHARACTERISTICS

The Company operates in the Adhesives and Sealants industry. This industry which is classified in the Standard Industrial Code (SIC) No. 2891, corresponds to North American Industrial Classification System (NAICS) No. 325520. This industry is discussed as follows.

Industry Outlook and Growth Potential

As listed on osha.gov, establishments in this industry are primarily engaged in manufacturing industrial and household adhesives, glues, caulking compounds, sealants, and linoleum, tile, and rubber cements from vegetable, animal, or synthetic plastics materials. Adhesives and sealants are made from precise blends of petroleum-derived plastic resins, synthetic rubber elastomers, and agents or additives used to enhance certain characteristics.

The market is highly fragmented in nature with the top five companies accounting for approximately one-third of the global adhesives market, and the remaining two-thirds which consist hundreds of small and medium-sized companies. Additionally, only a small number of these companies account for revenues over \$100 million. Emerging markets in the Asia-Pacific region is expected to witness substantial growth during the next few years. Countries such as India, China South Korea, Malaysia, Vietnam, Taiwan, and Indonesia offer several untapped opportunities. With China expected to lead the demand for adhesives and sealants in the Asia-Pacific region.

With a market size estimated to be around \$58.9 billion in 2019, the adhesives and sealants industry is projected to reach \$73.8 billion by 2024. Major factors driving growth in the industry can be attributed to the increasing demand from a wide range of applications

in several end-use industries such as packaging, transportation, electronics, and construction. Innovation in technology is one of the major drivers in this industry.

The main challenge faced by the industry is the increasing fluctuations in raw material prices for manufacturing. Strict environmental regulations of the Environmental Protection Agency (EPA) and Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) in the United States and Europe also remain a challenge that the industry is facing. Manufacturers are under pressure to produce products with less volatile organic compounds (VOC) considering health and safety issues.

Major Players

There are a few major players within the industry with Henkel currently holding the top spot. It has operations world-wide and maintains a well-balanced and diversified portfolio. Henkel's diversified product portfolio caters to end-use industries according to their requirements. In order to sustain its dominating position, the company may enter into new industries and target new markets. The evolving structure of this industry is highly conducive to merger and acquisition activity.

Table 4. Key Players in the Industry

Company	Location
Henkel AG & Co. KGaA	Germany
H.B. Fuller Co	United States
Sika AG	Switzerland
Arkema S.A.	France
Huntsman International LLC	United States
The 3M Company	United States
Illinois Tool Works Inc	United States
Avery Dennison Corporation	United States
DowDuPont Inc	United States
Wacker Chemie AG	Germany

Source: Industry Data

Companies operating in this industry are adopting key growth strategies which include product development, merger and acquisition, investment and expansion, and research and development, to further take advantage of this forecasted growth period.

Porter's Five Forces Analysis

Porter's Five Forces is a model that analyzes competitive forces that shape every industry. This helps determine a company's weaknesses and strengths which can be useful in determining corporate strategy.

Threat of New Entrants

Major players such as H.B. Fuller have a cost advantage through economies of scale. Product differentiation is strong within the industry, where most firms sell differentiated rather than a standardized product. Entry in the industry requires substantial capital and resource investment. Finally, government policies within the industry require strict licensing. The culmination of all these factors make the threat of new entrants very low. The Company should be focusing on innovation and differentiation by investing in Research and Development. New entrants are less likely to enter a dynamic industry where the established players keep defining industry standards regularly. This significantly reduces the window of profits for new firms thus discourage new players in the industry.

Bargaining Power of Suppliers

The products supplied by suppliers in this industry are standardized, less differentiated, and have low switching costs. Suppliers also do not provide a credible threat of forward integration into the industry. In addition, industry profits are closely tied to their suppliers, forcing suppliers to provide reasonable pricing for companies in this industry. All the factors combined, make bargaining power of suppliers moderately low. H.B. Fuller

should look into developing long-term contractual relationships with suppliers from different regions. This not only decreases dependency on one or a few suppliers, but also improves the Company's supply chain efficiency. A detailed cost-benefit analysis should be performed to determine feasibility.

Bargaining Power of Buyers

A culmination of lower customer concentration, the inability to integrate backwards, low price sensitivity, and high switching costs decrease the bargaining power of buyers in this industry. In addition, the high product differentiation creates unique products which generally leads to very few alternatives. The Company can tackle the threat of bargaining power of buyers by building loyalty through excellent customer experience. This can potentially raise the switching costs, reducing their bargaining power. Other strategies to strengthen the Company's positioning in the market include developing new products, identifying new market segments, and adopting new product diversification strategies.

Threat from Substitute Products

The high differentiation of products within this industry cause substitutes available for these products to be very low. These substitutes are of high quality but are significantly more expensive. Comparatively, firms in this industry on average sell at a lower price while maintaining adequate quality. These factors make the threat of substitute products low within the industry. The Company can tackle the threat of substitute products by maintaining their differentiation strategy as well as being service oriented rather than just product oriented.

Rivalry among the existing players

There are a few main competitors in this industry. The top five control approximately one-third of the market share while the rest consist of small to mid-sized companies. The few competitors have large market shares which will likely push these firms to engage in competitive actions in order to become market leaders. The investment required to operate lead to particularly high exit barriers. Government restrictions and regulations are also a factor in the high exit barrier. Taking all of these into factors into consideration, the rivalry among existing players in this industry is moderately high. The Company can tackle the threat of rivalry among existing firms by focusing on differentiating its products and tapping into new markets as the industry continues to grow. Investing in research and development activities to identify new customer segments might also be beneficial.

HISTORICAL FINANCIAL STATEMENT ANALYSIS

An analysis of the Company's historical financial statements is subsequently discussed, including a brief summary of significant accounting policies, quality of earnings, relevant ratios and interpretations, cash conversion cycle, income statement and balance sheet conclusions, and cash management conclusions.

Summary of Significant Accounting Policies

The summary of significant accounting policies describes policies and procedures implemented by a company's management team. The policy summary is mandated by applicable accounting framework such as Generally Accepted Accounting Policies (GAAP) and International Financial Reporting Standards (IFRS).

Goodwill

H.B Fuller partners with the Minneapolis branch of KPMG for their auditing services. KPMG has been auditing the Company's annual SEC filings since 2003. As of November 30, 2019, KPMG issued an unqualified opinion on the Company's consolidated financial statements and internal control over financial reporting. In reviewing Item 8 to the financial statements regarding significant accounting policies, I found the following comments made by the auditor significant:

- The Company's the goodwill balance as of November 30, 2019 was \$1,282 million, of which \$149 million and \$74 million related to the EIMEA and CA Flooring reporting units, respectively. The Company performs goodwill impairment testing on an annual basis and whenever events or changes in circumstances indicate that the carrying value of a reporting unit likely exceeds its fair value.
- The estimated fair values of the EIMEA and CA Flooring reporting units exceeded their carrying values by 21 percent and 8 percent, respectively, indicating a higher risk that the goodwill may be impaired. The expected future cash flows used to determine the fair values of the reporting units were challenging to test. This is due to minor changes to those assumptions having a significant effect on the Company's assessment of the carrying value of the goodwill.

Inventories

In the fourth quarter of 2018, the Company elected to change the method of accounting for certain inventories in the United States within the Company's Americas Adhesives and Construction Adhesives segments, which represented approximately 25.7 percent of consolidated inventories, from the last-in, first-out method ("LIFO") to weighted-average cost. This change in accounting principle better measures the current

value of the Company's inventories and conforms the inventory costing methodology for inventory used within this segment to the weighted-average cost method used for the majority of the Company's inventories. In addition, consolidated financial statements as of December 2, 2017 were retrospectively adjusted to reflect this change

Revenue Recognition

The company elected to adopt, ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, during the quarter ended March 2, 2019 using the modified retrospective method of adoption. This ASU requires a firm to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. This adoption resulted in the following adjustment to beginning equity:

- The Company recorded an increase to opening retained earnings of \$1,776 as of December 1, 2018 related to accelerated recognition for arrangements where shipping and handling services were provided after control of the goods has transferred to the customer. Balance sheet amounts have been restated to reflect the adoption. Required disclosure notes were included in Note 10 of the annual report.

Pension Expense

The Company adopted ASU No. 2017-07, *Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* in the first quarter of 2019. As a result of the adoption, the components of net periodic defined benefit pension and postretirement benefit costs other than service cost are now presented as non-operating expenses for all periods presented. Certain amounts in the consolidated statements of income for the years ended December 1, 2018 and December 2, 2017 were adjusted as a result of the retrospective adjustment for the change in accounting principle.

