PAC-WEST TELECOMM INC
Form SC 13G/A
February 14, 2005

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

SCHEDULE 13G/A

(Rule 13d-102)

INFORMATION TO BE INCLUDED IN STATEMENTS FILED PURSUANT

TO RULES 13d-1(b), (c) AND (d) AND AMENDMENTS THERETO FILED

PURSUANT To 13d-2(b)

(Amendment No. 4)[1]

Pac-West Telecomm, Inc.

(Name of Issuer)

Common Stock

(Title of Class of Securities)

69371Y 10 1

(CUSIP Number)

December 31, 2004

(Date of Event Which Requires Filing of This Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

¨ Rule 13d-1(b)

¨ Rule 13d-1(c)

x Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person s initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be filed for the purpose of Section 18 of the Securities Exchange Act of 1934 or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. 69371Y 10 1 **Schedule 13G/A** Pac-West Telecomm, Inc.

1. NAMES OF REPORTING PERSONS

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

Bay Alarm Securities LLC

94-3347881

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP*

(a) ¨

(b) ¨

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Organized in South Dakota

NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	
	5. SOLE VOTING POWER **3,620,688**
	6. SHARED VOTING POWER **0**
	7. SOLE DISPOSITIVE POWER **3,620,688**
	8. SHARED DISPOSITIVE POWER **0**

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

3,620,688

10. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES* ¨

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9

9.9% (1)

12. TYPE OF REPORTING PERSON*

OO (limited liability company)

(1) Based upon 36,687,668 shares of the Issuer s common stock outstanding at October 29, 2004, as reported in the Issuer s Form 10-Q for the quarter ended September 30, 2004.

CUSIP No. 69371Y 10 1 **Schedule 13G/A** Pac-West Telecomm, Inc.

1. NAMES OF REPORTING PERSONS

I.R.S. IDENTIFICATION NOS. OF ABOVE PERSONS (ENTITIES ONLY)

The Westphal Family Foundation

91-6491365

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP*

(a) ¨

(b) ¨

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

Organized in California

NUMBER OF SHARES BENEFICIALLY OWNED BY EACH REPORTING PERSON WITH	
	5. SOLE VOTING POWER **50,000**
	6. SHARED VOTING POWER **0**
	7. SOLE DISPOSITIVE POWER **50,000**
	8. SHARED DISPOSITIVE POWER **0**

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

50,000

10. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES* ¨

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW 9

0.1% (1)

12. TYPE OF REPORTING PERSON*

OO (charitable trust)

(1) Based upon 36,687,668 shares of the Issuer s common stock outstanding at October 29, 2004, as reported in the Issuer s Form 10-Q for the quarter ended September 30, 2004.

Item 1 (a). Name of Issuer:

Pac-West Telecomm, Inc.

Item 1 (b). Address of Issuer s Principal Executive Offices:

1776 W. March Lane

Suite 250

Stockton, CA

Item 2 (a). Name of Person Filing:

Bruce A. Westphal as Chairman of the Board of Bay Alarm Company, sole member of Bay Alarm Securities LLC.

Patricia Westphal as Managing Co-Trustee of the Westphal Family Foundation.

Item 2 (b). Address of Principal Business Office or, if None, Residence:

925 Ygnacio Valley Road, Walnut Creek, CA 94596-8140 (for both entities)

Item 2 (c). Citizenship:

Bay Alarm Securities LLC is organized in South Dakota.

The Westphal Family Foundation is organized in California.

Item 2 (d). Title of Class of Securities:

Common Stock

Item 2 (e). CUSIP Number:

69371Y 10 1

Item 3. If this statement is filed pursuant to Rules 13d-1(b), or 13d-2(b) or (c), check whether the person filing is a:

(a) ¨ Broker or dealer registered under Section 15 of the Exchange Act.

(b) ¨ Bank as defined in Section 3(a)(6) of the Exchange Act.

(c) ¨ Insurance company as defined in Section 3(a)(19) of the Exchange Act.

(d) ¨ Investment company registered under Section 8 of the Investment Company Act.

(e) ¨ An investment adviser in accordance with Rule 13d-1(b)(1)(ii)(E).

(f) ¨ An employee benefit plan or endowment fund in accordance with Rule 13d-1(b)(1)(ii)(F).

(g) ¨ A parent holding company or control person in accordance with Rule 13d-1(b)(ii)(G).

(h) ¨ A savings association as defined in Section 3(b) of the Federal Deposit Insurance Act.

(i) ¨ A church plan that is excluded from the definition of an investment company under Section 3(c)(14) of the Investment Company Act.

