



what's next?



1999 Annual Report

**A whole new approach**

to managing our portfolio for profitable growth.



Ferro Corporation is a major global producer of performance materials for manufacturers. We are building on leading market positions as a supplier of coatings for ceramics and metal, electronic materials, pigments, specialty plastic compounds and colors, and polymer additives to create a portfolio of business lines offering outstanding profitable growth potential. We are targeting growth in performance and fine chemicals and electronic materials. Our materials are used traditionally in the markets of building and renovation, major appliances, household furnishings, transportation and industrial products. Headquartered in Cleveland, Ohio, Ferro has operations in 18 countries.

## Financial Highlights

Ferro Corporation and subsidiaries

(dollars in thousands except per share data)

	1999	1998	1997
<b>Operating results</b>			
Net sales	\$ 1,355,283	1,361,844	1,381,280
Net income (loss) <sup>(a)</sup>	\$ 73,015	69,282	(37,277)
<b>Per common share data<sup>(a)(b)</sup></b>			
Basic earnings (loss)	\$ 1.97	1.80	(1.08)
Diluted earnings (loss)	\$ 1.85	1.67	(1.08)
Cash dividends	\$ 0.55	0.495	0.43
<b>Other</b>			
Average shares outstanding <sup>(b)</sup>	35,197,243	36,419,090	38,131,631
Net cash provided by operations	\$ 127,155	80,031	130,283
Return on average shareholders' equity <sup>(a)</sup>	25%	25%	—
Number of holders of common stock (year-end)	2,329	2,257	2,945
Number of employees (year-end)	6,881	6,693	6,851

(a) Included in 1997 results is a pre-tax realignment charge of \$152.8 million, or \$2.52 per common share after taxes. Excluding the realignment charge, the Company recorded net income for 1997 of \$62.7 million, or \$1.44 per diluted common share.

(b) Basic earnings (loss) per share are based on a weighted average of common shares outstanding. Diluted earnings per share reflect the potential dilution of earnings per share assuming that certain stock options whose exercise price is less than the average market price of the stock are exercised and that convertible preferred shares are converted into common shares. Outstanding shares and per share data are adjusted to reflect a 3-for-2 stock split in November 1997.

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# To Our Shareholders



Hector R. Ortino,  
Chairman and Chief Executive Officer

**T**he question on the cover of this annual report is one we ask ourselves continually – what’s next? We fully realize that to stay competitive we need to constantly respond to that question and position ourselves for the future. Accordingly, this letter and annual report focus on how we see Ferro’s future.

But first, it is important to look at what we have accomplished in the four years since we established some aggressive growth goals for ourselves. This look back puts our plans for the future in context and should give you confidence in our ability to achieve our new goals. It is also a source of personal pride for me and the thousands of Ferro employees worldwide who have made our success possible.

In 1996, our response to the “what’s next” question was to concentrate our efforts on improving our margins and cost structure, to lay the foundation for growth and to position our businesses for the future. In 1999, we continued the process of improving our performance by finishing another record year, setting new goals for revenue growth and outlining our detailed plans for accomplishing those goals.

## A TRACK RECORD OF SUCCESS

1999 was the target year for achieving two challenging goals for gross margin improvement and earnings per share growth. In 1995, we had gross margins of 24 percent, and in 1999 we reached our three-year goal to achieve 28 percent gross margins, a significant accomplishment. We also set a goal to improve earnings per share at an annual growth rate of 12 percent. With the all-time record performance of \$1.85 in 1999, we capped four record years and exceeded our goal by achieving a compound annual growth rate in earnings per share of 15.5 percent.

These accomplishments are remarkable in the context of some very difficult business conditions. We overcame soft economies in Europe, Asia-Pacific and Latin America, where almost half of our sales are derived. We were able to mitigate the significant negative impact of foreign currency translation, and we continued to report record years despite a deflationary price environment. Our track record has been called one of the best in the specialty chemical industry over this time frame, and we are proud that we measure up so well against some very good, well-managed companies.

The actions that drove that performance are what you've heard here before. We lowered our cost structure by implementing a major plan to reduce the number of facilities we operate worldwide, and we pruned low-margin product lines, reorganized our marketing and R&D functions and upgraded our organizational talent and incentive systems.

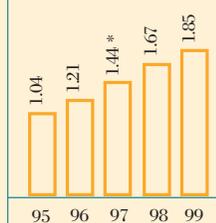
With the foundation for growth in place, in 1999 we continued to take actions to improve. So let's review how we did in more detail.

## 1999 HIGHLIGHTS

For the year, we reached a new level of performance with record net income of \$73.0 million. Earnings per share of \$1.85 also were an all-time record and represented an 11 percent increase over the \$1.67 achieved in 1998. Gross margin improved to 28 percent, versus 27 percent in the prior year, and propelled our earnings improvement.

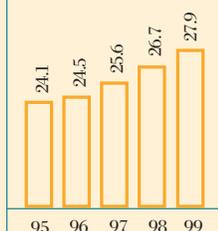
### DILUTED EARNINGS PER SHARE

4-year CAGR = 15.5%



\* excludes realignment charge

### GROSS MARGIN



**C**onsolidated sales for the year were \$1.36 billion, compared with \$1.36 billion in 1998. Improved volumes and the contribution of acquisitions made during 1999 were offset by lower selling prices, which were driven down by lower raw material costs and the effects of a strong U.S. dollar. Currency translation and lower prices due to raw materials have been recurring negative influences on our revenues for several years now. In fact, we estimate that negative currency translation has reduced our revenues by more than \$100 million on an annualized basis over the past four years. In addition, the deflationary price environment for raw materials has had a significant negative impact on revenues over this period.

We overcame most of these negative factors with our sales performance in 1999. We continued to lay the foundation for future growth. Most notable were the acquisitions we made in our plastic compounding and electronic materials businesses, the divestiture of our porous ceramics business and the announcement of our intention to sell our flame retardants businesses.

In March, we acquired Advanced Polymer Compounding (APC) based in Carpentersville, Illinois. APC produces a patented thermoplastic elastomer called Alcryn®. This acquisition broadened our product line in our already successful plastic compounding business.

In July, we completed the acquisition of TAM Ceramics Incorporated (TAM). TAM, based in Niagara Falls, New York, is a leading producer of dielectric ceramic powders for electronic applications. This acquisition solidified our position as the world leader in materials for the multi-layer ceramic capacitor industry.

In March 1999, we sold our Filtros porous ceramics business, and in January 2000, we announced our intention to sell our Pyro-Chek® flame retardant business. We will continue to divest selectively and concentrate our efforts on what we consider to be core assets.

Our overall performance in 1999 was supported by solid results in each group. Our plastics business recorded significant improvement for the year, with sales up 6.8 percent and segment income up 13.5 percent. Our most international segment, coatings, experienced sales declines due to the effects of currency and raw material costs but made a strong contribution to our profitability with segment income up 5.5 percent. Chemicals' results were mostly impacted by a significant decline in sales and profits in our petroleum additives business. However, we were encouraged by the improved performance in 1999 of polymer additives, our main growth platform in chemicals.

Another positive sign for the future was our performance in Asia. We have targeted this region as a significant growth area for our product lines, and in 1999 we saw the economy rebound. More importantly, though, we grew much faster than the economy as a result of our continued investment in the region during the down period of late 1997 and all of 1998. Today, we are positioned very well for growth in Asia and we continue to invest there.

We will remember 1999 as a year in which we cemented a solid foundation for our growth plans to succeed.

However, the biggest frustration of 1999 – and one I am sure you share – was the performance of our stock price, which closed the year down 15 percent. This performance is inconsistent with a company that has generated four years of record earnings performance. However, we were not alone. As the Standard and Poor’s Mid-Cap Chemical Index indicates, the stock actually performed in line with our peers, with the index down 15 percent for the year. Many of the companies in our industry are plagued by a market that appears to favor large-cap companies and has not shown interest in specialty chemical companies.

Although the performance of the stock price is frustrating, we believe it is a short-term setback, and we remain focused on driving improved performance in the years ahead.

#### STRATEGIC DIRECTION

Our strong performance of the past several years will not stop here. We have laid the foundation and have begun to take actions to drive further improvement. Our focus has shifted, however. As a result, we have set demanding objectives and goals to drive revenue growth of 6 to 8 percent over the next three years and to maintain our earnings-per-share goal of at least 12 percent growth over the long term.

We see growth coming from three main drivers – portfolio management, geographic expansion and acquisitions – all of which overlap. I’ll offer a brief overview of these strategies here, and you will read more about them throughout this report.

#### PORTFOLIO MANAGEMENT

For almost a year and a half now, we have been developing a new brand of thinking among our management team about how we should run our businesses. We call this new approach the Leadership Agenda. It helps us move away from being fixated on current businesses and forces us to concentrate on the pipeline of opportunities for future success. This approach also drives our investment of capital.

## New Goals

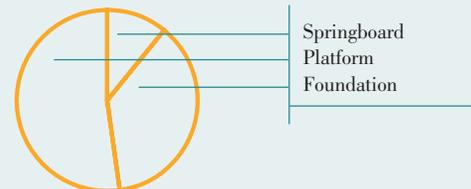
### OVER THE NEXT THREE YEARS, WE ARE AIMING TO ACHIEVE:

- 1– Sales growth of 6 to 8 percent compounded annually long-term (*excluding large acquisitions and divestitures*).
- 2– EPS growth of 12 percent compounded annually long-term.
- 3– A shift in our portfolio so that we are more heavily weighted in springboard businesses. The result will be a portfolio of businesses with greater growth and profit potential.

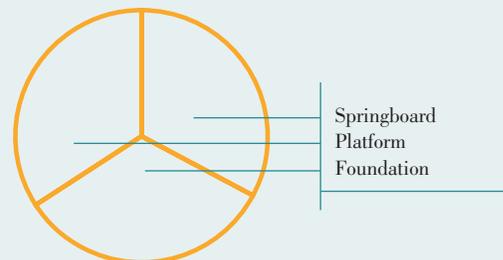
Currently the mix is as follows:

- *Foundation businesses, about 35 to 40 percent. These are mature businesses that typically grow at about the rate of the economy.*
- *Platform businesses, 50 to 55 percent. These businesses grow at 1.5 to two times the rate of the economy.*
- *Springboard businesses, almost 15 percent. Springboard businesses grow at multiples of the rate of the economy.*

#### CURRENT



#### GOAL



W

e have categorized our businesses according to their stage in the life cycle into what we call foundation, platform and springboard businesses (*see sidebar, page 7*). For example, the operative philosophy for mature foundation businesses will be to run efficiently and generate cash, while we will measure the success of faster-growing or springboard businesses by their ability to build larger core businesses. Platform businesses represent the largest portion of our current portfolio, and they will be expected to achieve a balance of profit and sales growth.

Our overall goal is to change the mix of businesses we have from being too heavily weighted in foundation and platform businesses to being more evenly weighted among all three categories. If we succeed, our businesses will be capable of generating a higher growth rate.

To drive the desired performance in each business, we have also matched our incentive system to this approach. Managers of foundation businesses will be rewarded for generating cash, managers of platform businesses will be rewarded for a balance of sales and profit growth and managers of springboard businesses will be rewarded for growth. We have also added rewards for success in acquisitions.

#### GEOGRAPHIC EXPANSION

Ferro's geographic breadth has long been a strength of the Company. In fact, we've had international operations for most of our 80-year history. Our global presence gives us balanced performance and a worldwide infrastructure to leverage growth in several of our key businesses. Our chemicals and plastics businesses have built leading positions in the United States for polymer additives, plastic compounds and colorants. We believe we can repeat their success internationally. In May 2000, we will open a new production facility for plastic colorants in Asia. In businesses that have long been international, we also see opportunities. Several of our businesses in Asia are running at full capacity, and we are installing additional capacity to keep pace with demand for our products in that region.

#### ACQUISITIONS

Part of our success in achieving our goals will depend on our ability to acquire businesses that broaden our product offering to high-growth markets. We are much more proactive today in aggressively pursuing our acquisition targets and 1999 provided an early indication of how successful our strategy can be. We are pursuing both large and small transactions.