Quality of Earnings

The quality of earnings or income ratio is an indicator to which the net income of a company satisfies the quality of criteria. Generally, earnings are considered to be of high quality if they consist of the following characteristics: predictable, consistent, and sustainable, exclude special and non-recurring items, backed by cash operating flows, and derived from the application of relevant accounting policies

This ratio is calculated by dividing the net cash flow from operations by the company's net income. A ratio of greater than 1.0 usually indicates high-quality income while a ratio less than 1.0 indicates low-quality. H.B. Fuller's quality of earnings ratio in 2019 is significantly greater than 1.0 at 2.06, and over the last five years, the ratio has averaged 1.99. This suggests that the business is conservative in its approach to income recognition.

Lastly, the quality of earnings refers to the extent to which a firm's earnings being reported are likely to translate into real economic value. The relatively high quality of earnings ratio, in addition to an unqualified audit report that indicates effective internal controls, with no material deficiencies, indicate high quality earnings and resultant reliable financial statements.

Relevant Ratios and Interpretations

Financial ratios offer a way of evaluating a company's performance to similar companies within the same industry. Ferro Corporation (NYSE: FOE) was used as the benchmark firm for comparison purposes as an alternative to industry standards since appropriate industry averages were difficult to obtain. Ferro fulfilled the same two selection criteria for H.B. Fuller, which include a public company that is either headquartered or incorporated in the Midwest region, and is listed on the Russell 2000 Index (small cap

firms). Additionally, for fiscal year 2019, annual net revenues for H.B. Fuller and Ferro were \$2.9 billion and \$1.0 billion respectively. While the market capitalizations for H.B. Fuller and Ferro Corp were \$1.7 billion and \$862 million respectively. Ferro is the closest comparable competitor in terms of annual revenue and market capitalization. Due to the fulfilment of the criteria mentioned and relatively similar annual sales and market capitalization, Ferro was selected as the benchmark firm for comparison against H.B. Fuller.

However, it is important to note that direct comparisons are marginally useful. While there are similarities in the segments that H.B. Fuller and Ferro operate in, there are no two companies in this industry that operate in identical segments. A brief summary of key ratios, comparison to industry benchmark, and interpretations with is subsequently discussed.

Solvency Ratios

Solvency ratios measure a company's ability to meet its long-term financial commitments. H.B Fuller operates in a capital-intensive industry where more assets are financed through debt. Therefore, solvency ratios in this industry tend to be higher due to substantial leverage. The Company's recent trends in solvency is discussed as follows.

Table 5. Solvency Ratios

Ratios	2019	2018	2017	2016	2015
Debt to Asset	0.69	0.72	0.76	0.54	0.57
Benchmark - FOE	0.80	0.79	0.79	0.80	0.74
Debt to Equity	2.26	2.62	3.18	1.19	1.33
Benchmark - FOE	3.96	3.70	3.72	4.03	2.78
Fixed Charge Coverage	2.67	2.41	2.34	7.12	6.53
Benchmark - FOE	3.07	4.28	5.26	3.99	4.84

Source: Company Annual Fillings

H.B. Fuller's increase in debt to asset ratio starting 2017 can be attributed to the debt borrowed in conjunction with the Company's acquisition of Royal Adhesives in 2017. The Company's debt to asset ratio in 2019 is 0.69 compared to the benchmark of 0.80. Ferro Corp, on the other hand, is highly volatile. Ferro Corp relied heavily on long-term debt over the past five-year period.

While Ferro Corp's debt to asset ratio continues to increase, H.B Fuller's ratio has since improved gradually and is only 0.69 for 2019. Decreases in long-term debt can be attributed to management's accelerated debt deleverage plan with total debt paydown of \$268 million in 2019. The increase in debt to equity ratio starting 2017 is also a byproduct of the recent acquisition. Ferro Corp is slightly superior when it comes to times interest earned and fixed charge coverage. The fixed charge coverage measures a company's ability to meet all fixed obligations rather than just interest. Ferro Corp's higher ratio can be directly attributed to its adequate cash reserve. While both companies have been aggressive in financing their growth with debt over the past five-years, H.B. Fuller is doing a much better job in managing their debt through proper cash management, working capital improvements, and divestment of non-core business.

Liquidity Ratios

Typically, small and mid-sized manufacturing companies have current ratios between 1.50 and 2.50 and have quick ratios between 0.5 and 1.50. H.B Fuller seems to be in-line with industry benchmarks.

Table 6. Liquidity Ratios

Ratios	2019	2018	2017	2016	2015
Current Ratio	1.91	1.99	2.27	2.07	2.29
Benchmark - FOE	2.31	2.30	2.32	2.37	2.54
Quick Ratio	1.12	1.17	1.32	1.26	1.38

Benchmark - FOE	1.62	1.07	1.18	1.24	1.33
Cash Ratio	0.21	0.28	0.39	0.36	0.34
Benchmark - FOE	0.25	0.27	0.18	0.19	0.27

Source: Company Annual Filings

H.B. Fuller's current ratio decreased to 1.91 in 2019 compared to 1.99 in 2018. The current ratio averaged at 2.11 for the five-year period. The decrease in the Company's quick ratio is can be attributed to the lower numbers of cash on hand. Ferro Corp's current ratio is slightly healthier and averaged 2.37 over the five-year period. However, it is important to note management's concerns on restrictive covenants in the Company's credit facilities that could affect liquidity and its strategic initiatives.

H. B Fuller's total cash and cash equivalents as of November 30, 2019 were \$112.2 million compared to \$150.8 million as of December 1, 2018.Changes in working capital can be attributed to lower net revenue and lower trade receivables compared to prior years. The relatively comparable liquidity ratios compared to the industry benchmark, suggest that the Company has the ability to meet its short-term debt obligations.

Profitability Ratios

In fiscal 2018, H.B. Fuller saw a tax benefit as a result of the US Tax Cuts and Jobs Act of 2017, which lowered the tax rate to 21 percent for corporations. H.B Fuller's gross profit margin increased to 27.85 percent compared to 27.52 percent in 2018. This improvement can be attributed to the lower raw material cost and increased product pricing. A combination of foreign currency exchange rates, divesture, and general economic and industry slowdowns negatively impacted in net revenue in 2019. On the other hand, Ferro Corp's gross profit decreased \$30.9 million compared to 2018. This decrease is primarily attributable to decreases across its business segments in net sales during the year ended

December 31, 2019. Return on Equity for both companies show massive fluctuations over the five-year period. Ferro Corp reported a net loss of \$20.8 million in 2016.

Table 7. Profitability Ratios

Ratios	2019	2018	2017	2016	2015
Gross Margin	27.85 %	27.52 %	26.16 %	29.11 %	27.26 %
Benchmark - FOE	30.32%	28.28%	29.80%	30.67%	28.05%
Return on Equity	10.70 %	14.86 %	5.58 %	13.23 %	10.07 %
Benchmark - FOE	2.00%	20.98%	16.20%	-	20.11%
Return on Assets	3.10 %	3.91 %	1.14 %	5.68 %	4.04 %
Benchmark - FOE	1.93%	4.47%	3.43%	3.47%	8.32%

Source: Company Annual Filings

H.B Fuller's Return on assets decreased to 3.10 percent compared to 3.91 percent in 2018. The downward trend starting in 2017 is a directly attributed of two main factors, lower annual net income and the higher leverage as a result of the recent acquisition. H.B Fuller invested more than \$60 million in capital expenditures in 2019. In addition, management expect 2020 capital expenditures to be approximately \$85.0 million. Fluctuations in the Company's earnings and business cycle massively impacted its return on asset. However, I predict that these will gradually improve as the businesses adjusts to its new restructuring plans.

Cash Conversion Cycle

The Company's cash conversion cycle averaged at 81 days for the five-year period. 2019 figures show improvement and is the lowest within the five-year range. The main contributor of this improvement is days payable outstanding. This increase can be attributed to an increase in trade payables in 2019. As of November 30, 2019, management indicated that the company is in compliance with all covenants of its contractual obligations and that fluctuations between the years primarily relate to the timing of payments and extension of payment terms globally.

Table 8. Cash Conversion Cycle

Days	2019	2018	2017	2016	2015
Sales Outstanding	63	60	77	63	66
Benchmark - FOE	49	69	93	83	79
Inventory Outstanding	59	59	77	61	60
Benchmark - FOE	160	107	103	95	81
Payables Outstanding	52	45	58	40	43
Benchmark - FOE	71	81	79	59	57
Cash Conversion Cycle	70	74	96	84	83
Benchmark - FOE	137	96	117	119	103

Source: Company Annual Filings

The high days payable outstanding indicated that the firm was using the available cash for short-term investments and increase their working capital and cash flow. A lower cycle is often indication of better management. Additionally, Ferro Corp's high inventory days negatively affects their cash conversion cycle. Ferro Corp experienced weaker demand in certain end markets and geographic regions in 2019 which directly attributed to the increase in days inventory outstanding. Overall, the H.B. Fuller is in line with industry benchmarks. However, it is important to note that the Company operates in a broad industry and industry comparisons are marginally useful. Even so, it might be useful for management to reassess policies surrounding payables and receivables to shorten its cash conversion cycle.