(j) ¨ Group, in accordance with Rule 13d-1(b)(1)(ii)(J)

If this statement is filed pursuant to Rule 13d-1(c), check this box. ¨

Item 4. Ownership.

Reference is made to Rows 5-9 and 11 of each of the cover pages of this Schedule 13G/A and associated footnotes, which Rows and footnotes are incorporated by reference herein.

Item 5. Ownership of Five Percent or Less of a Class.

Not Applicable

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Not Applicable

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company.

Not Applicable

Item 8. Identification and Classification of Members of the Group.

Not Applicable

Item 9. Notice of Dissolution of Group.

Not Applicable

Item 10. Certification.

Not Applicable

SIGNATURE PAGE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 11, 2005	**BAY ALARM SECURITIES LLC:**
	By Bay Alarm Company, Inc. as sole member
	/s/ Bruce A. Westphal
	Bruce A. Westphal, Chairman of the Board
February 11, 2005	**THE WESTPHAL FAMILY FOUNDATION:**
	/s/ Patricia Westphal
	Patricia Westphal, Managing Co-Trustee

EXHIBIT A

JOINT FILING AGREEMENT

This Joint Filing Agreement (this Agreement) hereby confirms the agreement by and among all of the undersigned that the Schedule 13G/A to which this Agreement is attached as Exhibit A with respect to the beneficial ownership of the undersigned of shares of the Common Stock of Pac-West Telecomm, Inc., is being filed on behalf of each of the undersigned. This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

February 11, 2005

BAY ALARM SECURITIES LLC:

By Bay Alarm Company, Inc. as sole member

/s/ Bruce A. Westphal

Bruce A. Westphal, Chairman of the Board

February 11, 2005

THE WESTPHAL FAMILY FOUNDATION:

/s/ Patricia Westphal

Patricia A. Westphal, Managing Co-Trustee

Brazil

Indonesia

Portugal

United States

China

Italy

Russia

Venezuela

Egypt

Japan

Spain

Unconsolidated Affiliates:

Italy

Spain

South Korea

Financial information for geographic areas is included in Note 19 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K. More than 50% of our net sales are outside of the U.S. Our customers represent more than 30 industries and operate in approximately 100 countries.

Our U.S. parent company receives technical service fees and/or royalties from many of its foreign subsidiaries. As a matter of corporate policy, the foreign subsidiaries have historically been expected to remit a portion of their annual earnings to the U.S. parent company as dividends. To the extent earnings of foreign subsidiaries are not remitted to the U.S. parent company, those earnings are indefinitely re-invested in those subsidiaries.

Available Information

Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, and Current Reports on Form 8-K, including any amendments, will be made available free of charge on our Web site, www.ferro.com, as soon as reasonably practical, following the filing of the reports with the U.S. Securities and Exchange Commission

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(SEC). Our Corporate Governance Principles, Legal and Ethical Policies, Guidelines for Determining Director Independence, and charters for our Audit Committee, Compensation Committee, Strategy Committee and Governance and Nomination Committee are available free of charge on our Web site or to any shareholder who requests them from the Ferro Corporation Investor Relations Department located at 6060 Parkland Blvd., Mayfield Heights, Ohio, 44124.

Forward-looking Statements

Certain statements contained here and in future filings with the SEC reflect our expectations with respect to future performance and constitute forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements are subject to a variety of uncertainties, unknown risks and other factors concerning our operations and the business environment, which are difficult to predict and are beyond our control.

Item 1A ***Risk Factors***

Many factors could cause our actual results to differ materially from those suggested by statements contained in this filing and could adversely affect our future financial performance. Such factors include the following:

We sell our products into industries where demand has been unpredictable, cyclical or heavily influenced by consumer spending, and such demand and our results of operations may be further impacted by macro-economic circumstances.

We sell our products to a wide variety of customers who supply many different market segments. Many of these market segments, such as building and renovation, major appliances, transportation, and electronics, are cyclical or closely tied to consumer demand. Consumer demand is difficult to accurately forecast and incorrect forecasts of demand or unforeseen reductions in demand can adversely affect costs and profitability due to factors such as underused manufacturing capacity, excess inventory, or working capital needs. Our forecasting systems and modeling tools may not accurately predict changes in demand for our products or other market conditions.

Our results of operations are materially affected by conditions in capital markets and economies in the U.S. and elsewhere around the world. Concerns over fluctuating prices, energy costs, geopolitical issues, government deficits and debt loads, and the availability and cost of credit have contributed to economic uncertainty around the world. Our customers may be impacted by these conditions and may modify, delay, or cancel plans to purchase our products. Additionally, if customers are not successful in generating sufficient revenue or are precluded from securing financing, they may not be able to pay, or may delay payment of, accounts receivable that are owed to us. A reduction in demand or inability of customers to pay us for our products may adversely affect our earnings and cash flow.