Small or add-on acquisitions will play a role in broadening the product offerings or technologies of our existing businesses, entering new markets and geographies and in speeding the development of new products. We will also consider larger, company-transforming acquisitions, which will only be considered if they can help us accelerate our growth plans and reshape our portfolio.

We have the appetite and the capacity to pursue our acquisition plans. We generate strong cash flows, our balance sheet can handle more leverage and we have supplemental plans for divestitures as a source of funds.

#### MANAGEMENT AND BOARD CHANGES

Although we continued to add to our management strengths in 1999, we also lost a key member of our team to retirement. After 40 remarkable years of service, Jim Fisher, Senior Vice President, Ceramics and Colorants, retired from Ferro. Jim spent his whole professional life with the Company. Jim's kindness, leadership and counsel will be missed by all Ferro employees but perhaps by no one more than me.

We are also losing a key member of the Board this year. Rex Sebastian will no longer serve on the board following the annual meeting in April. Rex has served on the Board since 1986. He has overseen many changes in the Company in this time and has been instrumental in our success. The value of his contributions will be missed. In July 1999, we elected William B. Lawrence, Executive Vice President, Law, Corporate Development and Government Affairs for TRW, Incorporated of Cleveland, Ohio, to our Board of Directors. We are excited to add Bill's experience and skills, notably in the area of acquisitions.

#### A LOOK AHEAD

So what is next for Ferro? Hopefully what I have said here and the details that fill the pages of our annual report will go a long way to answering that question for you. We believe it's a bright future with continued strong performance. We'll keep asking this question of ourselves to stay ahead of the changing tides of our markets and our competitive environment. With the dedication of all of our employees, I look forward to next year when I can report on our progress. My personal thanks go to our employees for their continuing contributions to our success, and to you, our shareholders, for your confidence in Ferro.

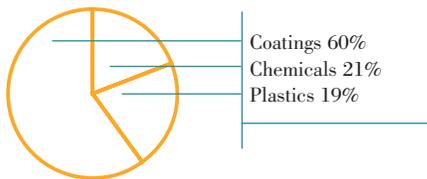
Handwritten signature of Hector R. Ortino

Hector R. Ortino

Chairman and Chief Executive Officer

# Ferro's portfolio at a glance

1999 SALES BY SEGMENT



1999 SALES BY REGION



	Business Units
<b>Coatings</b>	Tile, Specialty Glazes and Specialty Ceramics
	Specialty Colors
	Electronic Materials
	Industrial Coatings
<b>Chemicals</b>	Polymer Additives
	Performance and Fine Chemicals
<b>Plastics</b>	Plastic Colorants
	Liquid Coatings and Dispersions
	Filled and Reinforced Plastics



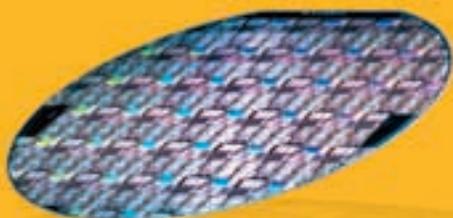


### Products

### Key Markets

### Locations

Ceramic glaze coatings, ceramic colors, decorative materials, kiln furniture, grinding media, structural ceramics, wear-resistant monolithics	Tile, sanitaryware, fine china, industrial and commercial machinery, electronics, transportation equipment, telecommunications	North America, Europe, Latin America, Asia-Pacific
Inorganic pigments, forehearth color, glass decorating enamels	Paint and plastics, glass packaging, tableware, appliances, automotive, architectural	North America, Europe, Latin America, Asia-Pacific
Electronic and specialty glasses, ceramic dielectric powders, thick film pastes and tapes, surface finishing compounds	Consumer electronics, telecommunications, computers, automotive, ophthalmic lenses/precision optics, military and defense, aerospace	North America, Europe, Asia-Pacific
Powder coatings, porcelain enamel coatings	Appliances, cookware, sanitaryware, architectural, automotive, industrial	North America, Europe, Latin America, Asia-Pacific
Heat and light stabilizers, epoxy plasticizers, lubricant additives	Household furnishings, automotive, industrial, architectural, construction	North America, Europe, Asia-Pacific
Performance and fine chemicals, lubricant additives and petroleum additives	Electronics, automotive, petrochemicals, pharmaceutical, agriculture, polymers	North America, Europe
Color concentrates/masterbatch	Appliances, automotive, packaging, recreation	North America, Europe
Gel coats, liquid and paste color dispersions	Boats, RVs and trucks, sanitaryware, swimming pools, architectural, industrial	North America, Europe
Filled and reinforced thermoplastic compounds, polyolefin alloys, thermoplastic elastomers/melt processable rubber	Appliances, automotive, household furnishings, recreation, industrial, lawn and garden equipment	North America, Europe



Sanders and other tools rely on Ferro's novel plastic compounds and colorants for enhanced appearance and durability. Automobiles are often equipped with an array of Ferro materials, from industrial coatings on the outside to polymer additives on the inside. Silicon wafers are polished during the fabrication of integrated circuits using Ferro's precision surface finishing materials.

## improving the mix

**M**any of the changes at Ferro will come from elevating our portfolio to a faster-growing, higher-margin mix of businesses. We are seizing opportunities in everything from our foundation businesses – traditional businesses on which we’ve built our success, to our platform businesses – steadily growing businesses which will drive our near-term performance, to our springboard businesses – fast-growing business lines which are currently small but offer the greatest potential to transform Ferro for the future.

Our new approach improves the way we manage operations and allocate resources among businesses. Overall, we are maximizing efficiencies in foundation businesses to generate excess cash and investing that cash in high-growth opportunities in existing and new businesses – through R&D, marketing initiatives, strategic acquisitions and geographic expansion.

For example, in our longest-running businesses, such as tile and color, we are aggressively pursuing process improvements to enhance productivity. What’s more, we are identifying new ways to expand our market leadership, including new products and growth in new regions.

In many of our platform businesses, we will spur growth through creative product line extensions that enable us to participate in higher-potential markets. In 1999, we continued to expand our popular line of plastic compounds that offer customers high performance at lower cost than standard materials. In addition, we added a new technology with the acquisition of Advanced Polymer Compounding (APC), a supplier of high-performance thermoplastic elastomers (TPEs).

We are also investing in newer springboard businesses that serve rapidly growing markets, such as electronic materials and performance and fine chemicals, with significant future sales and profit potential for Ferro. For example, because of our synthesis capabilities and proprietary compounds, we expect our chemicals business to benefit from the trend in the high-growth pharmaceutical market toward outsourcing production of key fine organic chemicals. We plan on being a strong niche player in certain key technologies within this market.



Building on our strengths, Ferro is increasingly targeting value-added chemical intermediates and services used in the production of pharmaceuticals.



## growing globally

**F**erro also expects to grow by broadening its geographic presence. We are exploring new plant locations, capacity expansions and export activity, as well as acquisitions, to develop new markets in virtually all of our businesses.

We are already one of the most geographically diverse specialty chemical companies, with approximately half of our sales coming from outside the United States. However, we still have strong opportunities to grow beyond our current markets. For example, two of our core businesses, plastics and chemicals, have very little presence in Europe and almost none in Asia – two markets with strong demand for these products.

Our 1999 acquisition of APC brought increased international scope to our plastics business. Through Alcryn®, a patented TPE product, we now have extended our export business to Mexico, Europe, China and Australia. We are currently expanding capacity for this product, which enjoys one of the highest growth rates in the plastics industry.

This year, we will begin production of plastic colorants in a new facility in Asia, giving that line entry in the large and growing Asian marketplace. We are also expanding our sales force and successful operations for our industrial coatings in Asia, building off our existing base in Ningbo, China.

Even businesses considered relatively mature in traditional markets offer significant growth potential in other geographies, which we intend to pursue. In tile, Ferro's most global business, we are increasing capacity in Asia, to solidify our solid market position and capitalize on double-digit volume growth in that region.



Our Alcrn<sup>®</sup> TPE product, which is experiencing double-digit growth rates, gives plastic appliance handles a rubber-like feel and soft grip. It also offers the performance advantages and ease of processing of a plastic material.



## making acquisitions

**F**erro has the financial capacity, the appetite and a very focused strategy for acquisitions. We are looking for both small and large acquisitions to meet our growth goals and speed the process of reshaping our portfolio. For example, we are intent on making acquisitions that will help turn our electronic materials business into a core business serving rapidly growing markets. In 1999, we acquired TAM Ceramics Incorporated (TAM), a supplier of dielectric powders for the electronics industry. TAM strengthened our leading position in dielectric ceramic powders for the passive and discrete component market, expanded our geographic presence and broadened our technology in electronic materials. Further acquisitions will enable us to offer full solutions for our customers and increase our position in other markets such as semiconductors.

Another major target for acquisitions is performance and fine chemicals, as we seek to build a much larger presence as a producer of value-added fine organic chemicals and custom synthesis for the high-growth pharmaceutical industry. Here our approach will focus on being a niche provider and differentiating ourselves by offering proprietary technologies rather than being a full solution provider.

Smaller, bolt-on acquisitions will help us gain a foothold in new markets. For example, our plan is for small acquisitions to play an important role in growing our polymer additives business in the European market.

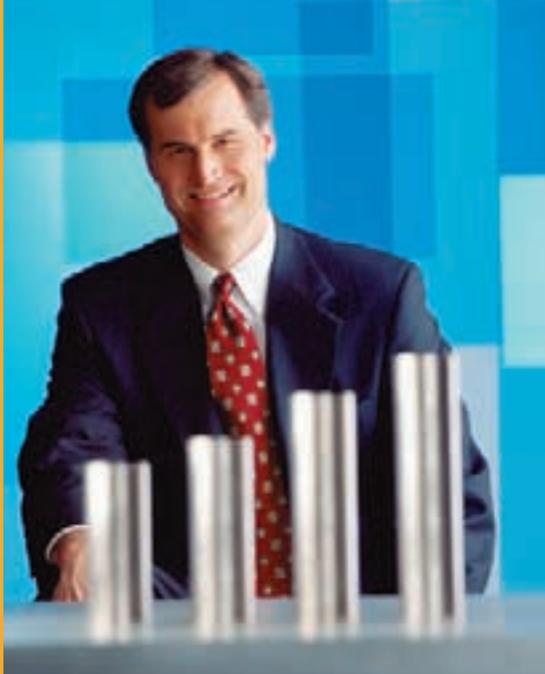
Smaller acquisitions will also be used to complement or broaden existing product lines. For instance, acquisitions in specialty plastics – similar to our APC acquisition – should bolster our strategy to form unique alloys with superior performance characteristics and extend our technology.

We plan to accomplish our acquisition plans while maintaining the strong financial discipline for which Ferro is known. The acquisitions we made in 1999 are already performing to our expectations and making a solid contribution.





Ferro is the world's largest manufacturer of thick film electrode materials for polycrystalline silicon photovoltaic cells in an industry expected to enjoy rapid growth through 2010.



Bret W. Wise, Senior Vice President and  
Chief Financial Officer

## Financials

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## Management's Discussion and Analysis

Ferro Corporation and subsidiaries

Ferro Corporation is a worldwide producer of performance materials for manufacturers. Ferro produces a variety of coatings, chemicals and plastics by utilizing organic and inorganic chemistry. The Company's materials are used extensively in the markets of building and renovation, major appliances, household furnishings, transportation and industrial products. Ferro's products are sold principally in the United States and Europe; however, operations extend to Latin America and are increasingly focused on Asia-Pacific. See Note 12 to the consolidated financial statements for segment operating data.

### 1999 RESULTS OF OPERATIONS

Consolidated net sales of \$1.36 billion for 1999 were 0.5% lower than 1998 net sales. Sales declined 0.9% in the Coatings segment and 5.0% in the Chemicals segment, while the Plastics segment increased sales by 6.8%.

The increase in sales volume for the Company was led by the Plastics segment and strong improvement in the tile and electronic materials businesses. Acquisitions made during 1999 also contributed strongly to sales. Increased volumes and acquisitions together added 5.5% to sales, offset by a decline in sales attributable to lower selling prices in correlation with a decline in raw material costs. The strengthening of the U.S. dollar against foreign currencies also reduced sales by 2.0% during 1999. Divestitures also had a modest impact in reducing sales.