Income Statement and Balance Sheet Conclusions

Despite a decrease in sales and gross profit, overall, the Company achieved solid financial performance in 2019. Key financial results and transactions for the fiscal year is as follows:

- Net revenue decreased 4.7 percent from 2018. This decrease can be attributed to a 3.3 percent decrease due to currency fluctuations, a 0.3 percent decrease due to the divesture of the surfactants and thickeners business, and a 2.1 percent decrease in

sales volume. In addition, the Company's operating segments have historically had lower net revenue in winter months, which can be attributed to international holidays and a seasonal decline in construction and consumer spending

- Gross profit in 2019 decreased 2.6 percent and gross profit margin increased to 27.9 percent from 27.2 percent in 2018. This increase is primarily due to favorable product pricing and lower raw material costs. Positive drivers of growth were partially offset by lower sales volumes.
- Diluted earnings per share was \$2.52 compared to \$3.29 in 2018. The decrease in earnings per share is primarily due to lower net revenue and higher income tax expense. The decrease was partially offset by lower operating cost and the gain of sale of the surfactants and thickeners business.

Cash Management Conclusions

Operating Activities

Changes in net working capital including trade receivables, inventory and trade payables accounted for an increase of cash of \$5.5 million, a use of cash of \$31.1 million and an increase of cash of \$8.9 million in 2019, 2018 and 2017, respectively. Total cash and cash equivalents as of November 30, 2019 were \$112.2 million compared to \$150.8 million as of December 1, 2018. The cash flows generated from operating activities suggest that the Company will be able to meet their ongoing liquidity and capital expenditure needs.

Investing Activities

Purchases of property plant and equipment were \$62.0 million in 2019, \$68.3 million in 2018, and \$54.9 million in 2017. The higher purchases in 2019 and 2018 compared to 2017 to the Company's acquisitions in 2017. Proceeds from the sale of

property, plant and equipment were \$11.1 million in 2019 compared to \$2.9 million in 2018 and \$0.7 million in 2017. The higher proceeds in 2019 can be attributed to the gain on the sale of certain properties.

Financing Activities

Total long and short-term debt was \$1,979.1 million as of November 30, 2019 and \$2,247.5 million as of December 1, 2018. The Company repaid \$288.6 million and \$185.8 million of long-term debt in 2019 and 2018 respectively. This payment is in conjunction of the Royal Adhesives acquisition. Cash generated from the exercise of stock options and repurchases of common stock were \$10.9 million and 3.0 million in 2019 respectively. Cash paid for dividends increased to \$32.4 million in 2019. The Company has an excellent historical dividend payout ratio. In addition, the Company recently announced that it will increase in quarterly cash dividends to shareholders, payable on April 30, 2020.

Overall, H.B Fuller has performed adequately in the context of its industry and market factors, considering recent strategic changes and challenging global macroeconomic conditions. The Company saw a massive restructuring that realigned the business into three global business units as of December 1, 2019. The sale of the surfactants, thickeners and dispersants business negatively impacted revenues by 0.8 percent, while organic revenue, which excludes impacts from foreign currency and divestitures, was down 0.9 percent versus last year. Despite these factors, relatively high operating cash flow in 2019 enabled debt pay down of \$268 million, exceeding the Company's initial 2019 paydown target of \$200 million by 34.0 percent.

Looking forward, taking the adhesives and sealants industry growth prospect into consideration, the Company can expect an increase in demand for their products which

result in an increase in sales volume. With expected cost savings as a result of the realignment of \$25 to \$35 million by 2021, investing in high-growth potential market savings, and a sound management, I believe that H.B Fuller is well positioned to grow profitably in 2020 and beyond.

VALUATION

Summarized Cash Flow Forecast

Annual free cash flow (FCF) for the five-year discrete time period of the company was calculated using the valuation template. Annual FCF components that are relevant for the forecast include, annual sales, annual cost of goods sold as a percentage of sales, annual operating expense and annual fixed asset purchases. Relevant annual FCF components were estimated based on the qualitative and quantitative analysis of H.B. Fuller.

H.B. Fuller reported a decrease in net revenue of 2.7 percent in 2019 compared to 2018. This decrease was due to a combination of decrease in sales volume, divestiture of non-core business, and currency fluctuations. Annual sales were forecasted based on historical annual sales and relevant qualitative and quantitative analysis. In the model, two different stages of growth rates are used to project the Company's future cash flows. The first stage may have a positive, negative, or volatile growth rate and will last for a finite period, whereas the second stage is assumed to have a stable growth rate for the rest of the life of the company. Generally, the first stage of growth is higher than the second stage as growth rates will stabilize gradually over a period of time in multiple stages. To determine the short-term growth rate, I analyzed free cash flow from the previous estimates or reported value.

Despite recent trends, I am predicting that sales will improve and that the negative growth is associated to restructuring expenses. Taking these factors into consideration, I

project the short-term sales growth rate to be 6 percent for the next few years. While the industry it operates in is expected to register robust growth over the next few years, external factors such as the global economy, should not be overlooked. At minimum the annual FCF annual growth rate will equal the annual nominal gross domestic product GDP growth rate, which is usually between four to five percent. Based on historical sales growth and factors mentioned previously, I am predicting a long-term growth rate of 4 percent. My projections are in line with the Company, as management predicted a 3 to 5 percent annual revenue growth. I forecasted the cost of goods sold to sales rate to be in line with the five-year average of 72.4 percent due to statements made by management in their most recent quarterly report stating that pricing in the commodities market has been stable and they have negotiated better pricing in their vendor contracts. In addition, annual fixed asset purchases were forecasted based on management estimation of 2020 capital expenditures of approximately \$85.0 million. Overall, assumptions used reflect a conservative valuation

H.B. Fuller's restructuring plan focuses on accelerating profitable growth. The Company has completed significant steps in this realignment initiative by finalizing the new structure and leadership teams, establishing clear operational plans for 2020, reducing costs in supporting functional areas, and investing resources in market segments with the highest growth potential

WACC Derivation

A company's Weighted Average Cost of Capital (WACC) is often used in financial modeling as the discount rate in calculating the net present value of a business. The purpose of WACC is to determine the cost of each part of the company's capital structure based on the proportion of its equity, debt, and preferred stock. Generally, a company's assets are financed by either debt or equity. The WACC is the average of

these sources of financing, each of which is weighted by its respective use. The percentage of common stock and interest-bearing debt in the capital structure are calculated. The market value of debt is typically difficult to calculate, therefore the book value of debt is used as a proxy for debt market capitalization. When preferred stock is used, the WACC formula is adjusted by the preferred stock percentage in the capital structure and by the required rate of return for preferred stock. However, since H.B. Fuller no preferred stock shares outstanding at the end of fiscal 2019, this adjustment is ignored. The WACC calculation consists of market value of equity, market value of debt, cost of equity, cost of debt, and the corporate tax rate.

This valuation estimates WACC using the Capital Asset Pricing Model (CAPM) model. The CAPM model is used to estimate the cost of shareholder equity. The CAPM formula requires three key parts, risk-free rate of return, market rate of return, and beta. Here, the Beta is a measure of a stock's volatility or risk as a regression of the company's stock price. A beta of 1.0 indicates that a company's common stock price moves in tandem with stock prices in the market as a whole. While a beta greater than one indicates that a company's common stock price increases more than stock prices in the market as whole and vice versa. Betas for publicly traded stocks are published and can also be calculated.

The calculations were done with the following assumptions. First, a 5-year monthly beta of 1.68 retrieved from Yahoo Finance was used in the WACC calculation. Parameters such as estimation period, return interval, estimate returns, and market index are required in setting up an estimation of a company's beta. Here, a five-year time horizon is used, with a monthly return interval using the stock's closing prices.

Additionally, the S&P 500 market index was used to estimate returns on the index for each interval for the period.

Next, a 10-year treasury bond average annual rate of 4.85 percent is used as the risk-free rate percent. The expected market return of 9.92 percent was derived from S&P 500 average annual return from 1928 through 2019. The S&P 500 index was used even though H.B. Fuller is considered is listed on the Russell 2000 and is considered a small-cap stock. This is because the market rate of return represents, among other things, the opportunity cost for investors who typically look across all firms for the highest investment return. This brings us to an equity risk premium of 5.07 percent. The cost of debt was calculated by adding the risk-free rate to H.B. Fuller's spread bond rating of 2.0 percent.

Additionally, the corporate income tax rate decreased to 21.0 percent after the passage of the U.S. Tax Reform. However, an adjusted tax rate of 26.0 percent is used in my valuation calculations. Which is in line with company estimates as management indicated that the company's core tax rate, excluding the impact of discrete items, is expected to be between 26 percent and 28 percent. Given the factors and assumptions discussed above, I determined H.B Fuller's WACC to be 10.34 percent.