We have undertaken cost-savings initiatives, including restructuring programs, to improve our operating performance, but we may not be able to implement and/or administer these initiatives in the manner contemplated and these initiatives may not produce the desired results.

We have undertaken cost-savings initiatives, including restructuring programs, and may undertake additional cost-savings initiatives in the future. These initiatives involve, among other things, restructuring programs that involve plant closures and staff reductions. Although we expect these initiatives to help us achieve incremental cost savings and operational efficiencies, we may not be able to implement and/or administer these initiatives, including plant closures and staff reductions, in the manner contemplated, which could cause the initiatives to fail to achieve the desired results. Additionally, the implementation of these initiatives may result in impairment charges, some of which could be material. Even if we do implement and administer these initiatives

in the manner contemplated, they may not produce the desired results. Accordingly, the initiatives that we have implemented and those that we may implement in the future may not improve our operating performance and may not help us achieve cost savings. Failure to successfully implement and/or administer these initiatives could have an adverse effect on our financial performance.

We are subject to a number of restrictive covenants under our credit facilities and the indenture governing our senior notes, which could affect our flexibility to fund ongoing operations and strategic initiatives, and, if we are unable to maintain compliance with such covenants, could lead to significant challenges in meeting our liquidity requirements.

Our credit facilities and the indenture governing our senior notes contain a number of restrictive covenants, including those described in more detail in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K. These covenants include customary operating restrictions that limit our ability to engage in certain activities, including additional loans and investments; prepayments, redemptions and repurchases of debt; and mergers, acquisitions and asset sales. We are also subject to customary financial covenants under our credit facilities, including a leverage ratio and an interest coverage ratio. These covenants under our credit facilities restrict the amount of our borrowings, reducing our flexibility to fund ongoing operations and strategic initiatives. These facilities and our senior notes are described in more detail in Capital Resources and Liquidity under Item 7 and in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

The most critical of these ratios is the leverage ratio. As of December 31, 2013, we were in compliance with our maximum leverage ratio covenant of 4.00x as our actual ratio was 2.57x, providing $43.8 million of EBITDA, as defined within our credit facilities and senior notes indenture, cushion on the leverage ratio. Our leverage ratio covenants decrease in the second and third quarters of 2014 to 3.75x and in the fourth quarter of 2014 and thereafter it will be 3.50x. To the extent that economic conditions in key markets deteriorate or we are unable to meet our business projections and EBITDA falls below approximately $100 million for a rolling four quarters, based on reasonably consistent debt levels with those as of December 31, 2013, we could be unable to maintain compliance with our leverage ratio covenant, in which case, our lenders could demand immediate payment of outstanding amounts and we would need to seek alternate financing sources to pay off such debts and to fund our ongoing operations. Such financing may not be available on favorable terms, if at all.

We depend on external financial resources, and the economic environment and credit market uncertainty could interrupt our access to capital markets, borrowings, or financial transactions to hedge certain risks, which could adversely affect our financial condition.

At December 31, 2013, we had approximately $311.7 million of short-term and long-term debt with varying maturities and approximately $40.9 million of off balance sheet arrangements, including consignment arrangements for precious metals, bank guarantees, and standby letters of credit. These arrangements have allowed us to make investments in growth opportunities and fund working capital requirements. In addition, we may enter into financial transactions to hedge certain risks, including foreign exchange, commodity pricing, and sourcing of certain raw materials. Our continued access to capital markets, the stability of our lenders, customers and financial partners and their willingness to support our needs are essential to our liquidity and our ability to meet our current obligations and to fund operations and our strategic initiatives. An interruption in our access to external financing or financial transactions to hedge risk could adversely affect our business prospects and financial condition. See further information regarding our liquidity in Capital Resources and Liquidity under Item 7 and in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

We strive to improve operating margins through sales growth, price increases, productivity gains, and improved purchasing techniques, but we may not achieve the desired improvements.

We work to improve operating profit margins through activities such as growing sales to achieve increased economies of scale, increasing prices, improving manufacturing processes, and adopting purchasing techniques that lower costs or provide increased cost predictability to realize cost savings. However, these activities depend

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on a combination of improved product design and engineering, effective manufacturing process control initiatives, cost-effective redistribution of production, and other efforts that may not be as successful as anticipated. The success of sales growth and price increases depends not only on our actions but also on the strength of customer demand and competitors pricing responses, which are not fully predictable. Failure to successfully implement actions to improve operating margins could adversely affect our financial performance.

We rely on information systems to conduct our business and interruption, or damage to, or failure or compromise of, these systems may adversely affect our business and results of operations.