Coatings segment sales were \$810.4 million, 0.9% lower than in 1998. Volume improvement for the segment was driven by improved performance in the tile and electronic materials businesses. Acquisitions also made a strong contribution to sales, in particular the TAM Ceramics Incorporated (TAM) acquisition in electronic materials, which was completed in July. Offsetting these improvements were lower selling prices, which correlated with a decline in the underlying price of major raw materials, and the effect of the stronger U.S. dollar. The Coatings segment is the Company's most international segment. Negative foreign currency translation and price/mix, combined, reduced sales by just over \$50.0 million for the segment.

Chemicals segment sales were \$290.0 million, down 5.0% compared with 1998. Sales were negatively impacted by volume declines in the United States, particularly in the petroleum additives business, and lower selling prices related to raw material price declines. Sales also were impacted negatively by currency translation.

For the Plastics segment, sales improved 6.8% over 1998, reaching \$254.9 million for the year. Strong domestic volume improvement was most evident in the filled and reinforced plastics business. The Advanced Polymer Compounding (APC) acquisition, completed in March 1999, also made a positive contribution to sales. Overall, increased volume, and the acquisition, added 12.4% and were partially offset by lower selling prices driven by a decline in raw material costs.

Gross margins improved from 26.7% in 1998 to 27.9% in 1999. The major contributions to gross margin expansion came from a better mix of products sold and manufacturing efficiencies from productivity improvement initiatives. Lower raw material costs and acquisitions also contributed to margin improvement.

Sales, administrative and general expenses increased to \$241.8 million compared with \$235.2 million in 1998, primarily due to acquisitions completed in 1999.

Segment income improved to \$153.6 million compared with \$147.9 million in 1998. A reconciliation of segment income to income before taxes is shown in Note 12 to the consolidated financial statements, "Reporting for segments."

Coatings segment income increased 5.5% to \$94.2 million. Significant gross margin improvement, driven by a combination of manufacturing efficiencies and improvement in the mix of products sold, was the main factor contributing to the improvement in segment income. The electronic materials business was particularly strong and included the contribution of the TAM acquisition. The Coatings segment has benefited the most from plant consolidation and has increased sales of higher-margin products by concentrating on new product development.

Chemicals segment income of \$34.2 million declined 6.0% compared with 1998. The decline in segment income was driven by reduced sales, particularly in the petroleum additives business.

Plastics segment income of \$25.2 million set a record and represented a 13.5% improvement over the previous record established in 1998. The Plastics segment has improved margins through the introduction of new products and the contribution of the APC acquisition. Additionally, improved manufacturing efficiencies and lower costs for raw materials had a positive impact on margins for the segment.

The increase in interest expense from \$15.3 million in 1998 to \$18.3 million in 1999 is primarily attributable to the funding of two acquisitions made in 1999.

Foreign currency gains, which vary depending on relative changes in exchange rates, were \$1.6 million in 1999, representing gains on option contracts used to hedge the earnings of selected foreign subsidiaries. For further information, see Note 13 to the consolidated financial statements.

The Company's performance in 1999 set new all-time records for net income and earnings per share. Net income increased to \$73.0 million compared with \$69.3 million recorded in 1998. Diluted earnings per share increased by 10.8% to \$1.85 compared with \$1.67 in 1998.

#### 1998 RESULTS OF OPERATIONS

Consolidated net sales of \$1.36 billion for 1998 were 1.4% lower than 1997 net sales. Sales increased 0.3% in both the Coatings segment and in the Plastics segment, while the Chemicals segment declined by 6.9%.

The strengthening of the U.S. dollar against foreign currencies and divestitures were the main factors contributing to the sales decline. Combined, negative foreign currency translation and divestitures reduced sales by \$24.1 million.

In addition, sales volumes were lower than the prior year, particularly in the Chemicals segment. Partially offsetting these declines were positive price/mix and the contribution of an acquisition.

Coatings segment sales were \$817.8 million, 0.3% greater than 1997 sales. The slight improvement in sales was largely due to improved performance in the powder coatings business worldwide and the electronics business domestically. Additionally, continued improvement in European results had a positive impact on sales. The effect of the stronger U.S. dollar had a major negative impact on sales.

Chemicals segment sales were \$305.3 million, down 6.9% compared with 1997. Sales were negatively impacted by volume declines in the United States, particularly in the petroleum additives business. Additionally, sales were impacted negatively by currency translation and the divestiture of a joint venture operation in Asia.

For the Plastics segment, sales improved 0.3% over 1997, reaching \$238.7 million for the year. Strong domestic volume improvement was evident in the plastic colorants and filled and reinforced plastics businesses. However, this was offset by a weak domestic price environment impacted by declining raw material costs.

Gross margins improved from 25.6% to 26.7%. Gross margin improvement was broad-based across all segments and regions. The major contributions to gross margin expansion came from a better mix of products sold and manufacturing efficiencies from continuous productivity improvement initiatives, including benefits from the Company's previously announced plant consolidation plan. New product introductions in the Plastics and Coatings segments, particularly in the ceramic tile and powder coatings businesses, helped improve sales of higher-margin products and develop business in new markets.

Sales, administrative and general expenses increased to \$235.2 million compared with \$233.7 million in 1997.

Segment income improved 9.8% to \$147.9 million compared with \$134.7 million in 1997. A reconciliation of segment income to income before taxes is shown in Note 12 to the consolidated financial statements, "Reporting for segments."

Coatings segment income increased 6.1% to \$89.3 million. Improvements were led by strong European results for the ceramic tile business and by the powder coatings business worldwide. A combination of manufacturing efficiencies and improvement in the mix of products sold were the main factors contributing to the improvements in ceramic tile. New product introductions for the tile market have broadened the product line in this business and generated additional high-margin business.

Income for the Chemicals segment improved 12.3% to establish a new record of \$36.4 million. The improvement was largely due to outstanding performance in the domestic industrial chemicals business and continued improvement in polymer additives. Overall, the Chemicals segment has benefited from productivity improvements and an improvement in the mix of products sold through careful key account management and improved sales of higher-margin products.

Plastics segment income of \$22.2 million set a new record, 22.7% above the previous record established in 1997. Margin improvement resulted from excellent performance in both the plastic colorants business and the filled and reinforced plastics busi-

ness. The Plastics segment improved margins through the introduction of new products for new applications at several key accounts. Additionally, improved manufacturing efficiencies and lower costs for raw materials had a positive impact on margins.

The increase in interest expense from \$12.2 million to \$15.3 million in 1998 is primarily attributable to the issuance of \$55.0 million 7<sup>1</sup>/<sub>8</sub>% debentures in March 1998.

Foreign currency gains amounted to \$0.9 million in 1998, largely attributable to the strengthening of the U.S. dollar versus foreign currencies. Foreign currency gains accrue from option contracts purchased to hedge the earnings of selected foreign subsidiaries. For further information, see Note 13 to the consolidated financial statements.

Net income and diluted earnings per share for 1998 were records of \$69.3 million and \$1.67, respectively, compared with a net loss of \$37.3 million and a loss of \$1.08 in 1997. The 1997 loss was due to a second-quarter pre-tax realignment charge of \$152.8 million. Excluding the effects of this charge, net income and diluted earnings per share for 1997 would have been \$62.7 million and \$1.44, respectively. Thus, excluding the charge, net income was up 10.5% and earnings per share were up 16.0% for 1998.

## Other Items

### IMPACT OF THE EURO CONVERSION

On January 1, 1999, 11 of 15 member countries of the European Economic and Monetary Union (the "EMU") established fixed conversion rates between their existing legacy currencies and the European Union's common currency, the Euro. Since that date, the Euro has traded on currency exchanges and been used in business transactions. The legacy currencies remain legal tender in the participating countries for a transition period up to January 1, 2002, when new Euro-denominated bills and coins will be issued. Legacy currencies will be withdrawn from circulation during the first six months of 2002.

In each of its affected businesses, the Company is able to process and has processed transactions in both the Euro and local currencies. Plans are well advanced in Europe to adapt computer and financial systems which do not currently accommodate the Euro as the standard reporting currency. The Company does not anticipate that remaining system conversion costs to allow the use of the Euro as the reporting currency will be material.

### ENVIRONMENTAL

The Company has received "Notices of Violation" from the United States Environmental Protection Agency in 1999 alleging that the Company violated various requirements of the Clean Air Act and related State laws in modifying and operating the Pyro-Chek® process at its facility in Hammond, Indiana. See the description in Note 8 to the consolidated financial statements. The Company has announced its intention to sell the assets relating to the Pyro-Chek® process and cease production of Pyro-Chek® at Hammond. Following the sale of the assets and cessation of Pyro-Chek® production, the Company will continue to be responsible for any claims relating to all past operations at Hammond, including Pyro-Chek® production. The Company is vigorously contesting these claims. If the matter cannot be resolved through negotiation, and the United States pursues and recovers the maximum potential penalties on all of its claims, it could have a material adverse affect on the Company. However, the Company believes that it will resolve this matter in a manner that will not have a material adverse affect.

Additionally, governmental agencies have identified several disposal sites for clean-up under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA," or the Superfund) and similar laws to which the Company has been named a "potentially responsible party." The Company is participating in the cost of certain clean-up efforts. However, the Company's share of such costs has not been material and is not expected to have a material adverse impact on the Company's financial condition or results of operations.

### ACCOUNTING CHANGES

In June 1998, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 133, "Accounting for Derivative Instruments and Hedging Activities," which establishes accounting and reporting standards for derivative instruments and for hedging activities. This Statement, as amended by Financial Accounting Standards No. 137, is effective for all quarters of fiscal years beginning after June 15, 2000, or the Company's fiscal year 2001. While the Company has not yet determined the effects the Statement will have on its financial position or results of operations, it does not anticipate a material impact.

## MARKET RISK MANAGEMENT

The Company's consolidated cash flows and earnings are subject to fluctuations due to changes in foreign currency exchange rates. The Company attempts to limit its exposure to changing foreign currency exchange rates through operational and financial market actions.

Exposures to changing foreign currency exchange rates in selective currencies are managed by financial market transactions, principally through the purchase of put options on currencies and forward foreign exchange contracts. Put options are purchased to offset the exposure of foreign currency-denominated earnings to a depreciation in the value of the local currency versus the U.S. dollar. The Company's primary foreign currency put option market exposure is the Euro. Foreign subsidiaries also hedge their exposure to the cost of raw materials denominated in U.S. dollars through the forward purchase of dollars to cover the future payable.

## LIQUIDITY AND CAPITAL RESOURCES

Cash flow provided by operations increased to \$127.2 million compared with \$80.0 in 1998 and \$130.3 million in 1997. The improvement in operating cash flows in 1999 is primarily due to a net working capital reduction of \$9.9 million (excluding acquisitions) compared with a net working capital increase in 1998. Cash provided by operations was more than sufficient to enable the Company to meet its liquidity requirements, which include working capital requirements, capital investments and interest expense in 1999.

The increase in net cash used for investing activities in 1999 is associated with a higher level of capital expenditures and acquisitions. Capital expenditures were \$76.2 million in 1999, \$60.3 million in 1998 and \$45.1 million in 1997. Capital expenditures for 2000 are estimated to be \$70.0 million to \$75.0 million.

The higher level of capital expenditures in 1999 and 2000 includes some of the expenditures for the ongoing implementation of a global enterprise-wide management information system, capacity increases in several product lines to support geographic expansion and investments in new product lines.

The change in net cash flow from financing activities was driven by long-term borrowings to fund acquisitions and a lower level of share repurchases in 1999.

In October 1995, the Company filed a \$300.0 million Shelf Registration with the Securities and Exchange Commission. This registration will enable the

Company to offer, either separately or together, debt securities, common stock and/or preferred stock, warrants, stock purchase contracts, depositary shares and stock purchase units. Proceeds may be used for general corporate purposes.