STOCK RECCOMENDATION

Main information, figures, and estimates were gathered from H.B Fuller's annual financial reports, historical and other relevant industry information, as well as available public information. Data used in the analysis was taken from Mergent Online, Yahoo Finance, and Electronic Data Gathering, Analysis, and Retrieval (EDGAR). Using the corporate valuation model, discounting expected free cash flows at the WACC, I estimated

that H.B. Fuller's stock price is at USD 30.96 per share as of April 1st, 2020, which is below the current price of USD 32.58. Given the small difference between the intrinsic valuation and the current market value. I will suggest a HOLD recommendation on the stock of the company.

APPENDIX A: SUMMARIZED HISTORICAL FINANCIAL STATEMENTS

Fuller (HB) Company (NYS: FUL) Summarized Income Statement					
(In thousands of USD, except share and per share amounts)	11/30/2019	12/01/2018	12/02/2017	12/03/2016	11/28/2015
Net revenue	\$2,897,000	\$3,041,002	\$ 2,306,043	\$2,094,605	\$2,083,660
Cost of sales	2,090,078	2,204,108	1,702,873	1,484,802	1,515,617
Gross profit	806,922	836,894	603,170	609,803	568,043
Selling, general & administrative expenses	580,928	582,132	477,030	407,638	397,558
Total other income (expense), net	37,943	1,184	(23,740)	(7,549)	(2,465)
Interest expense	103,287	110,994	43,701	27,359	25,021
Interest income	12,178	11,774	-	-	-
Income (loss) before income taxes	172,828	156,726	58,699	167,425	138,345
Income tax benefit (expense)	49,408	(6,356)	9,086	50,436	55,855
Income from equity method investments	7,424	8,150	8,677	7,393	5,907
Net income (loss) including non-controlling interests	130,844	171,232	58,290	124,382	87,097
Net income (loss) attributable to non-controlling interests	(27)	(24)	(48)	(254)	(417)
Net income attributable to H.B. Fuller	\$ 130,817	\$ 171,208	\$ 58,242	\$ 124,128	\$ 86,680
Year end shares outstanding	51,241	50,733	50,389	50,141	50,074
EPS attributable to H.B. Fuller common stockholders:					
Basic	\$ 2.57	\$ 3.38	\$ 1.16	\$ 2.48	\$ 1.72
Diluted	\$ 2.52	\$ 3.29	\$ 1.13	\$ 2.42	\$ 1.69
Weighted-average common shares outstanding:					
Basic	50,920	50,591	50,370	50,136	50,274
Diluted	51,983	51,975	51,619	51,270	51,393
Dividends declared per common share	\$ 0.64	\$ 0.62	\$ 0.59	\$ 0.55	\$ 0.51

Ferro Corp (NYS: FOE) Summarized Income Statement					
(In thousands of USD, except share and per share amounts)	12/31/2019	12/31/2018	12/31/2017	12/31/2016	12/31/2015
Net sales	\$1,018,366	\$1,612,408	\$1,396,742	\$1,145,292	\$1,075,341
Cost of sales	709,550	1,156,475	980,521	794,075	773,661
Gross profit	308,816	455,933	416,221	351,217	301,680
Selling, general & administrative expenses	212,485	278,566	258,604	241,702	216,899
Restructuring & impairment charges	10,955	13,295	11,409	15,907	9,655
Interest expense	24,302	33,371	27,754	21,547	15,163
Interest earned	3,325	674	901	630	363
Foreign currency gains (losses), net	(9,166)	(8,187)	(6,554)	(12,906)	(4,495)
Gains (losses) on extinguishment of debt	-	(3,226)	(3,905)	-	-
Miscellaneous income (expense), net	(11,722)	(15,970)	1,622	2,660	1,048
Income (loss) before taxes	43,511	103,992	110,518	62,445	54,783
Income tax expense (benefit)	8,119	23,046	52,750	17,868	(45,100)
Net income (loss) from continuing operations	35,392	80,946	57,768	44,577	99,883
Income (loss) from discontinued operations, net of income taxes	(27,977)	-	-	(64,464)	(36,779)
Net income (loss)	7,415	80,946	57,768	(19,887)	63,104
Less: net income attributable to noncontrolling interests	(1,377)	(853)	(714)	(930)	996
Net income (loss) attributable to Ferro Corp common shareholders	\$ 6,038	\$ 80,093	\$ 57,054	\$ (20,817)	\$ 64,100
Year end shares outstanding	82,005	83,000	84,000	83,400	84,000
Weighted-average common shares outstanding:					
Basic	82,083	83,940	83,713	83,298	86,718
Diluted	82,891	85,085	85,156	84,910	88,433
Earnings (loss) per share attributable to Ferro Corporation common shareholders:					
Earnings (loss) per share from continuing operations - basic	\$ 0.41	\$ 0.95	\$ 0.68	\$ 0.52	\$ 1.16
Earnings (loss) per share from discontinued operations - basic	(0.34)	-	-	(0.77)	(0.42)
Net earnings (loss) per share - basic	\$ 0.07	\$ 0.95	\$ 0.68	\$ (0.25)	\$ 0.74
Diluted earnings (loss):					
Earnings (loss) per share from continuing operations - diluted	\$ 0.41	\$ 0.94	\$ 0.67	\$ 0.51	\$ 1.14
Earnings (loss) per share from discontinued operations - diluted	(0.34)	-	-	(0.76)	(0.42)
Net earnings (loss) per share - diluted	\$ 0.07	\$ 0.94	\$ 0.67	\$ (0.25)	\$ 0.72

Fuller (HB) Company (NYS: FUL) Summarized Balance Sheets

(In thousands of USD, except share and per share amounts)	11/30/2019	12/01/2018	12/02/2017	12/03/2016	11/28/2015
Assets					
Cash & cash equivalents	\$ 112,191	\$ 150,793	\$ 194,398	\$ 142,245	\$ 119,168
Trade receivables, net	493,181	485,719	473,700	351,130	364,704
Inventories	337,267	355,563	359,505	247,399	248,504
Other current assets	90,723	95,657	117,389	70,479	68,675
Total current assets	1,033,362	1,087,732	1,144,992	811,253	801,051
Property, plant & equipment, net	629,813	636,549	670,194	515,275	512,860
Goodwill	1,281,808	1,305,171	1,336,684	366,248	354,204
Other intangibles, net	799,399	908,151	1,001,792	205,359	212,993
Other assets	241,352	237,668	206,984	160,119	161,144
Total assets	3,985,734	4,175,271	4,360,646	2,058,254	2,042,252
Liabilities and Equity					
Notes payable	\$ 15,732	\$ 14,770	\$ 31,468	\$ 37,334	\$ 30,757
Current maturities of long-term debt	65,000	91,225	21,515	80,178	22,500
Trade payables	298,869	273,378	268,467	162,964	177,864
Accrued compensation	78,582	78,384	84,903	52,444	52,079
Income taxes payable	23,229	12,578	14,335	7,985	8,970
Other accrued expenses	60,745	75,788	84,225	50,939	57,355
Total current liabilities	\$ 542,157	\$ 546,123	\$ 504,913	\$ 391,844	\$ 349,525
Long-term debt, net of current maturities	1,898,384	2,141,532	-	-	-
Accrued pension liabilities	80,214	70,680	71,205	73,545	76,324
Other liabilities	242,190	264,768	341,581	62,174	69,272
Total liabilities	\$ 2,762,945	\$ 3,023,103	\$ 3,316,626	\$ 1,115,708	\$ 1,164,727
Common stock	51,241	50,733	50,389	50,141	50,074
Additional paid-in capital	130,295	95,940	74,662	59,564	55,522
Retained earnings	1,384,411	1,285,246	1,119,231	1,090,900	994,608
Accumulated other comprehensive income (loss)	(343,600)	(280,152)	(200,655)	(262,729)	(227,284)
Total H.B. Fuller stockholders' equity	1,222,347	1,151,767	1,043,627	937,876	872,920
Non-controlling interest	442	401	393	393	406
Total equity	\$ 1,222,789	\$ 1,152,168	\$ 1,044,020	\$ 938,269	\$ 873,326
Total liabilities and stockholder's equity	\$ 3,985,734	\$ 4,175,271	\$ 4,360,646	\$ 2,053,977	\$ 2,038,053