We rely on information systems to obtain, process, analyze and manage data to forecast and facilitate the purchase and distribution of our products; to receive, process, and ship orders on a timely basis; to account for other product and service transactions with customers; to manage the accurate billing and collections for thousands of customers; to process payments to suppliers; and to manage data and records relating to our employees, contractors, and other individuals. Our business and results of operations may be adversely affected if these systems are interrupted, damaged, or compromised or if they fail for any extended period of time, due to events including but not limited to programming errors, computer viruses and security breaches. Information privacy and security risks have generally increased in recent years because of the proliferation of new technologies and the increased sophistication and activities of perpetrators of cyber attacks, and prevention of information and privacy security breaches cannot be assured. We may be required to expend additional resources to continue to enhance our information privacy and security measures and/or to investigate and remediate any information security vulnerabilities. In addition, third-party service providers are responsible for managing a significant portion of our information systems, and we are subject to risk as a result of possible information privacy and security breaches of those third parties. The consequences of these risks could adversely impact our results of operations, financial condition, and cash flows.

We depend on reliable sources of energy and raw materials, including petroleum-based materials, minerals and other supplies, at a reasonable cost, but the availability of these materials and supplies could be interrupted and/or their prices could escalate and adversely affect our sales and profitability.

We purchase energy and many raw materials, including petroleum-based materials and other supplies, which we use to manufacture our products. Changes in their availability or price could affect our ability to manufacture enough products to meet customers demands or to manufacture products profitably. We try to maintain multiple sources of raw materials and supplies where practical, but this may not prevent unanticipated changes in their availability or cost and, for certain raw materials, there may not be alternative sources. We may not be able to pass cost increases through to our customers. Significant disruptions in availability or cost increases could adversely affect our manufacturing volume or costs, which could negatively affect product sales or profitability of our operations.

The global scope of our operations exposes us to risks related to currency conversion rates, new and different regulatory schemes and changing economic, regulatory, social and political conditions around the world.

More than 50% of our net sales during 2013 were outside of the U.S. In order to support global customers, access regional markets and compete effectively, our operations are located around the world. We may encounter difficulties expanding into additional growth markets around the world. Our operations have additional complexity due to economic, regulatory, social and political conditions in multiple locations and we are subject to risks relating to currency conversion rates. Other risks inherent in international operations include the following:

- New and different legal and regulatory requirements and enforcement mechanisms in local jurisdictions;
- U.S. and other export licenses may be difficult to obtain and we may be subject to export duties or import quotas or other trade restrictions or barriers;
- Increased costs, and decreased availability, of transportation or shipping;

- Credit risk and financial conditions of local customers and distributors;

- Risk of nationalization of private enterprises by foreign governments or restrictions on investments;

- Potentially adverse tax consequences, including imposition or increase of withholding and other taxes on remittances and other payments by subsidiaries; and

- Local political, economic and social conditions, including the possibility of hyperinflationary conditions, deflation, and political instability in certain countries.

We have subsidiaries in Venezuela, a country that has established rigid controls over the ability of foreign companies to repatriate cash, and in Egypt, a country with recent political instability. Such conditions could potentially impact our ability to recover both the cost of our investments and earnings from those investments. While we attempt to anticipate these changes and manage our business appropriately in each location where we do business, these changes are often beyond our control and difficult to forecast.

The consequences of these risks may have significant adverse effects on our results of operations or financial position, and if we fail to comply with applicable laws and regulations, we could be exposed to civil and criminal penalties, reputational harm, and restrictions on our operations.

We have a presence in regions of the world where it can be difficult for a multi-national company such as Ferro to compete lawfully with local competitors, which may cause us to lose business opportunities.

We pursue business opportunities around the world and many of our most promising growth opportunities are in developing markets and the Asia-Pacific region, including the People s Republic of China. Although we have been able to compete successfully in those markets to date, local laws and customs can make it difficult for a multi-national company such as Ferro to compete on a level playing field with local competitors without engaging in conduct that would be illegal under U.S. or other countries anti-bribery laws. Our strict policy of observing the highest standards of legal and ethical conduct may cause us to lose some otherwise attractive business opportunities to competitors in these regions.

Regulatory authorities in the U.S., European Union and elsewhere are taking a much more aggressive approach to regulating hazardous materials and other substances, and those regulations could affect sales of our products.

Legislation and regulations concerning hazardous materials and other substances can restrict the sale of products and/or increase the cost of producing them. Some of our products are subject to restrictions under laws or regulations such as California Proposition 65 or the EU s chemical substances directive. The EU REACH registration system requires us to perform studies of some of our products or components of our products and to register the information in a central database, increasing the cost of these products. As a result of such regulations, customers may avoid purchasing some products in favor of less hazardous or less costly alternatives. It may be impractical for us to continue manufacturing heavily regulated products, and we may incur costs to shut down or transition such operations to alternative products. These circumstances could adversely affect our business, including our sales and operating profits.