In March 1998, the Company issued \$55.0 million 7 $\frac{1}{8}$ % debentures under this registration. The debentures have a 30-year maturity.

The Company expects to be able to meet its working capital requirements and capital investment needs from cash and cash equivalents, cash flow from operations and, if necessary, use of its revolving credit facility or long-term borrowings. The Company has available to it a \$150.0 million five-year revolving credit facility with four domestic banks. The Company has borrowed \$80.0 million under this facility as of December 31, 1999 pursuant to acquisitions made during the year. The Company is actively pursuing its acquisition strategy and may, from time to time, use its revolving credit facility or alternate financing arrangements, including divestitures, to fund acquisitions. The Company also has \$245.0 million of availability under the previously mentioned shelf registration.

## CAUTIONARY NOTE ON FORWARD-LOOKING STATEMENTS

Certain statements contained in this Management's Discussion and Analysis and elsewhere in this report reflect the Company's current expectations with respect to the future performance of the Company and may constitute "forward-looking statements" within the meaning of the 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, and actual events or results may differ materially from the results discussed in the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to: the level of the Company's success with its acquisition program; changes in customer requirements, markets or industries served; changing economic conditions globally; foreign exchange rates, especially in Europe; changes in the prices of major raw materials; and significant technological or competitive developments.

## Consolidated Statements of Income

Ferro Corporation and subsidiaries

(dollars in thousands except per share data)

Years ended December 31	1999	1998	1997
Net sales	\$1,355,283	1,361,844	1,381,280
Cost of sales	976,877	997,583	1,028,069
Selling, administrative and general expense	241,830	235,155	233,674
Realignment charge	—	—	152,790
Other charges (income):			
Interest expense	18,343	15,284	12,163
Interest earned	(1,554)	(2,936)	(2,286)
Foreign currency transactions	(1,561)	(944)	(2,246)
Miscellaneous – net	5,234	7,221	7,586
	20,462	18,625	15,217
Income (loss) before taxes	116,114	110,481	(48,470)
Income tax expense (benefit)	43,099	41,199	(11,193)
Net income (loss)	73,015	69,282	(37,277)
Dividend on preferred stock, net of tax	3,747	3,789	3,757
Net income (loss) available to common shareholders	\$ 69,268	65,493	(41,034)
Per common share data			
Basic earnings (loss)	\$ 1.97	1.80	(1.08)
Diluted earnings (loss)	1.85	1.67	(1.08)

See accompanying notes to consolidated financial statements.

## Consolidated Balance Sheets

Ferro Corporation and subsidiaries

	(dollars in thousands)	
December 31	1999	1998
<b>Assets</b>		
<b>Current assets</b>		
Cash and cash equivalents	\$ 7,114	12,185
Accounts and trade notes receivable after deduction of \$8,801 in 1999 and \$9,737 in 1998 for possible losses	261,501	249,771
Inventories	170,663	140,970
Other current assets	51,251	48,202
<b>Total current assets</b>	<b>490,529</b>	<b>451,128</b>
<b>Property, plant and equipment</b>		
Land	21,055	14,583
Buildings	151,355	140,117
Machinery and equipment	543,317	485,627
	715,727	640,327
Less accumulated depreciation and amortization	385,334	367,592
<b>Net property, plant and equipment</b>	<b>330,393</b>	<b>272,735</b>
<b>Other assets</b>		
Unamortized intangibles	93,412	50,617
Miscellaneous other assets	57,416	74,685
<b>Total assets</b>	<b>\$971,750</b>	<b>849,165</b>
<b>Liabilities and shareholders' equity</b>		
<b>Current liabilities</b>		
Notes and loans payable	\$ 45,939	30,987
Accounts payable	131,923	105,932
Income taxes	6,777	4,006
Accrued payroll	19,246	19,762
Accrued expenses/other current liabilities	133,748	121,869
<b>Total current liabilities</b>	<b>337,633</b>	<b>282,556</b>
<b>Other liabilities</b>		
Long-term debt, less current portion	236,794	156,283
Postretirement liabilities	49,712	45,426
Other non-current liabilities	50,616	81,639
<b>Shareholders' equity</b>		
Serial convertible preferred stock, without par value. Authorized 2,000,000 shares; 1,520,215 shares issued	70,500	70,500
Guaranteed ESOP obligation	—	(4,067)
Common stock, par value \$1 per share. Authorized 300,000,000 shares; 47,323,053 shares issued	47,323	47,323
Paid-in capital	17,482	7,954
Retained earnings	503,309	453,265
Accumulated other comprehensive income	(74,459)	(44,927)
Other	(8,714)	(6,758)
	555,441	523,290
Less cost of treasury stock:		
Common – 12,153,584 shares-1999 and 11,995,955 shares-1998	240,506	226,076
Preferred – 386,860 shares-1999 and 300,881 shares-1998	17,940	13,953
<b>Total shareholders' equity</b>	<b>296,995</b>	<b>283,261</b>
<b>Commitments and contingencies</b>		
<b>Total liabilities and shareholders' equity</b>	<b>\$971,750</b>	<b>849,165</b>

See accompanying notes to consolidated financial statements.

## Consolidated Statements of Shareholders' Equity

Ferro Corporation and subsidiaries

Years ended December 31	(dollars in thousands)									
	Preferred stock	Guaranteed ESOP obligation	Common stock	Paid-in capital	Retained earnings	Accumulated other comprehensive income (loss) <sup>(a)(b)</sup>	Common stock held in treasury	Preferred stock held in treasury	Other	Total shareholders' equity
<b>Balances at December 31, 1996</b>	\$70,500	(22,592)	31,549	14,107	463,177	(27,804)	(132,595)	(8,408)	(3,730)	384,204
Comprehensive income (loss)										
Net income (loss)					(37,277)					(37,277)
Other comprehensive income (loss), net of tax <sup>(a)</sup>										
Foreign currency translation adjustment						(27,467)				(27,467)
Minimum pension liability adjustment						868				868
Other comprehensive income (loss)										(26,599)
Comprehensive income (loss)										(63,876)
Cash dividends:										
Common					(16,428)					(16,428)
Preferred					(4,229)					(4,229)
Federal tax benefits					525					525
Transactions involving benefit plans		8,777		3,589			7,871	(2,750)	(1,268)	16,219
Three-for-two stock split			15,774	(15,788)						(14)
Purchase of treasury stock							(43,250)			(43,250)
<b>Balances at December 31, 1997</b>	\$70,500	(13,815)	47,323	1,908	405,768	(54,403)	(167,974)	(11,158)	(4,998)	273,151
Comprehensive income										
Net income					69,282					69,282
Other comprehensive income (loss), net of tax <sup>(a)</sup>										
Foreign currency translation adjustment						11,005				11,005
Minimum pension liability adjustment						(1,529)				(1,529)
Other comprehensive income										9,476
Comprehensive income										78,758
Cash dividends:										
Common					(18,072)					(18,072)
Preferred					(4,038)					(4,038)
Federal tax benefits					325					325
Transactions involving benefit plans		9,748		6,046			6,082	(2,795)	(1,760)	17,321
Purchase of treasury stock							(64,184)			(64,184)
<b>Balances at December 31, 1998</b>	\$70,500	(4,067)	47,323	7,954	453,265	(44,927)	(226,076)	(13,953)	(6,758)	283,261
Comprehensive income										
Net income					73,015					73,015
Other comprehensive income (loss), net of tax <sup>(a)</sup>										
Foreign currency translation adjustment						(30,161)				(30,161)
Minimum pension liability adjustment						629				629
Other comprehensive income (loss)										(29,532)
Comprehensive income										43,483
Cash dividends:										
Common					(19,383)					(19,383)
Preferred					(3,779)					(3,779)
Federal tax benefits					191					191
Transactions involving benefit plans		4,067		9,528			5,626	(3,987)	(1,956)	13,278
Purchase of treasury stock							(20,056)			(20,056)
<b>Balances at December 31, 1999</b>	\$70,500	—	47,323	17,482	503,309	(74,459)	(240,506)	(17,940)	(8,714)	296,995

(a) Income tax (expense) benefits related to the components of other comprehensive income (loss) were \$(729), \$679 and \$340 in 1999, 1998 and 1997, respectively.

(b) Accumulated translation adjustments were \$(70,927), \$(40,766), \$(51,771) and \$(24,304) and accumulated minimum pension liability adjustments were \$(3,532), \$(4,161), \$(2,632) and \$(3,500) at December 31, 1999, 1998, 1997 and 1996, respectively.

See accompanying notes to consolidated financial statements.

## Consolidated Statements of Cash Flows

Ferro Corporation and subsidiaries

	(dollars in thousands)		
Years ended December 31	1999	1998	1997
<b>Cash flows from operating activities</b>			
Net income (loss)	\$ 73,015	69,282	(37,277)
Adjustments to reconcile net income (loss) to net cash provided by operating activities			
Depreciation and amortization	48,501	43,122	44,975
Change in deferred income taxes	5,078	4,652	(48,823)
Realignment charge	—	—	152,790
Changes in current assets and liabilities, net of effects of acquisitions			
Accounts and trade notes receivable	603	(14,687)	(1,119)
Inventories	(4,126)	(13,357)	23,544
Other current assets	5,520	(902)	(10,939)
Accounts payable	20,408	(5,290)	(2,238)
Accrued expenses and other current liabilities	(12,459)	(3,037)	11,414
Other operating activities	(9,385)	248	(2,044)
<b>Net cash provided by operating activities</b>	<b>127,155</b>	<b>80,031</b>	<b>130,283</b>
<b>Cash flow from investing activities</b>			
Capital expenditures for plant and equipment	(76,244)	(60,274)	(45,129)
Acquisition of companies, net of cash acquired	(119,477)	(4,146)	—
Proceeds from sale of assets	8,966	2,860	7,332
Other investing activities	(4,798)	(12)	1,250
<b>Net cash used by investing activities</b>	<b>(191,553)</b>	<b>(61,572)</b>	<b>(36,547)</b>
<b>Cash flow from financing activities</b>			
Net borrowings (payments) under short-term lines	14,952	7,718	(25,290)
Proceeds from long-term debt	117,207	54,297	760
Principal payments on long-term debt	(36,464)	(1,254)	(1,938)
Proceeds from sale of stock	7,162	5,084	4,801
Purchase of treasury stock	(20,056)	(64,184)	(43,250)
Cash dividends paid	(23,162)	(22,110)	(20,657)
Other financing activities	(223)	(590)	(1,560)
<b>Net cash provided (used) by financing activities</b>	<b>59,416</b>	<b>(21,039)</b>	<b>(87,134)</b>
Effect of exchange rate changes on cash	(89)	(1,572)	(4,291)
<b>Increase (Decrease) in cash and cash equivalents</b>	<b>(5,071)</b>	<b>(4,152)</b>	<b>2,311</b>
<b>Cash and cash equivalents at beginning of period</b>	<b>12,185</b>	<b>16,337</b>	<b>14,026</b>
<b>Cash and cash equivalents at end of period</b>	<b>\$ 7,114</b>	<b>12,185</b>	<b>16,337</b>
<b>Cash paid during the period for</b>			
Interest	\$ 14,795	13,879	8,473
Income taxes	\$ 23,200	40,909	36,917

See accompanying notes to consolidated financial statements.

# Notes to Consolidated Financial Statements

Ferro Corporation and subsidiaries

Years ended December 31, 1999, 1998 and 1997

## 1. Summary of significant accounting policies

### NATURE OF OPERATIONS

Ferro Corporation is a worldwide producer of performance materials for manufacturers. Ferro produces a variety of coatings, chemicals and plastics by utilizing organic and inorganic chemistry. The Company's materials are used extensively in the markets of building and renovation, major appliances, household furnishings, transportation, and industrial products. Ferro's products are sold principally in the United States and Europe; however, operations extend to the Latin America and Asia-Pacific regions.

### PRINCIPLES OF CONSOLIDATION

The consolidated financial statements include the accounts of the Company and all of its subsidiaries after elimination of significant intercompany accounts, transactions and profits.

Certain amounts in the 1998 and 1997 financial statements and the accompanying notes have been reclassified to conform to the 1999 presentation.