Ferro Corp (NYS: FOE) Summarized Balance Sheets

(In thousands of USD, except share and per share amounts)	12/31/2019	12/31/2018	12/31/2017	12/31/2016	12/31/2015
Assets					
Cash & cash equivalents	\$ 96,202	\$ 104,301	\$ 63,551	\$ 45,582	\$ 58,380
Accounts receivable, net	135,804	306,882	354,416	259,687	231,970
Inventories	264,622	356,998	324,180	229,847	184,854
Other receivables	69,365	91,143	67,137	37,814	34,088
Other current assets	22,373	23,960	16,448	9,087	15,695
Current assets held-for-sale	294,803	-	-	-	16,215
Total current assets	883,169	883,284	825,732	582,017	553,290
Property, plant & equipment, net	300,005	381,341	321,742	262,026	260,429
Goodwill	172,209	216,464	195,369	148,296	145,669
Intangible assets, net	127,820	184,953	187,616	137,850	106,633
Deferred income taxes	98,714	103,488	108,025	106,454	87,385
Operating leased assets	21,684	-	-	-	-
Other non-current assets	72,021	42,930	43,718	47,126	48,767
Non-current assets held-for-sale	158,999	-	-	-	23,178
Total assets	1,834,621	1,812,460	1,682,202	1,283,769	1,225,351
Liabilities and Equity					
Loans payable & current portion of long-term debt	\$ 8,703	\$ 10,260	\$ 25,136	\$ 17,310	\$ 7,446
Accounts payable	138,830	256,573	211,711	127,655	120,380
Accrued payrolls	27,447	39,989	48,201	35,859	28,584
Accrued expenses & other current liabilities	73,759	77,995	70,151	65,203	54,664
Current liabilities held-for-sale	133,006	-	-	-	7,156
Total current liabilities	381,745	384,817	355,199	246,027	218,230
Long-term debt, less current portion	798,862	811,137	726,491	557,175	466,108
Postretirement & pension liabilities	174,021	173,046	166,680	162,941	148,249
Operating leased non-current liabilities	15,326	-	-	-	-
Other non-current liabilities	56,976	57,611	77,152	62,594	66,990
Non-current liabilities held-for-sale	37,489	-	-	-	1,493
Total liabilities	\$ 1,464,419	\$ 1,426,611	\$ 1,325,522	\$ 1,028,737	\$ 901,070
Common stock	93,436	93,436	93,436	93,436	93,436
Paid-in capital	294,543	298,123	302,158	306,566	314,854
Retained earnings (accumulated deficit)	262,016	255,978	171,744	114,690	135,507
Accumulated other comprehensive income (loss)	(109,376)	(105,361)	(75,468)	(106,643)	(61,318)
Common shares in treasury, at cost	180,243	165,545	147,056	160,936	166,020
Total Ferro Corporation shareholders' equity	360,376	376,631	344,814	247,113	316,459
Noncontrolling interests	9,826	9,218	11,866	7,919	7,822
Total equity	\$ 370,202	\$ 385,849	\$ 356,680	\$ 255,032	\$ 324,281
Total liabilities and stockholder's equity	\$ 1,834,621	\$ 1,812,460	\$ 1,682,202	\$ 1,283,769	\$ 1,225,351

Fuller (HB) Company (NYS: FUL) Summarized Statements of Cash Flows

(In thousands of USD)	11/30/2019	12/01/2018	12/02/2017	12/03/2016	11/28/2015
Operating Activities					
Net income (loss) including non-controlling interests	\$ 130,844	\$ 171,232	\$ 58,290	\$ 124,382	\$ 87,097
Depreciation	67,115	68,636	51,072	49,189	48,305
Amortization	74,091	76,490	36,243	28,495	26,984
Deferred income taxes	(29,028)	(47,446)	(20,936)	5,344	6,645
Income from equity method investments, net of dividends received	(39)	(3,172)	(2,640)	(3,701)	(3,042)
Losses (gains) from sales of assets	(24,104)	-	-	-	-
Share-based compensation	24,003	17,113	17,503	13,344	14,156
Pension & other postretirement benefit plan contributions	(8,063)	(6,558)	(4,704)	(6,572)	(4,645)
Pension & other postretirement benefit plan income (expense)	(11,300)	(14,332)	(6,069)	11,634	(3,572)
Excess tax benefit from share-based compensation	-	-	(2,010)	(1,641)	(1,433)
Non-cash loss (gain) on mark to market adjustment	-	1,126	(4,233)	(6,032)	-
Non-cash charge for the sale of inventories revalued at the date of acquisition	-	-	11,289	528	2,416
Trade receivables, net	(25,632)	(39,429)	(26,826)	1,874	(12,038)
Inventories	19,584	(17,068)	(10,560)	(3,495)	(4,588)
Other assets	(18,316)	(35,184)	(12,986)	(8,383)	11,991
Trade payables	11,553	25,401	44,365	(12,292)	5,794
Accrued compensation	1,342	(306)	12,249	879	5,982
Other accrued expenses	(1,882)	(4,282)	9,809	(5,548)	9,691
Income taxes payable	21,043	4,048	(14,973)	(1,707)	(1,369)
Other liabilities	448	(21,429)	14,685	(20,105)	(1,778)
Other operating activities	37,518	78,472	(8,778)	29,495	22,633
Net cash flows from operating activities	\$ 269,177	\$ 253,312	\$ 140,790	\$ 195,688	\$ 210,529
Investing Activities					
Purchased property, plant & equipment	(61,982)	(68,263)	(54,934)	(63,310)	(58,624)
Purchased businesses, net of cash acquired	(8,292)	3,499	(1,745,415)	(52,547)	(217,572)
Purchased business remaining equity	(9,870)	-	-	-	-
Proceeds from sale of property, plant & equipment	11,133	2,923	672	4,332	5,326
Proceeds from sale of business	70,293	-	-	-	-
Cash received from government grant	8,881	-	-	-	-
Cash outflow related to government grant	(2,758)	-	-	-	-
Net cash flows from investing activities	\$ 7,405	\$ (61,841)	\$ (1,800,927)	\$ (111,525)	\$ (258,821)
Financing Activities					
Proceeds from issuance of long-term debt	-	-	2,856,278	-	357,000
Repayment of long-term debt	(288,600)	(185,750)	(1,079,250)	(22,500)	(211,250)
Payment of debt issuance costs	-	-	(24,207)	-	-
Net proceeds from (payments on) notes payable	1,662	(13,276)	(7,776)	7,746	(2,623)
Dividends paid	(32,357)	(31,124)	(29,612)	(27,518)	(25,683)
Contingent consideration payment	(3,610)	-	-	-	-
Proceeds from stock options exercised	10,885	6,237	17,705	11,269	4,631
Excess tax benefit from share-based compensation	-	-	2,010	1,641	1,433
Purchase of redeemable non-controlling interest	-	-	(3,127)	-	-
Repurchases of common stock	(3,026)	(4,688)	(21,831)	(23,228)	(19,290)
Net cash flows from financing activities	\$ (315,046)	\$ (228,601)	\$ 1,710,190	\$ (52,590)	\$ 104,218
Effect of exchange rate changes on cash & cash equivalents	(138)	(6,475)	2,100	(8,496)	(9,033)
Net change in cash & cash equivalents	(38,602)	(43,605)	52,153	23,077	41,599
Cash & cash equivalents at beginning of year	150,793	194,398	142,245	119,168	77,569
Cash & cash equivalents at end of year	\$ 112,191	\$ 150,793	\$ 194,398	\$ 142,245	\$ 119,168
Supplemental disclosure of cash flow information:					
Cash paid for interest	\$ 107,088	\$ 109,428	\$ 43,790	\$ 29,505	\$ 27,156
Cash paid for income taxes	\$ 37,232	\$ 36,841	\$ 37,986	\$ 46,815	\$ 33,076