Our businesses depend on a continuous stream of new products, and failure to introduce new products could affect our sales, profitability and liquidity.

One way that we remain competitive is by developing and introducing new and improved products on an ongoing basis. Customers continually evaluate our products in comparison to those offered by our competitors. A failure to introduce new products at the right time that are price competitive and that provide the features and performance required by customers could adversely affect our sales, or could require us to compensate by lowering prices. In addition, when we invest in new product development, we face risks related to production delays, cost over-runs and unanticipated technical difficulties, which could impact sales, profitability and/or liquidity.

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We may not be able to complete or successfully integrate future acquisitions into our business, which could adversely affect our business or results of operations.

As part of our strategy, we intend to pursue acquisitions. Our success in accomplishing growth through acquisitions may be limited by the availability and suitability of acquisition candidates and by our financial resources, including available cash and borrowing capacity. Acquisitions involve numerous risks, including difficulty determining appropriate valuation, integrating operations, technologies, services and products of the acquired product lines or businesses, personnel turnover and the diversion of management s attention from other business matters. In addition, we may be unable to achieve anticipated benefits from these acquisitions in the time frame that we anticipate, or at all, which could adversely affect our business or results of operations.

Our strategy includes seeking opportunities in new growth markets, and failure to identify or successfully enter such markets could affect our ability to grow our revenues and earnings.

Certain of our products are sold into mature markets and part of our strategy is to identify and enter into markets growing more rapidly. These growth opportunities may involve new geographies, new product lines, new technologies, or new customers. We may not be successful capitalizing on such opportunities and our ability to increase our revenue and earnings could be impacted.

Sales of our products to certain customers or into certain industries may expose us to different and complex regulatory regimes.

We seek to expand our customer base and the industries into which we sell. Selling products to certain customers or into certain industries, such as governments or the defense industry, requires compliance with regulatory regimes that do not apply to sales involving other customers or industries and that can be complex and difficult to navigate. Our failure to comply with these regulations could result in liabilities or damage to our reputation with customers, which could negatively impact our business, financial condition, or results of operations.

We have limited or no redundancy for certain of our manufacturing facilities, and damage to or interference with those facilities could interrupt our operations, increase our costs of doing business and impair our ability to deliver our products on a timely basis.

If certain of our existing production facilities become incapable of manufacturing products for any reason, we may be unable to meet production requirements, we may lose revenue and we may not be able to maintain our relationships with our customers. Without operation of certain existing production facilities, we may be limited in our ability to deliver products until we restore the manufacturing capability at the particular facility, find an alternative manufacturing facility or arrange an alternative source of supply. Although we carry business interruption insurance to cover lost revenue and profits in an amount we consider adequate, this insurance does not cover all possible situations. In addition, our business interruption insurance would not compensate us for the loss of opportunity and potential adverse impact on relations with our existing customers resulting from our inability to produce products for them.

The markets for our products are highly competitive and subject to intense price competition, which could adversely affect our sales and earnings performance.

Our customers typically have multiple suppliers from which to choose. If we are unwilling or unable to provide products at competitive prices, and if other factors, such as product performance and value-added services do not provide an offsetting competitive advantage, customers may reduce, discontinue, or decide not to purchase our products. If we could not secure alternate customers for lost business, our sales and earnings performance could be adversely affected.

If we are unable to protect our intellectual property rights or to successfully resolve claims of infringement brought against us, our product sales and financial performance could be adversely affected.

Our performance may depend in part on our ability to establish, protect and enforce intellectual property rights with respect to our products, technologies and proprietary rights and to defend against any claims of infringement, which involves complex legal, scientific and factual questions and uncertainties. We may have to rely on litigation to enforce our intellectual property rights. In addition, we may face claims of infringement that could interfere with our ability to use technology or other intellectual property rights that are material to our business operations. If litigation that we initiate is unsuccessful, we may not be able to protect the value of some of our intellectual property. In the event a claim of infringement against us is successful, we may be required to pay royalties or license fees to continue to use technology or other intellectual property rights that we have been using or we may be unable to obtain necessary licenses from third parties at a reasonable cost or within a reasonable time.

Our operations are subject to operating hazards and, as a result, to stringent environmental, health and safety regulations, and compliance with those regulations could require us to make significant investments.