Financial results for acquisitions are included in the consolidated financial statements from the date of acquisition.

### TRANSLATION OF FOREIGN CURRENCIES

Except for international companies whose functional currency is the U.S. dollar, financial statements of international companies are translated to U.S. dollar equivalents at the following exchange rates: (1) balance sheet accounts at year-end rates; (2) income statement accounts at exchange rates weighted by the monthly volume of transactions occurring during the year. Translation gains or losses are recorded in shareholders' equity as a component of accumulated other comprehensive income, and transaction gains and losses are reflected in net income.

For countries where the U.S. dollar is the functional currency, remeasurement and transaction gains or losses are reflected in net income.

### CASH EQUIVALENTS

Cash equivalents consist of highly liquid instruments with a maturity of three months or less and are carried at cost, which approximates market value.

### RISK MANAGEMENT DERIVATIVES

Derivatives primarily consist of foreign currency forward exchange contracts and foreign currency options. Gains and losses related to qualifying hedges of firm commitments are deferred and are recognized as adjustments of carrying amounts when the hedged transaction occurs. Gains and losses on derivative financial instruments that do not qualify as hedges are recognized as foreign currency transaction gains or losses. Premiums paid on purchased options are deferred and amortized over the life of the option.

### USE OF ESTIMATES IN THE PREPARATION OF FINANCIAL STATEMENTS

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

### INVENTORIES

Inventories are valued at the lower of cost or market. Cost is determined utilizing the first-in, first-out (FIFO) method, except for selected domestic inventories where the last-in, first-out (LIFO) method is used.

### LONG-LIVED ASSETS

In the case of goodwill and other intangibles, the excess cost over equity in net assets of acquired companies is being amortized over periods benefited, ranging from 15 to 40 years. Accumulated amortization was \$32.0 million and \$25.9 million at December 31, 1999 and 1998, respectively.

Property, plant and equipment is carried at cost. Depreciation of plant and equipment is provided on a straight-line basis for financial reporting purposes. The annual depreciation provision is based on the following estimated useful lives:

Buildings	20 to 40 years
Machinery and equipment	5 to 15 years

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. In the event of impairment, a loss is recognized for the excess of the carrying amount over fair value.

#### ENVIRONMENTAL COSTS

The Company expenses recurring costs associated with control and disposal of hazardous materials in current operations. Costs associated with the remediation of environmental pollution are accrued when it becomes probable that a liability has been incurred and the costs can be reasonably estimated.

#### INCOME TAXES

Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely that some portion or all of the deferred tax assets will not be realized. Deferred tax assets and liabilities are adjusted for the effects of changes in tax laws and rates on the date of enactment.

#### EARNINGS PER SHARE

Basic earnings per share are based on a weighted average of common shares outstanding. Diluted earnings per share reflect the potential dilution of earnings per share assuming that certain stock options whose exercise price is less than the average market price of the stock are exercised and that convertible preferred shares are converted into common shares.

#### 2. Inventories

The portion of inventories valued by the LIFO method at December 31, 1999 and 1998 is as follows:

	1999	1998
United States	40%	52%
Consolidated	20	22

If the FIFO method of inventory valuation had been used exclusively by the Company, inventories would have been \$11.7 million and \$14.5 million higher than reported at December 31, 1999 and 1998, respectively.

Since certain of the inventory costs are determined by use of the LIFO dollar value method (under which the raw materials, work in process and finished goods are included in one pool), it is not practicable to separate LIFO inventory values among raw materials, work in process and finished goods.

#### 3. Financing and long-term debt

Long-term debt at December 31, 1999 and 1998 are as follows:

<i>(dollars in thousands)</i>	1999	1998
Debentures, 7.125%, due 2028	\$ 54,406	54,385
Debentures, 7.625%, due 2013	24,816	24,808
Debentures, 8.0%, due 2025	49,411	49,388
Debentures, 7.375%, due 2015	24,943	24,939
Revolving credit agreement	80,000	—
Other	3,965	3,873
	237,541	157,393
Less current portion <sup>(a)</sup>	747	1,110
<b>Total</b>	<b>\$236,794</b>	<b>156,283</b>

<sup>(a)</sup>Included in notes and loans payable.

The aggregate principal payments on long-term indebtedness for the next five years are as follows:

<i>(dollars in thousands)</i>				
2000	2001	2002	2003	2004
\$747	2,133	542	80,260	283

At December 31, 1999, \$1.8 million of long-term indebtedness was secured by property, equipment and certain other assets with a net book value approximating \$2.5 million. At December 31, 1999, the Company had \$155.0 million principal amount outstanding under debentures which had an estimated fair market value of \$145.1 million.

In 1995, the Company filed a \$300.0 million Shelf Registration with the Securities and Exchange Commission. This registration will enable the Company to offer, separately or together, debt securities, common stock and/or preferred stock, warrants, stock purchase contracts, depositary shares and stock purchase units. Proceeds from securities issued under the Shelf Registration may be used for general corporate purposes.

In 1998, the Company issued \$55.0 million 7 $\frac{1}{8}$ % debentures due 2028 under the 1995 Shelf Registration.

The Company has a five-year revolving credit agreement in the amount of \$150.0 million, which matures on August 1, 2003. The agreement permits the maturity date to be extended for one year with the consent of the parties. Interest on revolving credit borrowings is payable at floating prime or lower rates based on Company options. There is a commitment fee of  $\frac{3}{16}$ % per year. At December 31, 1999, the Company had borrowed \$80.0 million under this agreement.

There are no covenants in the revolving credit agreement which significantly limit the dividend payment capability of the Company, and the Company does not expect to include any such covenants in future offerings under the Shelf Registration. In addition, there are no significant restrictions on the payment of dividends by the subsidiaries and affiliates of the Company.

In 1989, the Company created an Employee Stock Ownership Plan (ESOP). The ESOP borrowed \$63.5 million at an interest rate of 8.5% and \$7.0 million at an adjustable interest rate in 10-year loans guaranteed by the Company. On June 30, 1999, the final principal payments on these obligations were made, repaying the borrowings in full. Prior to 1999 the Company reflected the guaranteed ESOP borrowings as a loan guarantee on its balance sheet with a like amount of "Guaranteed ESOP Obligation" recorded as a reduction of shareholders' equity.

Capitalized interest was \$1.3 million, \$0.6 million and \$0.5 million in 1999, 1998 and 1997, respectively.

The maintenance of minimum cash balances is informally agreed to with certain banks as a result of loans, commitments and services rendered. Cash balances maintained to meet operating needs on a daily basis are sufficient to satisfy these informal agreements. These balances are available for use by the Company and its subsidiaries at all times and do not contain legal restrictions. Cash in excess of such operating requirements is invested in short-term securities.

#### 4. Stock plans

The Company maintains a stock option plan, a performance share plan and a savings and stock ownership plan which includes an investment savings plan and an ESOP for the benefit of its employees.

The stock option plan provides for the issuance of stock options at no less than the then current market price. Stock options have a maximum term of 10 years and vest evenly over four years.

Information pertaining to these stock options is shown below:

	1999	1998	1997
Options granted	648,557	642,935	682,942
Average option price	\$22.36	23.58	19.56
Options exercised	350,862	277,139	379,149
Average option price	\$16.05	12.96	11.18
Options which became exercisable	520,263	461,739	363,454
Average option price	\$19.31	18.29	17.85
Options unexercised at year-end	3,021,144	2,820,764	2,478,641
Option price range per share	\$8.89 to \$29.25	8.89 to 29.25	8.89 to 22.67
Options cancelled	89,409	23,673	25,304
Options available for granting future options	818,125	1,377,273	1,996,535

Significant option groups outstanding at December 31, 1999 and the related weighted-average price for the exercisable options and remaining life information are as follows:

Range of exercise prices	Options Outstanding			Options Exercisable	
	Shares	Average exercise price	Life (years)	Remaining average shares	Average exercise price
\$26-30	142,017	\$28.46	9.2	6,875	\$28.66
22-26	694,445	22.98	6.9	347,828	22.88
18-22	1,376,410	20.29	6.9	633,839	19.96
10-18	764,715	15.79	4.6	669,735	15.79
8-10	43,557	8.89	1.0	43,557	8.89
\$ 8-30	3,021,144	\$19.99	6.3	1,701,834	\$18.67

All options were granted at an exercise price equal to the fair market value of the Company's common stock at the date of grant. The weighted-average fair market value at date of grant for options granted during 1999, 1998 and 1997 was \$8.39, \$8.16 and \$6.89 per

option, respectively. The fair value of options at date of grant was estimated using the Black-Scholes model with the following weighted-average assumptions:

	1999	1998	1997
Expected life (years)	8.1	8.5	8.5
Interest rate	5.42%	5.85	5.84
Volatility	33.50	25.25	25.25
Dividend yield	2.22	1.88	1.88

On a pro forma basis, had compensation cost for the Company's stock option plan been determined based on the fair value at the grant date, the Company's net income and earnings per share would have been reduced to the pro forma amounts shown below:

	1999	1998	1997
Net income (loss) as reported	\$73,015	69,282	(37,277)
Net income (loss) pro forma	69,958	67,013	(39,138)
Income (loss) per share (diluted) as reported	\$ 1.85	1.67	(1.08)
Income (loss) per share (diluted) pro forma	\$ 1.76	1.61	(1.13)

The pro forma effects on net income (loss) are not representative of the pro forma effects on net income in future years because they do not take into consideration pro forma compensation expense related to grants made prior to 1996.

The Company maintains a performance share plan whereby awards, expressed as shares of common stock of the Company, are earned only if the Company meets specific performance targets over a three-year period. The plan pays 50% cash and 50% common stock for the value of any earned performance shares. Performance share awards in the amount of 769,337 shares, 832,007 shares and 601,802 shares were outstanding at the end of 1999, 1998 and 1997, respectively. The Company accrues amounts based on performance reflecting the value of cash and common stock, which is anticipated to be earned. The effect of the plan was to reduce income by \$2.1 million, \$3.5 million and \$2.7 million in 1999, 1998 and 1997, respectively.

The ESOP provides for the Company to match eligible employee pre-tax savings. Amounts expensed under the ESOP were \$3.5 million, \$3.5 million and \$3.3 million in 1999, 1998 and 1997, respectively.

## 5. Capital stock

In 1989, Ferro issued 1,520,215 shares of 7% Series A ESOP Convertible Preferred Stock to National City Bank, trustee for the Ferro ESOP. The shares were issued at a price of \$46.375 per share for a total consideration of \$70.5 million. Each share of ESOP convertible preferred stock is convertible into 2.5988 shares of common stock. As the loans are repaid by the trustee, preferred shares are allocated to participating individual employee accounts. The Company is required to repurchase at the original issue price, for cash or common stock at the Company's option, the preferred shares allocated to an employee's ESOP account upon distribution of such account to the employee unless such shares have been converted to common stock. Each preferred share carries one vote, voting together with the common stock on most matters.

The Company purchased 892,779 shares of common stock in 1999 at an aggregate cost of \$20.1 million; 2,595,482 shares of common stock in 1998 at an aggregate cost of \$64.2 million; and 1,346,627 shares of common stock in 1997 at an aggregate cost of \$43.3 million. At December 31, 1999, the Company had remaining authorization to acquire 2,075,133 shares under the then current treasury stock purchase program.

The Company maintains a Shareholder Rights Plan ("the Plan") whereby, until the occurrence of certain events, each share of the outstanding common stock represents ownership of one right (Right). The Rights become exercisable only if a person or group acquires 20% or more of the Company's common stock (10% under certain circumstances) or commences a tender or exchange offer upon consummation of which such person or group would control 20% or more of the common shares or is declared an Adverse Person (as defined in the Plan) by the Board of Directors. The Rights, which do not have the right to vote or receive dividends, expire on April 8, 2006. Rights may be redeemed by the Company at \$0.03<sup>1/3</sup> per Right at any time until the 15th day following public announcement that a person or group has acquired 20% or more of the voting power, unless such period is extended by the Board of Directors while the Rights are redeemable.