Ferro Corp (NYS: FOE) Summarized Statements of Cash Flows

(In Thousands of USD)	12/31/2019	12/31/2018	12/31/2017	12/31/2016	12/31/2015
Operating Activities					
Net income (loss)	\$ 7,415	\$ 80,946	\$ 57,768	\$ (19,887)	\$ 63,104
Loss (gain) on sale of assets & businesses	(916)	164	(852)	(2,764)	1,836
Depreciation & amortization	55,879	53,974	50,085	46,805	41,061
Interest amortization	3,755	3,577	3,496	1,353	1,125
Restructuring & impairment charges	44,702	4,084	7,593	50,868	13,270
Loss (gain) on extinguishment of debt	-	3,226	3,905	-	-
Provision for allowance for doubtful accounts	1,086	681	44	1,383	639
Retirement benefits	9,063	9,221	(6,417)	14,436	(5,986)
Deferred income taxes	(11,826)	(3,720)	23,490	(11,451)	(66,328)
Stock-based compensation	7,406	8,441	11,770	7,245	-
Accounts receivable	(74,444)	19,885	(25,852)	(21,893)	20,208
Inventories	(10,578)	(33,922)	(46,962)	(10,271)	6,562
Other receivables & other current assets	1,204	(1,444)	(7,099)	(3,006)	4,147
Accounts payable	(10,075)	35,887	26,150	1,162	(14,605)
Accrued expenses & other current liabilities	8,016	164	(22,398)	11,626	(23,547)
Other operating activities	(12,977)	1,629	10,069	(2,976)	(3,074)
Net cash flows from operating activities	\$ 17,710	\$ 182,793	\$ 84,790	\$ 62,630	\$ 51,202
Investing Activities					
Capital expenditures for property, plant & equipment & other long-lived assets	(64,970)	(80,619)	(50,552)	(24,945)	(43,087)
Proceeds from sale of equity method investment	-	-	2,268	-	-
Collections of financing receivables	84,567	7,020	-	-	-
Business acquisitions, net of cash acquired	(251)	(74,954)	(131,194)	(129,511)	(202,155)
Other investing activities	1,957	37	567	-	-
Net cash flows from investing activities	\$ 21,303	\$ (148,516)	\$ (178,911)	\$ (150,822)	\$ (244,600)
Financing Activities					
Net borrowings (repayments) under loans payable	45	(19,077)	(19,634)	4,596	(7,261)
Proceeds from revolving credit facility	-	-	15,628	355,743	242,390
Principal payments on revolving credit facility	-	-	(327,183)	(214,188)	(72,390)
Proceeds from term loan facility	-	-	623,827	-	-
Principal payments on term loan facility	-	-	(4,872)	-	-
Principal payments on term loan facility - credit facility	-	(304,060)	-	-	-
Principal payments on term loan facility - amended credit facility	(8,200)	(6,150)	-	-	-
Proceeds from term loan facility - amended credit facility	-	466,075	-	-	-
Proceeds from revolving credit facility - credit facility	-	134,950	-	-	-
Principal payments on revolving credit facility - credit facility	-	(212,950)	-	-	-
Proceeds from revolving credit facility - amended credit facility	227,101	240,035	-	-	-
Principal payments on revolving credit facility - amended credit facility	(227,101)	(240,035)	-	-	-
Principal payments on long-term debt	-	-	(3,971)	-	-
Proceeds from long term debt	-	-	2,700	-	-
Payment of debt issuance costs	-	(3,466)	(12,927)	(711)	-
Acquisition related contingent consideration payment	(5,200)	(9,464)	(1,315)	-	-
Proceeds from exercise of stock options	1,052	764	4,526	1,140	404
Purchase of treasury stock	(25,000)	(28,807)	-	(11,429)	(38,571)
Other financing activities	(1,892)	(8,448)	(3,166)	(154)	(1,846)
Net cash flows from financing activities	\$ (39,195)	\$ 9,367	\$ 108,363	\$ 81,997	\$ 119,726
Effect of exchange rate changes on cash & cash equivalents	283	(2,894)	3,727	(6,603)	(8,448)
Increase (decrease) in cash & cash equivalents	101	40,750	17,969	(12,798)	(82,120)
Cash & cash equivalents at beginning of period	104,301	63,551	45,582	58,380	140,500
Cash & cash equivalents at end of period	\$ 104,402	\$ 104,301	\$ 63,551	\$ 45,582	\$ 58,380
Less: cash & cash equivalents of discontinued operations at end of period	(8,200)	-	-	-	-
Cash & cash equivalents of continuing operations at end of period	\$ 96,202	-	-	-	-
Cash paid during the period for interest	\$ 33,429	\$ 33,910	\$ 26,850	\$ 17,486	\$ 16,188
Cash paid during the period for income taxes	\$ 21,682	\$ 36,789	\$ 25,662	\$ 19,734	\$ 21,364

APPENDIX B: VALUATION, SPREADSHEETS, AND CALCULATIONS

Fuller (HB) Company (NYS: FUL) Valuation					
(in Thousands of USD)	11/30/2020	11/30/2021	11/30/2022	11/30/2023	11/30/2024
Calculating Projected FCF					
Marginal tax rate	39%	39%	39%	39%	39%
Reported income tax expense	621,757	582,680	537,749	494,011	450,433
Taxes reported but not paid	31,716	19,533	18,368	18,521	18,784
Actual taxes paid	590,041	563,146	519,381	475,491	431,649
Plus tax saved due to net interest expenses	42,437	28,917	18,964	9,942	2,927
Minus tax paid on non-operating income	4,598	4,827	5,031	5,243	5,463
Tax on operating income	627,880	587,237	533,313	480,189	429,113
Net operating profit after taxes (NOPAT)	1,080,918	984,706	895,914	811,805	731,242
NOPAT adjusted for extraordinary income	1,080,918	984,706	895,914	811,805	731,242
Operating current assets	1,140,169	1,207,234	1,268,040	1,330,402	1,394,840
Operating current liabilities	562,025	590,051	615,064	640,909	667,828
Net operating working capital	578,144	617,184	652,976	689,493	727,012
Operating long term capital	3,767,964	3,995,748	4,202,758	4,414,829	4,633,702
Operating capital (adjusted for any special asset impairment of accounting changes)	4,346,108	4,612,931	4,855,734	5,104,322	5,360,714
Investment in operating capital	641,130	266,823	242,802	248,588	256,392
Free cash flow (including extraordinary income)	439,788	717,883	653,111	563,217	474,850
Calculating Projected ROIC					
ROIC (NOPAT/ Beginning capital)	29.17%	22.66%	19.42%	16.72%	14.33%
Projected Growth Rates					
Growth in Sales	20.00%	4.99%	4.24%	4.20%	4.20%
Growth in operating capital	17.30%	6.14%	5.26%	5.12%	5.02%
Calculating Value					
WACC	10.34%	10.34%	10.34%	10.34%	10.34%
Assumed long-term return on invested capital					
Horizon value					
Value of operations	3,227,755	2,843,468	2,484,236	2,177,771	1,927,999
Value of operations adjusted for half-year convention	3,390,452	2,986,795	2,609,456	2,287,543	2,025,181
Value of investments	133,344	139,993	145,928	319,786	714,690
Total value of firm	3,523,796	3,126,789	2,755,384	2,607,328	2,739,872
Value of all debt, preferred stock, and other nonoperating liabilities	1,789,722	1,166,553	603,202	297,735	308,429
Value of equity	1,734,075	1,960,236	2,152,182	2,309,593	2,431,443
Number of shares	51,241	51,241	51,241	51,241	51,241
Estimated price per share, end of fiscal year	\$ 33.84	\$ 38.26	\$ 42.00	\$ 45.07	\$ 47.45

FinSAS Version 2003051213	Vertical Analysis				
Company:	H.B. Fuller				
Analyst:	Kevin				
Most Recent Year Available:	2019				
Years Available for:					
Income Statement (1-5)	5				
Balance Sheet (1-5)	5				
=====					
INCOME STATEMENT	2019	2018	2017	2016	2015

Net Sales	100.00%	100.00%	100.00%	100.00%	100.00%
Less: Cost of Goods Sold	72.15%	72.48%	73.84%	70.89%	72.74%

Gross Profit	27.85%	27.52%	26.16%	29.11%	27.26%
Other Operating Revenue	0.00%	0.00%	0.00%	0.00%	0.00%
Less: Operating Expenses	20.05%	19.14%	20.69%	19.46%	19.08%

Operating Income	7.80%	8.38%	5.47%	9.65%	8.18%
Less: Interest Expense (no capitalized interest)	3.57%	3.65%	1.90%	1.31%	1.20%
Other Income (Expenses)	1.73%	0.43%	-1.03%	-0.36%	-0.12%
Unusual or Infreq. Item; Gain (Loss)	0.00%	0.00%	0.00%	0.01%	-0.22%
Equity in Earnings of Assoc.;					
Profit (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%

Income before Taxes	5.97%	5.15%	2.55%	7.99%	6.64%
Less:Taxes Related to Operations	1.71%	-0.21%	0.39%	2.41%	2.68%

N.I. before Min. Ern.	4.26%	5.36%	2.15%	5.59%	3.96%
Minority Share of Earnings (Loss)	0.26%	0.27%	0.37%	0.34%	0.26%

N.I. before Nonrecurring Items	4.52%	5.63%	2.53%	5.93%	4.22%
Oper. of Discontinued Segment; Income (Loss)	0.00%	0.00%	0.00%	0.00%	-0.06%
Disposal of Discont. Segment; Gain (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%
Extraordinary Item; Gain (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%
Cum. Effect of Acct Change; Gain (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%

Net Income (Loss)	4.52%	5.63%	2.53%	5.93%	4.16%
=====					
BALANCE SHEET	2019	2018	2017	2016	2015

ASSETS					
Current Assets:					
Cash	2.81%	3.61%	4.46%	6.91%	5.84%
Marketable Securities	0.00%	0.00%	0.00%	0.00%	0.00%
Gross Receivables	12.64%	11.97%	11.13%	17.66%	18.44%
Less: Allowance for Bad Debts	0.27%	0.34%	0.27%	0.60%	0.58%
Net Trade Receivables	12.37%	11.63%	10.86%	17.06%	17.86%
Inventories	8.46%	8.52%	8.24%	12.02%	12.17%
Prepaid Expenses	0.00%	0.00%	0.00%	0.00%	0.00%
Other Current Assets	2.28%	2.29%	2.69%	3.42%	3.36%

Total Current Assets	25.93%	26.05%	26.26%	39.41%	39.22%
Long-Term Assets:					
Net Tangible (Fixed) Assets (other than construction in progress)	14.44%	14.30%	14.08%	22.58%	22.94%
Construction in Progress	1.36%	0.95%	1.29%	2.46%	2.17%
Intangible Assets	52.22%	53.01%	53.63%	27.77%	27.77%
Investments	0.00%	0.00%	0.00%	0.00%	0.00%
Other Nonoperating Assets	0.00%	0.00%	0.00%	0.00%	0.00%
Other Operating Assets	6.06%	5.69%	4.75%	7.78%	7.89%