Our production facilities are subject to hazards associated with the manufacture, handling, storage, and transportation of chemical materials and products. These hazards can cause personal injury and loss of life, severe damage to, or destruction of, property and equipment and environmental contamination and other environmental damage and could have an adverse effect on our business, financial condition or results of operations.

We strive to maintain our production facilities and conduct our manufacturing operations in a manner that is safe and in compliance with all applicable environmental, health and safety regulations. Compliance with changing regulations may require us to make significant capital investments, incur training costs, make changes in manufacturing processes or product formulations, or incur costs that could adversely affect our profitability, and violations of these laws could lead to substantial fines and penalties. These costs may not affect competitors in the same way due to differences in product formulations, manufacturing locations or other factors, and we could be at a competitive disadvantage, which might adversely affect financial performance.

If we are unable to manage our general and administrative expenses, our business, financial condition or results of operations could be negatively impacted.

We may not be able to manage our administrative expense in all circumstances. While we attempt to effectively manage such expenses, including through projects designed to create administrative efficiencies, increases in staff-related and other administrative expenses may occur from time to time. Recently, we have made significant efforts to achieve general and administrative cost savings and improve our operational performance. As a part of these initiatives, we have and will continue to consolidate business and management operations and enter into arrangements with third parties offering additional cost savings. It cannot be assured that our strategies to reduce our general and administrative costs and improve our operating performance will be successful or achieve the anticipated savings.

Our multi-jurisdictional tax structure may not provide favorable tax efficiencies.

We conduct our business operations in a number of countries and are subject to taxation in those jurisdictions. While we seek to minimize our worldwide effective tax rate, our corporate structure may not optimize tax efficiency opportunities. We develop our tax position based upon the anticipated nature and structure of our business and the tax laws, administrative practices and judicial decisions now in effect in the countries in which we have assets or conduct business, which are subject to change or differing interpretations. In addition, our effective tax rate could be adversely affected by several other factors, including: increases in expenses that are not deductible for tax purposes, the tax effects of restructuring charges or purchase accounting for acquisitions, changes related to our ability to ultimately realize future benefits attributed to our deferred tax assets, including those related to other-than-temporary impairment, and a change in our decision to indefinitely

reinvest foreign earnings. Further, we are subject to review and audit by both domestic and foreign tax authorities, which may result in adverse decisions. Increased tax expense could have a negative effect on our operating results and financial condition.

We have significant deferred tax assets, and if we are unable to utilize these assets, our results of operations may be adversely affected.

To fully realize the carrying value of our net deferred tax assets, we will have to generate adequate taxable profits in various tax jurisdictions. At December 31, 2013, we had $22.0 million of net deferred tax assets, after valuation allowances. If we do not generate adequate profits within the time periods required by applicable tax statutes, the carrying value of the tax assets will not be realized. If it becomes unlikely that the carrying value of our net deferred tax assets will be realized, the valuation allowances may need to be increased in our consolidated financial statements, adversely affecting results of operations. Further information on our deferred tax assets is presented in Note 8 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

We may not be successful in implementing our strategies to increase our return on invested capital.

We are taking steps to generate a higher return on invested capital. There are risks associated with the implementation of these steps, which may be complicated and may involve substantial capital investment. To the extent we are unsuccessful in achieving these strategies, our results of operations may be adversely affected.

We are subject to stringent labor and employment laws in certain jurisdictions in which we operate, we are party to various collective bargaining arrangements, and our relationship with our employees could deteriorate, which could adversely impact our operations.

A majority of our full-time employees are employed outside the U.S. In certain jurisdictions where we operate, labor and employment laws are relatively stringent and, in many cases, grant significant job protection to certain employees, including rights on termination of employment. In addition, in certain countries where we operate, our employees are members of unions or are represented by works councils. We are often required to consult and seek the consent or advice of these unions and/or works councils. These regulations and laws, coupled with the requirement to consult with the relevant unions or works councils, could have a significant impact on our flexibility in managing costs and responding to market changes.

Furthermore, approximately 22% of our U.S. employees as of December 31, 2013, are subject to collective bargaining arrangements or similar arrangements, and approximately 11% are subject to labor agreements that expire in 2014. While we expect to complete renewal of these agreements without significant disruption to our business, there can be no assurance that we will be able to negotiate labor agreements on satisfactory terms or that actions by our employees will not be disruptive to our business. If these workers were to engage in a strike, work stoppage or other slowdown or if other employees were to become unionized, we could experience a significant disruption of our operations and/or higher ongoing labor costs, which could adversely affect our business, financial condition and results of operations.

Employee benefit costs, especially postretirement costs, constitute a significant element of our annual expenses, and funding these costs could adversely affect our financial condition.