If any person becomes the owner of 20% or more of the common stock (10% under certain circumstances), or if the Company is the surviving corporation in a merger with a 20% or more stockholder and its common shares are not changed or converted, or if a

20% or more stockholder engages in certain self-dealing transactions with the Company, then each Right not owned by such person or related parties will entitle its holder to purchase shares of common stock at a purchase price of 50% of the then current market price of the common stock up to a value of \$73.33 per Right.

In the event the Company engages in a merger or other business combination transaction in which the Company is not the surviving corporation or the Company is the surviving corporation but its common stock is changed or exchanged or 50% or more of the Company's assets or earning power is sold or transferred, each holder of a Right shall have the right to receive, upon exercise thereof at the then current exercise price of the Right, that number of shares of common stock of the surviving company which at the time of the transaction would have a market value of two times the exercise price of the Right.

## 6. Earnings per share computation

Information concerning the calculation of basic and diluted earnings per share (EPS) is shown below:

<i>(in thousands, except EPS)</i>	1999	1998	1997
<b>Basic EPS Computation</b>			
Numerator:			
Net income (loss) available	\$69,268	65,493	(41,034)
Denominator:			
Weighted-average common shares outstanding	35,197	36,419	38,132
<b>Basic EPS</b>	<b>\$ 1.97</b>	<b>1.80</b>	<b>(1.08)</b>
<b>Diluted EPS Computation</b>			
Numerator:			
Net income (loss) available	\$69,268	65,493	(41,034)
Convertible preferred stock	2,371	2,205	(a)
Net income (loss) assuming conversion	\$71,639	67,698	(41,034)
Denominator:			
Weighted-average common shares outstanding	35,197	36,419	38,132
Convertible preferred stock	3,043	3,247	(a)
Options	567	813	(a)
Total shares	38,807	40,479	38,132
<b>Diluted EPS</b>	<b>\$ 1.85</b>	<b>1.67</b>	<b>(1.08)</b>

<sup>(a)</sup> Use basic EPS since conversion of preferred shares and options would be anti-dilutive.

## 7. Acquisitions, divestitures and realignment

In July 1999, the Company purchased TAM Ceramics Incorporated (TAM), based in Niagara Falls, New York. TAM is a leading supplier of dielectric powders for the electronics industry and zircon-based ceramics powders for a variety of uses.

In March 1999, the Company acquired Advanced Polymer Compounding Company (APC), a supplier of high-performance thermoplastic elastomers and engineering plastic compounds. APC is headquartered in Carpentersville, Illinois.

The aggregate cash purchase price for the above two acquisitions was approximately \$109.2 million. The purchase price was allocated based on the fair value of assets and liabilities at the dates of acquisition, with approximately \$44.1 million being assigned to goodwill which is being amortized over 15 to 20 years.

In January 2000, the Company announced that it had reached an agreement in principle to sell its Pyro-Chek® flame retardant business. The Company expects to complete this transaction in the first half of 2000.

In March 1999, the Company sold its Filtros porous ceramics business, based in East Rochester, New York.

In May 1998, the Company acquired the assets of Ningbo Powder Coatings Company Ltd., located in the People's Republic of China.

In March 1998, the Company sold a majority of its shares in Ferro Ecuatoriana S.A., located in Ecuador.

In July 1997, the Company sold the remaining interest in Nissan-Ferro Organic Chemical Company, Ltd., located in Japan.

The Company sold or closed operations representing annual sales of \$0.7 million, \$5.1 million and \$20.5 million in 1999, 1998 and 1997, respectively.

The above acquisitions and divestitures were not material to Ferro.

In the second quarter of 1997, the Company announced a program to consolidate manufacturing facilities and reduce headcount worldwide. At that time, the Company recorded a pre-tax charge of \$152.8 million to recognize impairment of assets, expected severance related to headcount reduction and other related costs. In connection with this plan, the Company has closed, sold or consolidated more than 20 facilities worldwide through December 1999 and asset impairment charges have amounted to \$94.7 million. In addition, the Company has paid, or accrued, severance

and related costs of approximately \$24.0 million to date under the program. Other costs incurred amount to \$16.0 million through December 1999, of which \$6.2 million was cash payments. The Company expects to complete the program in the year 2000 and has \$15.3 million remaining of the original reserve reflected in other accrued liabilities. During 1999, the Company sold facilities provided for under the realignment program and adjusted the reserves established on these facilities to reflect the actual gain or loss on the sale.

#### 8. Contingent liabilities

In 1994, the Company's Keil Chemical Division (Keil), located in Hammond, Indiana, settled an enforcement proceeding brought by the Indiana Department of Environmental Management (IDEM) concerning air emissions from Keil's Pyro-Chek® process. The settlement was in the form of an Agreed Order with IDEM. The Agreed Order confirmed the Company's plans to install additional controls and imposed certain aggregate limitations on air emissions from the Pyro-Chek® production process while the Company applied for and obtained a construction and operating permit for the existing air source. The control equipment was installed, but the Company has had a continuing disagreement with the agency over whether it has been in compliance with the Agreed Order, including which methods should be used to demonstrate compliance.

In November 1998, IDEM filed suit in Indiana state court seeking to shut down Keil's operation of the Pyro-Chek® process. At a hearing held on December 4, 1998, the court denied IDEM's request for a preliminary injunction, and later dismissed the claim for a permanent injunction on grounds that the dispute arising out of the Agreed Order should be addressed before the Indiana Office of Environmental Adjudication. The day before this hearing, IDEM denied Keil's application for a permit for air emissions for the Pyro-Chek® process. The Company appealed IDEM's denial of Keil's permit application to the Indiana Office of Environmental Adjudication.

On December 29, 1998, IDEM wrote to the Company alleging that because Keil is in violation of the Agreed Order, operation of the Pyro-Chek® process is prohibited, and that the Company will be subject to fines of up to \$25,000 for each day of continued operation. The Company filed a petition for review before the Indiana Office of Environmental Adjudication seeking to confirm that operation of the Pyro-Chek® process has been and remains in compliance with the Agreed Order. On February 24, 1999, IDEM withdrew its December 29, 1998 letter alleging that Keil was in violation of the Agreed Order and that the Pyro-Chek® process is prohibited. On March 15, 1999, the Company's petition for review was dismissed without objection.

On May 4, 1999, and December 16, 1999, the United States Environmental Protection Agency (U.S. EPA) issued "Notices of Violation" (NOVs) alleging that Keil violated various requirements of the Clean Air Act and related State laws in modifying and operating the Pyro-Chek® process. The Company has met with U.S. EPA and entered into negotiations intended to resolve the issues raised in the NOVs. If the matter cannot be resolved through negotiation, and the United States pursues and recovers the maximum potential penalties on all of its claims, it could have a material adverse effect on the Company. However, the Company believes that it will resolve this matter in a manner that will not have a material adverse effect.

There are also pending against the Company and its consolidated subsidiaries various other lawsuits and claims beyond those mentioned above. In the opinion of management, the ultimate liabilities resulting from such other lawsuits and claims will not materially affect the consolidated financial position or results of operations or liquidity of the Company.

#### 9. Research and development expense

Amounts expended for development or significant improvement of new and/or existing products, services and techniques approximated \$30.9 million, \$29.4 million and \$26.6 million in 1999, 1998 and 1997, respectively.

## 10. Retirement benefits

Information concerning the pension and other postretirement benefit plans of the Company and consolidated subsidiaries is as follows:

	Pension Benefits		Other Benefits	
	1999	1998	1999	1998
<i>(dollars in thousands)</i>				
Change in benefit obligation:				
Benefit obligation at beginning of year	\$267,148	231,547	\$ 38,470	35,253
Service cost	8,489	7,199	971	777
Interest cost	16,683	15,996	2,569	2,515
Amendments	369	347	—	—
Effect of curtailment gain (loss)	12	(737)	—	—
Plan participants' contributions	399	468	—	—
Benefits paid	(11,297)	(11,014)	(2,148)	(1,822)
Acquisitions	13,249	—	3,240	—
Actuarial loss (gain)	(30,788)	20,669	(1,098)	1,747
Exchange rate effect	(8,366)	2,673	—	—
Benefit obligation at end of year	255,898	267,148	42,004	38,470
Change in plan assets:				
Fair value of plan assets at beginning of year	238,036	220,575	—	—
Actual return on plan assets	26,805	21,702	—	—
Employer contribution	4,020	3,339	2,148	1,822
Plan participants' contributions	399	468	—	—
Benefits paid	(11,297)	(11,014)	(2,148)	(1,822)
Acquisitions	17,634	—	—	—
Exchange rate effect	(8,953)	2,966	—	—
Fair value of plan assets at end of year	266,644	238,036	—	—
Funded status	10,746	(29,112)	(42,004)	(38,470)
Unrecognized net actuarial loss (gain)	(33,337)	4,864	(7,185)	(6,255)
Unrecognized prior service cost	4,355	4,703	(523)	(701)
Net amount recognized	\$ (18,236)	(19,545)	\$(49,712)	(45,426)
Amounts recognized in the statement of financial position consist of:				
Prepaid benefit cost	\$ 4,604	3,099	\$ —	—
Accrued benefit liability	(24,725)	(28,070)	(49,712)	(45,426)
Intangible asset	938	1,620	—	—
Accumulated other comprehensive income	947	3,806	—	—
Net amount recognized	\$ (18,236)	(19,545)	\$(49,712)	(45,426)
Weighted-average assumptions as of December 31				
Discount rate	7.43%	6.50	7.93	6.84
Expected return on plan assets	8.20%	8.10	N/A	N/A
Rate of compensation increase	3.9%	4.1	N/A	N/A

For measurement purposes, a 9.0% increase in the cost of covered health care benefits was assumed for 2000, gradually decreasing to 5.0% for 2008 and later years.

<i>(dollars in thousands)</i>	Pension Benefits			Other Benefits		
	1999	1998	1997	1999	1998	1997
Components of net periodic cost						
Service cost	\$ 8,489	7,199	6,484	\$ 971	777	671
Interest cost	16,683	15,996	15,198	2,569	2,515	2,479
Expected return on plan assets	(18,626)	(18,208)	(16,513)	—	—	—
Amortization of prior service cost	976	935	962	(177)	(177)	(177)
Net amortization and deferral	100	(425)	(685)	(169)	(330)	(507)
Curtailement effect	46	(609)	—	—	—	—
Net periodic pension cost	\$ 7,668	4,888	5,446	\$3,194	2,785	2,466

The projected benefit obligation, accumulated benefit obligation and fair value of plan assets for the pension plans with accumulated benefit obligations in excess of plan assets were \$21.9 million, \$21.7 million and \$13.0 million, respectively, as of December 31, 1999 and \$29.1 million, \$28.8 million and \$16.2 million, respectively, as of December 31, 1998.

A one-percentage point change in the assumed health care cost trend rates would have the following effect:

<i>(dollars in thousands)</i>	1-Percentage Point Increase	1-Percentage Point Decrease
Effect on total of service and interest cost component	\$ 273	(250)
Effect on postretirement benefit obligation	\$1,306	(2,396)

Costs for defined contribution pension plans were \$0.6 million in 1999, 1998 and 1997.

The Company also maintains other supplemental retirement plans under which it expensed \$4.7 million, including \$3.1 million settlement cost, \$1.4 million and \$1.7 million in the years ended December 31, 1999, 1998 and 1997, respectively.

#### 11. Income tax expense

Income tax expense (benefit) is comprised of the following components:

<i>(dollars in thousands)</i>	1999	1998	1997
Current:			
U.S. federal	\$13,708	19,583	21,958
Foreign	20,493	20,753	14,354
State and local	1,055	3,416	3,758
	35,256	43,752	40,070
Deferred:			
U.S. federal	6,565	(1,381)	(25,173)
Foreign	212	(774)	(21,908)
State and local	1,066	(398)	(4,182)
	7,843	(2,553)	(51,263)
Total income tax	\$43,099	41,199	(11,193)

In addition to the 1999 income tax expense of \$43,099, certain tax benefits of \$0.6 million were allocated directly to shareholders' equity.