Total Long-Term Assets	74.07%	73.95%	73.74%	60.59%	60.78%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%
LIABILITIES AND EQUITY					
Current Liabilities:					
Accounts Payable	7.50%	6.55%	6.16%	7.92%	8.71%
Short Term Loans	0.39%	0.35%	0.72%	1.81%	1.51%
Current Maturity of L.t. Debt	1.63%	2.18%	0.49%	3.90%	1.10%
Other Current Liabilities	4.08%	3.99%	4.21%	5.41%	5.80%

Total Current Liabilities	13.60%	13.08%	11.58%	19.04%	17.11%
Long-Term Liabilities:					
Long-term Debt	47.63%	51.29%	55.01%	28.57%	32.79%
Reserves	0.00%	0.00%	0.00%	0.00%	0.00%
Deferred Liabilities	0.00%	0.00%	0.00%	0.00%	0.00%
Minority Interest	0.00%	0.00%	0.00%	0.00%	0.00%
Redeemable Preferred	0.00%	0.00%	0.00%	0.00%	0.00%
Other Long-term Liabilities	8.09%	8.03%	9.47%	6.59%	7.13%

Total Long-term Liabilities	55.72%	59.33%	64.48%	35.17%	39.92%
Total Liabilities	69.32%	72.40%	76.06%	54.21%	57.03%
Shareholders' Equity:					
Preferred Equity	0.00%	0.00%	0.00%	0.00%	0.00%
Common Equity-incl. Ret. Ern.	30.68%	27.60%	23.94%	45.59%	42.76%

Total Equity	30.68%	27.60%	23.94%	45.59%	42.76%
Total Liabilities and Equity	100.00%	100.00%	100.00%	99.79%	99.79%
=====					

FinSAS Version 2003051213	Vertical Analysis				
Company:	Ferro Corp				
Analyst:	Kevin				
Most Recent Year Available:	2019				
Years Available for:					
Income Statement (1-5)	5				
Balance Sheet (1-5)	5				
=====					
INCOME STATEMENT	2019	2018	2017	2016	2015

Net Sales	100.00%	100.00%	100.00%	100.00%	100.00%
Less: Cost of Goods Sold	69.68%	71.72%	70.20%	69.33%	71.95%

Gross Profit	30.32%	28.28%	29.80%	30.67%	28.05%
Other Operating Revenue	0.00%	0.00%	0.00%	0.00%	0.00%
Less: Operating Expenses	20.87%	17.28%	18.51%	21.10%	20.17%

Operating Income	9.46%	11.00%	11.28%	9.56%	7.88%
Less: Interest Expense (no capitalized interest)	2.06%	2.03%	1.92%	1.83%	1.38%
Other Income (Expenses)	-1.15%	-0.99%	0.12%	0.23%	0.10%
Unusual or Infreq. Item; Gain (Loss)	-1.98%	-1.33%	-1.29%	-2.52%	-1.32%
Equity in Earnings of Assoc.;					
Profit (Loss)	0.00%	-0.20%	-0.28%	0.00%	0.00%

Income before Taxes	4.27%	6.45%	7.91%	5.45%	5.29%
Less:Taxes Related to Operations	0.80%	1.43%	3.78%	1.56%	-4.19%

N.I. before Min. Ern.	3.48%	5.02%	4.14%	3.89%	9.48%
Minority Share of Earnings (Loss)	-2.75%	0.00%	0.00%	-5.63%	-3.42%

N.I. before Nonrecurring Items	0.73%	5.02%	4.14%	-1.74%	6.06%
Oper. of Discontinued Segment; Income (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%
Disposal of Discont. Segment; Gain (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%
Extraordinary Item; Gain (Loss)	0.00%	0.00%	0.00%	0.00%	0.00%
Cum. Effect of Acct Change; Gain (Loss)	-0.14%	-0.05%	-0.05%	-0.08%	0.09%

Net Income (Loss)	0.59%	4.97%	4.08%	-1.82%	6.16%
=====					
BALANCE SHEET	2019	2018	2017	2016	2015

ASSETS					
Current Assets:					
Cash	5.24%	5.75%	3.78%	3.55%	4.76%
Marketable Securities	0.00%	0.00%	0.00%	0.00%	0.00%
Gross Receivables	7.50%	17.24%	21.53%	20.23%	19.57%
Less: Allowance for Bad Debts	0.10%	0.30%	0.46%	0.00%	0.64%
Net Trade Receivables	7.40%	16.93%	21.07%	20.23%	18.93%
Inventories	14.42%	19.70%	19.27%	17.90%	15.09%
Prepaid Expenses	0.00%	0.00%	0.00%	0.00%	0.99%
Other Current Assets	21.07%	6.35%	4.97%	3.65%	5.39%

Total Current Assets	48.14%	48.73%	49.09%	45.34%	45.15%
Long-Term Assets:					
Net Tangible (Fixed) Assets (other than construction in progress)	16.35%	21.04%	19.13%	20.41%	21.25%
Construction in Progress	0.00%	0.00%	0.00%	0.00%	0.00%
Intangible Assets	16.35%	22.15%	22.77%	22.29%	20.59%
Investments	0.00%	0.00%	0.00%	0.00%	0.00%
Other Nonoperating Assets	12.59%	2.37%	2.60%	3.67%	5.87%
Other Operating Assets	6.56%	5.71%	6.42%	8.29%	7.13%

Total Long-Term Assets	51.86%	51.27%	50.91%	54.66%	54.85%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%
LIABILITIES AND EQUITY					
Current Liabilities:					
Accounts Payable	7.57%	14.16%	12.59%	9.94%	9.82%
Short Term Loans	4.02%	4.30%	4.17%	5.08%	4.46%
Current Maturity of L.t. Debt	0.47%	0.57%	1.49%	1.35%	0.61%
Other Current Liabilities	8.75%	2.21%	2.87%	2.79%	2.92%

Total Current Liabilities	20.81%	21.23%	21.12%	19.16%	17.81%
Long-Term Liabilities:					
Long-term Debt	43.54%	44.75%	43.19%	43.40%	38.04%
Reserves	0.00%	0.00%	0.00%	0.00%	0.00%
Deferred Liabilities	0.00%	0.00%	0.00%	0.00%	0.00%
Minority Interest	0.00%	0.00%	0.00%	0.00%	0.00%
Redeemable Preferred	0.00%	0.00%	0.00%	0.00%	0.00%
Other Long-term Liabilities	15.47%	12.73%	14.49%	17.57%	17.69%

Total Long-term Liabilities	59.01%	57.48%	57.68%	60.97%	55.73%
Total Liabilities	79.82%	78.71%	78.80%	80.13%	73.54%
Shareholders' Equity:					
Preferred Equity	0.00%	0.00%	0.00%	0.00%	0.00%
Common Equity-incl. Ret. Ern.	20.18%	21.29%	21.20%	19.87%	26.46%

Total Equity	20.18%	21.29%	21.20%	19.87%	26.46%
Total Liabilities and Equity	100.00%	100.00%	100.00%	100.00%	100.00%
=====					

FinSAS Version 2003051213		Horizontal Analysis			
Company:		H.B. Fuller			
Analyst:		Kevin			
Most Recent Year Available:		2019			
Years Available for:					
Income Statement (1-5)		5			
Balance Sheet (1-5)		5			
=====					
INCOME STATEMENT					
	2019	2018	2017	2016	2015

Net Sales	139.03%	145.95%	110.67%	100.53%	100.00%
Less: Cost of Goods Sold	137.90%	145.43%	112.36%	97.97%	100.00%

Gross Profit	142.05%	147.33%	106.18%	107.35%	100.00%
Other Operating Revenue	#N/A	#N/A	#N/A	#N/A	#N/A
Less: Operating Expenses	146.12%	146.43%	119.99%	102.54%	100.00%

Operating Income	132.56%	149.43%	73.99%	118.58%	100.00%
Less: Interest Expense (no capitalized interest)	412.80%	443.60%	174.66%	109.34%	100.00%
Other Income (Expenses)	-2033.31%	-525.68%	963.08%	306.25%	100.00%
Unusual or Infreq. Item; Gain (Loss)	0.00%	0.00%	0.00%	-3.61%	100.00%
Equity in Earnings of Assoc.;					
Profit (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A

Income before Taxes	124.93%	113.29%	42.43%	121.02%	100.00%
Less:Taxes Related to Operations	88.46%	-11.38%	16.27%	90.30%	100.00%

N.I. before Min. Ern.	149.62%	197.70%	60.14%	141.82%	100.00%
Minority Share of Earnings (Loss)	134.74%	148.01%	157.18%	130.04%	100.00%