Employee benefit costs are a significant element of our cost structure. Certain expenses, particularly postretirement costs under defined benefit pension plans and healthcare costs for employees and retirees, may increase significantly at a rate that is difficult to forecast and may adversely affect our financial results, financial condition or cash flows. Declines in global capital markets may cause reductions in the value of our pension plan assets. Such circumstances could have an adverse effect on future pension expense and funding requirements. Further information regarding our retirement benefits is presented in Note 10 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

Our implementation of business information systems and processes could adversely affect our results of operations and cash flow.

We have been implementing information systems and related business processes to standardize and streamline our business operations. Implementation of information systems and related processes involves risk, including risks related to programming and data transfer. Costs of implementation also could be greater than anticipated. In addition, we may be unable or decide not to implement such systems and processes in certain locations. Inherent risks, decisions and constraints related to implementation could result in operating inefficiencies and could impact our ability to perform business transactions. These risks could adversely impact our results of operations, financial condition, and cash flows.

There are risks associated with the manufacture and sale of our products into the pharmaceutical industry.

The manufacture and sale of products into the pharmaceutical industry involves the risk of injury to consumers, as well as commercial risks. Injury to consumers could result from, among other things, tampering by unauthorized third parties or the introduction into the product of foreign objects, substances, chemicals and other agents during the manufacturing, packaging, storage, handling or transportation phases. Shipment of adulterated products may be a violation of law and may lead to an increased risk of exposure to product liability or other claims, product recalls and increased scrutiny by federal and state regulatory agencies. Such claims or liabilities may not be covered by our insurance or by any rights of indemnity or contribution that we may have against third parties. In addition, the negative publicity surrounding any assertion that our products caused illness or injury could have a material adverse effect on our reputation with existing and potential customers, which could negatively impact our business, operating results or financial condition.

We are exposed to lawsuits in the normal course of business, which could harm our business.

We are from time to time exposed to certain legal proceedings, which may include claims involving product liability, infringement of intellectual property rights of third parties and other claims. Due to the uncertainties of litigation, we can give no assurance that we will prevail on claims made against us in the lawsuits that we currently face or that additional claims will not be made against us in the future. We do not believe that lawsuits we currently face are likely to have a material adverse effect on our business, operating results or financial condition. Future claims or lawsuits, if they were to result in a ruling adverse to us, could give rise to substantial liability, which could have a material adverse effect on our business, operating results or financial condition.

We are exposed to intangible asset risk, and a write down of our intangible assets could have an adverse impact to our operating results and financial position.

We have recorded intangible assets, including goodwill, in connection with business acquisitions. We are required to perform goodwill impairment tests on at least an annual basis and whenever events or circumstances indicate that the carrying value may not be recoverable from estimated future cash flows. As a result of our annual and other periodic evaluations, we may determine that the intangible asset values need to be written down to their fair values, which could result in material charges that could be adverse to our operating results and financial position. See further information regarding our goodwill and other intangible assets in Critical Accounting Policies under Item 7 and in Note 5 to the consolidated financial statements under Item 8 of this Form 10-K.

Interest rates on some of our borrowings are variable, and our borrowing costs could be adversely affected by interest rate increases.

Portions of our debt obligations have variable interest rates. Generally, when interest rates rise, our cost of borrowings increases. We estimate, based on the debt obligations outstanding at December 31, 2013, that a one percent increase in interest rates would cause interest expense to increase by $0.5 million annually. Continued

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interest rate increases could raise the cost of borrowings and adversely affect our financial performance. See further information regarding our interest rates on our debt obligations in Quantitative and Qualitative Disclosures about Market Risk under Item 7A and in Note 6 to the consolidated financial statements under Item 8 of this Form 10-K.

Many of our assets are encumbered by liens that have been granted to lenders, and those liens affect our flexibility to dispose of property and businesses.

Certain of our debt obligations are secured by substantially all of our assets. These liens could reduce our ability and/or extend the time to dispose of property and businesses, as these liens must be cleared or waived by the lenders prior to any disposition. These security interests are described in more detail in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

We may not pay dividends on our common stock at any time in the foreseeable future.

Holders of our common stock are entitled to receive such dividends as our Board of Directors from time to time may declare out of funds legally available for such purposes. Our Board of Directors has no obligation to declare dividends under Ohio law or our amended Articles of Incorporation. We may not pay dividends on our common stock at any time in the foreseeable future. Any determination by our Board of Directors to pay dividends in the future will be based on various factors, including our financial condition, results of operations and current anticipated cash needs and any limits our then-existing credit facility and other debt instruments place on our ability to pay dividends.

We are exposed to risks associated with acts of God, terrorists and others, as well as fires, explosions, wars, riots, accidents, embargoes, natural disasters, strikes and other work stoppages, quarantines and other governmental actions, and other events or circumstances that are beyond our control.