The above taxes are based on earnings before income taxes. These earnings (losses) aggregated \$59.5 million, \$60.7 million and \$(14.5) million for domestic operations and \$56.6 million, \$49.8 million and \$(34.0) million for foreign operations in 1999, 1998 and 1997, respectively.

A reconciliation of the statutory federal income tax rate and the effective tax rate follows:

	1999	1998	1997
Statutory federal income tax rate	35.0%	35.0	(35.0)
Foreign tax rate difference	0.8	2.3	1.6
U.S. taxes on dividends from subsidiaries	(0.7)	0.4	1.4
Foreign sales corporation	(0.9)	(1.0)	(0.3)
State and local taxes net of federal	1.5	1.8	3.9
Realignment charge	—	—	7.2
Miscellaneous	1.4	(1.2)	(1.9)
Effective tax rate	37.1%	37.3	(23.1)

The components of deferred tax assets and liabilities at December 31 were:

<i>(dollars in thousands)</i>	1999	1998
Deferred tax assets:		
Pension and other benefit programs	28,824	29,502
Accrued liabilities	22,459	30,114
Net operating loss carryforwards	8,220	8,342
Inventories	2,446	3,730
Other	10,401	12,582
Total deferred tax assets	\$72,350	84,270
Deferred tax liabilities:		
Property and equipment – depreciation and amortization	22,948	14,211
Other	1,454	1,173
Total deferred tax liabilities	\$24,402	15,384
Net deferred tax asset before valuation allowance	47,948	68,886
Valuation allowance	(6,448)	(6,475)
Net deferred tax assets	\$41,500	62,411

At December 31, 1999, the Company's foreign subsidiaries had deferred tax assets relating to net operating loss carryforwards for income tax purposes of \$8.2 million that expire in years 2000 through 2004, and in two instances have no expiration period. For financial reporting purposes, a valuation allowance of \$6.1 million has been recognized to offset the deferred tax assets relating to the net operating loss carryforwards.

Of the total deferred tax assets, \$29.2 million and \$26.5 million were classified as current at December 31, 1999 and 1998, respectively.

Undistributed earnings of the Company's foreign subsidiaries amounted to approximately \$113.4 million. Deferred income taxes are not provided on these earnings as it is intended that the majority of these earnings are indefinitely invested in these entities.

## 12. Reporting for segments

In determining reportable segments, the Company considered its operating and management structure and the types of information subject to regular review by its "chief operating decision maker." On this basis, the Company's reportable segments include Coatings, Chemicals and Plastics.

Principal products from which the Coatings segment derives its revenues are ceramic glaze coatings, inorganic color, and powder and porcelain enamel coatings and electronic materials. The Chemicals segment's principal products include polymer additives as well as performance and fine chemicals. Revenues for the Plastics segment result primarily from the sale of plastic colorants and filled and reinforced plastics.

The accounting policies of the segments are consistent with those described for the consolidated financial statements in the summary of significant accounting policies (see Note 1). The Company measures segment profit for internal reporting purposes as net operating profit before interest and tax. Excluded from net operating profit are such items as realignment charges and unallocated corporate expenses. A complete reconciliation of segment income to consolidated income before tax is presented below.

Sales to external customers are presented in the following chart. Intersegment sales are not material.

<i>(dollars in millions)</i>	1999	1998	1997
Net sales			
Coatings	\$ 810.4	817.8	815.4
Chemicals	290.0	305.3	328.0
Plastics	254.9	238.7	237.9
Total	\$1,355.3	1,361.8	1,381.3

Income and reconciliation to income (loss) before taxes follows:

<i>(dollars in millions)</i>	1999	1998	1997
Coatings	\$ 94.2	89.3	84.2
Chemicals	34.2	36.4	32.4
Plastics	25.2	22.2	18.1
Segment income	153.6	147.9	134.7
Unallocated expenses	17.2	18.7	15.1
Realignment charge	—	—	152.8
Interest expense	18.3	15.3	12.2
Interest earned	(1.6)	(2.9)	(2.3)
Foreign currency	(1.6)	(0.9)	(2.2)
Miscellaneous-net	5.2	7.2	7.6
Income (loss) before taxes	\$116.1	110.5	(48.5)

Unallocated expenses consist primarily of corporate costs.

#### Depreciation and amortization

<i>(dollars in millions)</i>	1999	1998	1997
Coatings	\$ 29.4	25.7	25.8
Chemicals	11.0	10.8	12.2
Plastics	6.2	4.6	5.2
Segment depreciation and amortization	46.6	41.1	43.2
Other	1.9	2.0	1.8
Total consolidated	\$ 48.5	43.1	45.0

#### Assets

<i>(dollars in millions)</i>	1999	1998	1997
Coatings	\$557.2	452.4	403.9
Chemicals	157.1	163.2	163.5
Plastics	114.5	83.1	75.4
Segment assets	828.8	698.7	642.8
Other assets	143.0	150.5	142.9
Total consolidated	\$971.8	849.2	785.7

Segment assets consist of trade receivables, inventories, intangibles, and property, plant and equipment net of applicable reserves. Other assets include cash, deferred taxes and other items.

#### Expenditures for long-lived assets (including acquisitions)

<i>(dollars in millions)</i>	1999	1998	1997
Coatings	\$108.9	38.7	29.0
Chemicals	10.9	9.0	11.2
Plastics	33.5	6.8	3.7
Total	\$153.3	54.5	43.9

Geographic information follows:

#### Net sales

<i>(dollars in millions)</i>	1999	1998	1997
United States and Canada	\$ 756.7	737.3	748.6
International	598.6	624.5	632.7
Total	\$1,355.3	1,361.8	1,381.3

Geographic revenues are based on the region in which the customer invoice is generated. The United States of America is the single largest country for customer sales. No other single country represents greater than 10% of consolidated sales.

#### Long-lived assets

<i>(dollars in millions)</i>	1999	1998	1997
United States and Canada	\$303.0	218.4	207.0
International	120.8	106.3	87.5
Total	\$423.8	324.7	294.5

Except for the United States of America, no single country has greater than 10% of consolidated long-lived assets.

### 13. Financial instruments

The carrying amounts of cash and cash equivalents, trade receivables, other current assets, accounts payable and amounts included in investments and accruals meeting the definition of a financial instrument approximate fair value.

It is the Company's hedging policy to neutralize or mitigate the potentially negative effects of currency movements and raw material prices. The Company's use of derivative financial instruments is limited to the hedging of underlying exposures. The Company does not engage in speculative transactions for trading purposes.

The Company uses forward exchange contracts and currency options to hedge its exposure to foreign currency fluctuations. Several of the Company's foreign subsidiaries enter into forward contracts to protect against the risk of increased cost of non-local currency-denominated raw materials. The most prevalent transactions involve the purchase of U.S. dollars against the Euro. The maturity of the hedge instruments is consistent with the underlying exposure, generally not beyond one year. At December 31, 1999, the market value of such forward contracts was \$9.9 million, compared with a contract value of \$10.2 million.

The Company enters into foreign currency options to protect the U.S. dollar value of profits generated by certain European operations. Such activity involves the purchase of put options for the Euro against the U.S. dollar. The maturity of the options is generally under one year. At December 31, 1999, the face value or notional amount of all outstanding currency options was \$11.1 million. If liquidated at year-end 1999, these options would have produced a cash amount of \$0.5 million versus an unamortized cost of \$0.2 million.

The Company enters into selective foreign currency forward contracts to protect the U.S. dollar value of certain intercompany loans or subsidiary currency exposures. Such activities involve the forward sale of foreign currencies against the U.S. dollar. The maturity date of the forward contract is usually under one year. At December 31, 1999, the contract value of all outstanding forward contracts was \$22.3 million. If liquidated at year-end 1999, these forward contracts would have produced a cash gain amount of \$0.1 million.

All forward contract, option and hedging activity is executed with major reputable multinational financial institutions. Accordingly, the Company does not anticipate counterparty default.

#### 14. Lease commitment

In 1995, in conjunction with an acquisition, the Company entered into a five-year operating lease agreement for certain land, buildings, machinery and equipment. The Company has the option to purchase the assets at the end of the lease term for a price of \$29.6 million. In the event the Company chooses not to exercise this option, the Company is obligated to pay, or is entitled to receive from the lessor, the difference between the net sales proceeds and the outstanding lease balance.

Rentals are based on floating rates, and the total annual lease payments, based on the amount outstanding as of December 31, 1999, are estimated to be \$1.8 million annually.

## Selected Financial Data

Ferro Corporation and subsidiaries

Years ended December 31, 1989 through 1999  
(dollars in thousands except per share data  
and employee data)

	1999	1998	1997	1996	1995
<b>Operating results <sup>(a)</sup></b>					
Net sales	\$ 1,355,283	1,361,844	1,381,280	1,355,685	1,322,954
Income (loss) before taxes and cumulative effect of changes in accounting principles	116,114	110,481	(48,470)	88,207	80,159
Income tax expense (benefit)	\$ 43,099	41,199	(11,193)	33,621	30,905
Net income (loss)	\$ 73,015	69,282	(37,277)	54,586	49,254
Income as a percent of sales before cumulative effect of changes in accounting principles	5.4%	5.1%	—	4.0%	3.7%
Return on average shareholders' equity	25.2%	24.9%	—	14.2%	13.2%
<b>Per common share data <sup>(a,b)</sup></b>					
Average shares outstanding	35,197,243	36,419,090	38,131,631	39,506,572	41,419,578
Basic earnings	\$ 1.97	1.80	(1.08)	1.29	1.10
Diluted earnings	1.85	1.67	(1.08)	1.21	1.04
Cash dividends	0.55	0.495	0.43	0.39	0.36
Book value	8.44	8.02	7.32	9.99	9.49
<b>Financial condition at year-end</b>					
Current assets	\$ 490,529	451,128	427,030	416,522	433,530
Current liabilities	337,633	282,556	277,707	252,333	258,472
Working capital	152,896	168,572	149,323	164,189	175,058
Plant and equipment	715,727	640,327	561,181	683,129	653,352
Accumulated depreciation and amortization	385,334	367,592	321,001	375,746	364,064
Net property, plant and equipment	330,393	272,735	240,180	307,383	307,288
Other assets	150,828	125,302	118,469	146,563	136,294
Total assets	971,750	849,165	785,679	870,468	872,112
Long-term debt	236,794	156,283	102,020	105,308	104,910
ESOP loan guarantee	—	4,067	13,815	22,592	30,470
Postretirement liabilities	49,712	45,426	44,462	44,846	43,570
Other non-current liabilities	50,616	77,572	74,524	61,185	57,540
Shareholders' equity	296,995	283,261	273,151	384,204	382,150
<b>Plant and equipment</b>					
Capital expenditures and acquisitions	118,670	64,420	45,129	50,592	60,733
Depreciation	42,417	38,650	39,421	42,283	40,233
<b>Employees</b>					
Number (year-end)	6,881	6,693	6,851	6,912	6,914
Sales per employee	\$ 196,960	203,473	201,617	196,135	191,344

1994	1993	1992	1991	1990	1989
1,194,247	1,065,748	1,097,793	1,056,940	1,124,833	1,083,573
74,306	89,289	97,689	20,349	43,509	83,764
26,912	31,784	38,861	15,532	24,090	34,016
47,394	36,955	58,828	4,817	19,419	49,748
4.0%	5.4%	5.4%	0.5%	1.7%	4.6%
13.1%	16.3%	18.1%	1.6%	6.4%	16.8%
42,745,959	43,601,090	43,301,822	42,689,787	43,074,468	45,695,063
1.02	0.77	1.29	0.04	0.38	1.04
0.97	0.73	1.18	0.04	0.35	0.97
0.36	0.34	0.30	0.29	0.29	0.27
8.79	8.21	7.95	7.11	7.18	6.80
415,415	411,253	414,927	405,740	386,704	408,692
228,336	198,958	205,043	212,575	221,155	210,059
187,079	212,295	209,884	193,165	165,549	198,633
601,594	538,188	497,561	511,605	519,044	446,290
313,005	280,367	269,998	276,885	263,114	226,268
288,589	257,821	227,563	234,720	255,930	220,022
97,372	98,820	54,055	31,465	43,029	40,417
801,376	767,894	696,545	671,925	685,663	669,131
77,611	79,349	53,210	55,658	58,047	60,764
37,503	44,076	50,897	57,229	62,649	68,020
42,076	40,096	—	—	—	—
49,106	46,618	42,422	41,176	38,210	33,219
366,744	358,797	344,973	305,287	305,602	297,069
63,404	75,037	48,761	39,005	61,408	53,471
37,076	33,812	33,451	32,686	30,389	27,574
6,817	6,627	6,535	7,266	8,205	8,045
175,187	160,820	167,990	145,460	137,090	134,690

(a) Included in 1997 is a pre-tax realignment charge of \$152.8 million, which on an after-tax basis is \$100.0 million, or \$2.52 per common share. Excluding the realignment charge, net income for 1997 would have been \$62.7 million, or \$1.44 per common share. Included in 1993 is a pre-tax charge of \$3.0 million, which on an after-tax basis is \$1.8 million, or \$0.04 per common share. Also included in 1993 is the cumulative effect of accounting changes of \$20.6 million, which on an after-tax basis is \$0.47 per common share. Included in 1991 is a pre-tax restructuring charge of \$45.3 million, which on an after-tax basis is \$31.7 million, or \$0.74 per common share. A litigation charge of \$12.0 million is included in 1990, which on an after-tax basis \$7.9 million, or \$0.18 per common share. Excluding the charges in 1991 and 1990, net income for 1991 would have been \$36.5 million, or \$0.78 per common share, and net income for 1990 would have been \$27.3 million, or \$0.56 per common share.