N.I. before Nonrecurring Items	148.69%	194.60%	66.20%	141.09%	100.00%
Oper. of Discontinued Segment; Income (Loss)	0.00%	0.00%	0.00%	0.00%	100.00%
Disposal of Discont. Segment; Gain (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A
Extraordinary Item; Gain (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A
Cum. Effect of Acct Change; Gain (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A

Net Income (Loss)	150.92%	197.52%	67.19%	143.20%	100.00%
=====					
BALANCE SHEET					
	2019	2018	2017	2016	2015

ASSETS					
Current Assets:					
Cash	94.15%	126.54%	163.13%	119.37%	100.00%
Marketable Securities	#N/A	#N/A	#N/A	#N/A	#N/A
Gross Receivables	133.79%	132.71%	128.88%	96.51%	100.00%
Less: Allowance for Bad Debts	89.82%	118.10%	98.12%	103.51%	100.00%
Net Trade Receivables	135.23%	133.18%	129.89%	96.28%	100.00%
Inventories	135.72%	143.08%	144.67%	99.56%	100.00%
Prepaid Expenses	#N/A	#N/A	#N/A	#N/A	#N/A
Other Current Assets	132.10%	139.29%	170.93%	102.63%	100.00%

Total Current Assets	129.00%	135.79%	142.94%	101.27%	100.00%
Long-Term Assets:					
Net Tangible (Fixed) Assets (other than construction in progress)	122.83%	127.39%	131.00%	99.19%	100.00%
Construction in Progress	122.56%	89.53%	127.23%	114.03%	100.00%
Intangible Assets	366.93%	390.22%	412.29%	100.78%	100.00%
Investments	#N/A	#N/A	#N/A	#N/A	#N/A
Other Nonoperating Assets	#N/A	#N/A	#N/A	#N/A	#N/A
Other Operating Assets	149.77%	147.49%	128.45%	99.36%	100.00%

Total Long-Term Assets	237.86%	248.75%	259.08%	100.47%	100.00%
Total Assets	195.16%	204.44%	213.52%	100.78%	100.00%
LIABILITIES AND EQUITY					
Current Liabilities:					
Accounts Payable	168.03%	153.70%	150.94%	91.62%	100.00%
Short Term Loans	51.15%	48.02%	102.31%	121.38%	100.00%
Current Maturity of L.t. Debt	288.89%	405.44%	95.62%	356.35%	100.00%
Other Current Liabilities	137.29%	140.83%	154.95%	94.06%	100.00%

Total Current Liabilities	155.11%	156.25%	144.46%	112.11%	100.00%
Long-Term Liabilities:					
Long-term Debt	283.51%	319.82%	358.26%	87.83%	100.00%
Reserves	#N/A	#N/A	#N/A	#N/A	#N/A
Deferred Liabilities	#N/A	#N/A	#N/A	#N/A	#N/A
Minority Interest	#N/A	#N/A	#N/A	#N/A	#N/A
Redeemable Preferred	#N/A	#N/A	#N/A	#N/A	#N/A
Other Long-term Liabilities	221.44%	230.40%	283.51%	93.22%	100.00%

Total Long-term Liabilities	272.42%	303.85%	344.91%	88.80%	100.00%
Total Liabilities	237.22%	259.55%	284.76%	95.79%	100.00%
Shareholders' Equity:					
Preferred Equity	#N/A	#N/A	#N/A	#N/A	#N/A
Common Equity-incl. Ret. Ern.	140.02%	131.93%	119.55%	107.44%	100.00%

Total Equity	140.02%	131.93%	119.55%	107.44%	100.00%
Total Liabilities and Equity	195.57%	204.87%	213.96%	100.78%	100.00%
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FinSAS Version 2003051213	Horizontal Analysis				
Company:	Ferro Corp				
Analyst:	Kevin				
Most Recent Year Available:	2019				
Years Available for:					
Income Statement (1-5)	5				
Balance Sheet (1-5)	5				
=====					
INCOME STATEMENT	2019	2018	2017	2016	2015

Net Sales	94.70%	149.94%	129.89%	106.51%	100.00%
Less: Cost of Goods Sold	91.71%	149.48%	126.74%	102.64%	100.00%

Gross Profit	102.37%	151.13%	137.97%	116.42%	100.00%
Other Operating Revenue	#N/A	#N/A	#N/A	#N/A	#N/A
Less: Operating Expenses	97.96%	128.43%	119.23%	111.44%	100.00%

Operating Income	113.62%	209.21%	185.91%	129.17%	100.00%
Less: Interest Expense (no capitalized interest)	141.74%	220.93%	181.44%	141.33%	100.00%
Other Income (Expenses)	-1118.51%	-1523.85%	154.77%	253.82%	100.00%
Unusual or Infreq. Item; Gain (Loss)	142.20%	151.82%	126.95%	203.63%	100.00%
Equity in Earnings of Assoc.;					
Profit (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A

Income before Taxes	76.50%	182.83%	194.30%	109.79%	100.00%
Less:Taxes Related to Operations	-18.00%	-51.10%	-116.96%	-39.62%	100.00%

N.I. before Min. Ern.	34.71%	79.38%	56.65%	43.71%	100.00%
Minority Share of Earnings (Loss)	76.07%	0.00%	0.00%	175.27%	100.00%

N.I. before Nonrecurring Items	11.37%	124.15%	88.60%	-30.50%	100.00%
Oper. of Discontinued Segment; Income (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A
Disposal of Discont. Segment; Gain (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A
Extraordinary Item; Gain (Loss)	#N/A	#N/A	#N/A	#N/A	#N/A
Cum. Effect of Acct Change; Gain (Loss)	-138.25%	-85.64%	-71.69%	-93.37%	100.00%

Net Income (Loss)	9.12%	120.99%	86.19%	-31.45%	100.00%
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BALANCE SHEET	2019	2018	2017	2016	2015

ASSETS					
Current Assets:					
Cash	164.79%	178.66%	108.86%	78.08%	100.00%
Marketable Securities	#N/A	#N/A	#N/A	#N/A	#N/A
Gross Receivables	57.38%	130.29%	151.09%	108.31%	100.00%
Less: Allowance for Bad Debts	22.56%	70.71%	100.48%	0.00%	100.00%
Net Trade Receivables	58.54%	132.29%	152.79%	111.95%	100.00%
Inventories	143.15%	193.12%	175.37%	124.34%	100.00%
Prepaid Expenses	0.00%	0.00%	0.00%	0.00%	100.00%
Other Current Assets	585.69%	174.40%	126.65%	71.06%	100.00%

Total Current Assets	159.62%	159.64%	149.24%	105.19%	100.00%
Long-Term Assets:					
Net Tangible (Fixed) Assets (other than construction in progress)	115.20%	146.43%	123.54%	100.61%	100.00%
Construction in Progress	#N/A	#N/A	#N/A	#N/A	#N/A
Intangible Assets	118.92%	159.10%	151.80%	113.41%	100.00%
Investments	#N/A	#N/A	#N/A	#N/A	#N/A
Other Nonoperating Assets	321.11%	59.67%	60.77%	65.50%	100.00%
Other Operating Assets	137.78%	118.43%	123.62%	121.82%	100.00%

Total Long-Term Assets	141.57%	138.26%	127.44%	104.42%	100.00%
Total Assets	149.72%	147.91%	137.28%	104.77%	100.00%
LIABILITIES AND EQUITY					
Current Liabilities:					
Accounts Payable	115.33%	213.14%	175.87%	106.04%	100.00%
Short Term Loans	134.93%	142.68%	128.33%	119.28%	100.00%
Current Maturity of L.t. Debt	116.88%	137.79%	337.58%	232.47%	100.00%
Other Current Liabilities	448.95%	111.89%	134.87%	100.33%	100.00%

Total Current Liabilities	174.93%	176.34%	162.76%	112.74%	100.00%
Long-Term Liabilities:					
Long-term Debt	171.39%	174.02%	155.86%	119.54%	100.00%
Reserves	#N/A	#N/A	#N/A	#N/A	#N/A
Deferred Liabilities	#N/A	#N/A	#N/A	#N/A	#N/A
Minority Interest	#N/A	#N/A	#N/A	#N/A	#N/A
Redeemable Preferred	#N/A	#N/A	#N/A	#N/A	#N/A
Other Long-term Liabilities	130.95%	106.42%	112.50%	104.06%	100.00%

Total Long-term Liabilities	158.55%	152.57%	142.10%	114.63%	100.00%
Total Liabilities	162.52%	158.32%	147.11%	114.17%	100.00%
Shareholders' Equity:					
Preferred Equity	#N/A	#N/A	#N/A	#N/A	#N/A
Common Equity-incl. Ret. Ern.	114.16%	118.99%	109.99%	78.65%	100.00%

Total Equity	114.16%	118.99%	109.99%	78.65%	100.00%
Total Liabilities and Equity	149.72%	147.91%	137.28%	104.77%	100.00%
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