(b) Basic earnings per share are based on a weighted average of common shares outstanding. Diluted earnings per share further reflect the potential dilution of earnings per share, assuming that certain stock options whose exercise price is less than the average market price for the stock are exercised and that convertible preferred shares are converted into common shares. Book value is based on outstanding common shares and net worth at the end of the year. Outstanding common shares and per share data are adjusted to reflect the 3-for-2 stock split in August 1989, 3-for-2 stock split in August 1992 and 3-for-2 stock split in November 1997.

## Quarterly Data (Unaudited)

Ferro Corporation and subsidiaries

(dollars in thousands except per share data)

	Quarter	Net sales	Gross profit	Net income	Per common share			Common stock price range
					Basic earnings	Diluted earnings	Cash dividends	
1999	1	\$ 331,481	92,216	17,101	0.46	0.43	0.135	\$28.000-20.125
	2	337,035	96,459	19,174	0.52	0.48	0.135	30.938-23.750
	3	338,035	93,329	18,066	0.48	0.45	0.135	28.375-20.563
	4	348,732	96,402	18,674	0.51	0.48	0.145	22.250-19.188
	Total	\$1,355,283	378,406	73,015	1.97	1.85	0.550	
1998	1	\$ 339,763	90,141	17,055	0.43	0.40	0.120	\$30.125-22.438
	2	348,004	92,551	18,402	0.47	0.44	0.120	29.750-23.875
	3	334,388	89,965	16,762	0.44	0.41	0.120	25.875-18.000
	4	339,689	91,604	17,063	0.46	0.42	0.135	29.250-18.563
	Total	\$1,361,844	364,261	69,282	1.80	1.67	0.495	

The common stock of the Company is listed on the New York Stock Exchange. Ticker Symbol: FOE  
At January 31, 2000, the Company had 2,315 holders of its common stock.

# Independent Auditors' Report

Ferro Corporation and subsidiaries

## To the Shareholders and Board of Directors of Ferro Corporation

We have audited the accompanying consolidated balance sheets of Ferro Corporation and subsidiaries as of December 31, 1999 and 1998 and the related consolidated statements of income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 1999. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the

accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Ferro Corporation and subsidiaries at December 31, 1999 and 1998, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 1999 in conformity with generally accepted accounting principles.

**KPMG LLP**

KPMG LLP  
Cleveland, Ohio  
January 25, 2000

# board of directors



- 5 **Sandra Austin Crayton**  
(1994) President, PhyServ Solutions, Inc., a wholly owned subsidiary of National Data Corporation; also President and CEO of Austin Associates, a management consulting firm, Age 52 [2, 3, 4]
- 6 **Albert C. Bersticker**  
(1978) Retired Chairman of Ferro. Age 65
- 7 **William E. Butler**  
(1992) Retired Chairman and Chief Executive Officer, Eaton Corporation, a manufacturer of engineered products for automotive, industrial, commercial and military markets, Age 68 [2, 3]

1

2

3

4

5

- 1 **Hector R. Ortino**  
(1993) Chairman and Chief Executive Officer of Ferro, Age 57 [3]
- 2 **Michael H. Bulkin**  
(1998) Private investor; Retired Director, McKinsey & Company, a management consulting firm, Age 61 [2, 3]
- 3 **John C. Morley**  
(1987) President, Evergreen Ventures, Ltd.; Retired Director, President and Chief Executive Officer, Reliance Electric Company, a manufacturer of industrial motors and controls, mechanical power transmission products and specialty telecommunication systems and products, Age 68 [1, 3, 4]
- 4 **William J. Sharp**  
(1998) President, North American Tire, The Goodyear Tire & Rubber Company, a worldwide manufacturer of tires, chemicals and engineered products, Age 58 [1, 4]
- 8 **Dr. Glenn R. Brown**  
(1988) Science advisor to the Governor of the State of Ohio; Retired Senior Vice President and Director, Standard Oil Company, Age 69 [1, 2]
- 9 **Dennis W. Sullivan**  
(1992) Executive Vice President, Parker Hannifin Corporation, a manufacturer of fluid power products, Age 61 [1, 4]
- 10 **Rex A. Sebastian**  
(1986) Private investor; Retired Senior Vice President, Operations, Dresser Industries, a producer of energy and industrial-related products and services, Age 70
- 11 **William B. Lawrence**  
(1999) Executive Vice President, Law, Corporate Development and Government Affairs, TRW Inc., a global provider of products and services for the automotive, aerospace and information systems markets, Age 55

*Note: Figures in parentheses indicate the year the Director was elected to the Board. Figures in brackets indicate the Committee(s) on which a Director serves.*

- [1] Audit
- [2] Compensation & Organization
- [3] Executive
- [4] Finance



## Corporate Officers

**David G. Campopiano**  
(1989) Vice President,  
Mergers and Acquisitions, Age 50

**Mark A. Cusick**  
(1995) Secretary  
Principal Occupation:  
Partner, Squire, Sanders & Dempsey  
LLP, Attorneys at Law, Age 51

**R. Jay Finch**  
(1991) Senior Vice President,  
Specialty Plastics, Age 58

**J. Larry Jameson**  
(1996) Senior Vice President,  
Industrial Coatings, Age 62

**Kent H. Lee, Jr.**  
(1996) Senior Vice President,  
Specialty Chemicals, Age 58

**Hector R. Ortino**  
(1971) Chairman and  
Chief Executive Officer, Age 57

**Millicent W. Pitts**  
(1998) Vice President,  
Global Operations Support, Age 45

**Paul V. Richard**  
(1983) Vice President,  
Human Resources, Age 40

**Robert A. Rieger**  
(1998) Vice President, Ceramics, Colors  
and Electronic Materials, Age 49

**Bret W. Wise**  
(1999) Senior Vice President and  
Chief Financial Officer, Age 39

*Note: Figures in parentheses indicate the  
year the Officer joined the Corporation.*

## Corporate Information

### Automatic Dividend Reinvestment and Stock Purchase Plan

This Plan provides an opportunity for shareholders to purchase additional shares of Ferro common stock by automatic reinvestment of dividends and by optional additional periodic cash payments, without paying service charges or brokerage commissions. These costs will be paid by Ferro.

The Plan is administered by National City Bank.

Any questions or correspondence about the Plan should be addressed to:

*National City Bank Corporate Trust Department*  
P.O. Box 92301  
Cleveland, Ohio 44193-0900  
216-476-8573  
Toll free: 800-622-6757

### Brokerage Accounts

To reduce communication delays that exist for some Ferro shareholders who hold their stock in brokerage accounts, the Company will send its various printed communications directly to these shareholders. If you would like to take advantage of this service, please write to: *Treasury Department, Ferro Corporation, 1000 Lakeside Avenue, P.O. Box 147000, Cleveland, Ohio 44114-7000, U.S.A.*, indicating the number of Ferro shares owned and the name and address of the brokerage firm that administers your account.

### Stock Transfer Agent/Registrar and Dividend Disbursing Agent

*National City Bank*  
P. O. Box 5756  
Cleveland, Ohio 44101-0756

### Trustee 7<sup>3</sup>/<sub>8</sub>%, 7<sup>7</sup>/<sub>8</sub>%, 7<sup>1</sup>/<sub>8</sub>% and 8% Debentures

*Chase Manhattan Trust Company National Association*  
Chase Financial Tower  
250 West Huron Road, Suite 220  
Cleveland, Ohio 44113

### Independent Auditors

*KPMG LLP*  
1500 National City Center  
1900 East Ninth Street  
Cleveland, Ohio 44114

### Exchange Listing

New York Stock Exchange  
Common Stock  
Stock symbol: FOE

### Form 10-K

Ferro Corporation's Form 10-K filed with the Securities and Exchange Commission for the year ended December 31, 1999 is available to shareholders upon written request to:

*Investor Relations*  
Ferro Corporation  
1000 Lakeside Avenue  
P.O. Box 147000  
Cleveland, Ohio 44114-7000  
call 216-641-8585 ext. 2100  
or email: [investor@ferro.com](mailto:investor@ferro.com)

### Investor Contact

*Aidan Gormley, Manager*  
Investor Relations  
216-875-7155  
email: [gormley@ferro.com](mailto:gormley@ferro.com)

### Annual Meeting

April 28, 2000, 9:00 a.m.  
Great Lakes Science Center  
Auditorium  
601 Erieside Avenue  
Cleveland, Ohio 44114

### Executive Offices

*Ferro Corporation*  
1000 Lakeside Avenue  
P.O. Box 147000  
Cleveland, Ohio 44114-7000  
216-641-8580

*For more information, visit the Company's Web site at [www.ferro.com](http://www.ferro.com)*

## Worldwide Operating Units

### United States

#### *Coatings*

California, Georgia, New York, Ohio,  
Pennsylvania, Tennessee

#### *Plastics*

Illinois, Indiana, New Jersey, Ohio

#### *Chemicals*

Indiana, Louisiana, Ohio, Texas

### Europe

#### *France*

Ferro France S.a.R.L.  
Ferro Chemicals S.A.

#### *Germany*

Ferro (Deutschland) GmbH.  
Ruhr-Pulverlack GmbH

#### *Great Britain*

Ferro (Great Britain) Ltd.

#### *Holland*

Ferro (Holland) B.V.

#### *Italy*

Ferro (Italia) S.R.L.

#### *Portugal*

Ferro Industries Quimicas, S.A.

#### *Spain*

Ferro Enamel Española, S.A.

#### *Turkey*

Ege-Ferro Kimya A.S. (49.9%)

### Latin America

#### *Argentina*

Ferro Enamel Argentina, S.A.I.C.y.M.  
Minera Loma Blanca, S.A.  
Procesadara de Boratos Argentinos, S.A. (50%)

#### *Brazil*

Ferro Enamel do Brasil I.C.L.

#### *Mexico*

Ferro Mexicana S.A. de C.V.

#### *Venezuela*

Ferro de Venezuela, C.A. (51%)

### Asia-Pacific

#### *Australia*

Ferro Corporation (Australia) Pty. Ltd.

#### *Indonesia*

P.T. Ferro Mas Dinamika (95%)

#### *People's Republic of China*

Ferro (Ningbo) Powder Coatings, Ltd.

#### *Taiwan, Republic of China*

Ferro Industrial Products Limited  
Ferro Toyo Co., Ltd. (60%)

#### *Thailand*

Ferro (Thailand) Co. Ltd. (49%)

Note: Percentages in parentheses indicate  
Ferro's ownership.

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registered trademarks of Ferro Corporation.