Ferro is exposed to risks from various events that are beyond our control, which may have significant effects on our results of operations. While we attempt to mitigate these risks through appropriate loss prevention measures, insurance, contingency planning and other means, we may not be able to anticipate all risks or to reasonably or cost-effectively manage those risks that we do anticipate. As a result, our operations could be adversely affected by circumstances or events in ways that are significant and/or long lasting.

The risks and uncertainties identified above are not the only risks that we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial also may adversely affect us. If any known or unknown risks and uncertainties develop into actual events, these developments could have material adverse effects on our financial position, results of operations, and cash flows.

We Are Subject To Risks Associated With Outsourcing Functions To Third Parties.

We have entered into outsourcing agreements with third parties, and rely on such parties, to provide certain services in support of our business. One such vendor provides a number of business services related to our information systems and finance and accounting activity. Arrangements with third party service providers may make our operations vulnerable if vendors fail to provide the expected service or there are changes in their own operations, financial condition, or other matters outside of our control. If these service providers are unable to perform to our requirements or to provide the level of service expected, our operating results and financial condition may suffer and we may be forced to pursue alternatives to provide these services, which could result in delays, business disruptions and additional expenses.

Item 1B ***Unresolved Staff Comments***

None.

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Item 2 ***Properties***

We lease our corporate headquarters offices, which are located at 6060 Parkland Blvd., Mayfield Heights, Ohio. The company owns other corporate facilities, including a centralized research and development facility, which is located in Independence, Ohio. We own principal manufacturing plants that range in size from 29,000 sq. ft. to over 800,000 sq. ft. Plants we own with more than 250,000 sq. ft. are located in Spain; Germany; Cleveland, Ohio; Penn Yan, New York; and Mexico. The locations of these principal manufacturing plants by reportable segment are as follows:

Pigments, Powders and Oxides-U.S.: Penn Yan, New York. Outside the U.S.: China and Brazil.

Performance Colors and Glass-U.S.: Washington, Pennsylvania, and Orrville, Ohio. Outside the U.S.: Brazil, China, France, Germany, Mexico, Spain, and the United Kingdom.

Performance Coatings-U.S.: Cleveland, Ohio. Outside the U.S.: Argentina, Brazil, China, Egypt, France, Indonesia, Italy, Mexico, Spain, Thailand and Venezuela.

Polymer Additives-U.S.: Bridgeport, New Jersey; Cleveland, Ohio; Walton Hills, Ohio; and Fort Worth, Texas. Outside the U.S.: Belgium and the United Kingdom.

Specialty Plastics-U.S.: Evansville, Indiana; Plymouth, Indiana; Edison, New Jersey; and Stryker, Ohio. Outside the U.S.: Spain.

Ferro s revolving credit facility has a security interest in the real estate of the parent company and its domestic material subsidiaries.

In addition, we lease manufacturing facilities for the Performance Colors and Glass segment in Germany, Japan, Italy, and Vista California; and for the Specialty Plastics segment in Carpentersville, Illinois. In some instances, the manufacturing facilities are used for two or more segments. Leased facilities range in size from 18,000 sq. ft. to over 100,000 sq. ft.

Item 3 ***Legal Proceedings***

There are various lawsuits and claims pending against the Company and its consolidated subsidiaries. We do not currently expect the resolution of such matters to materially affect the consolidated financial position, results of operations, or cash flows of the Company.

Item 4 ***Mine Safety Disclosures***

Not applicable.

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Executive Officers of the Registrant

The executive officers of the Company as of February 24, 2014, are listed below, along with their ages and positions held during the past five years. The year indicates when the individual was named to the indicated position. No family relationship exists between any of Ferro s executive officers.

Peter T. Thomas 58

President and Chief Executive Officer, 2013

Interim President and Chief Executive Officer, 2012

Vice President, Polymer and Ceramic Engineered Materials, 2009

Vice President, Organic Specialties, 2006

Mark H. Duesenberg 52

Vice President, General Counsel and Secretary, 2008

Executive Director, Legal and Government Affairs, Lenovo Group Ltd., a global manufacturer of personal computers and electronic devices, 2008

Legal Director Europe, Middle East and Africa, Lenovo Group Ltd., 2005

Ann E. Killian 59

Vice President, Human Resources, 2005

Jeffrey L. Rutherford 53

Vice President and Chief Financial Officer, 2012

Vice President and Chief Financial Officer, Park-Ohio Holdings Corp., an industrial supply chain logistics and diversified manufacturing business, 2008

Senior Vice President and Chief Financial Officer, UAP Holding Corp., an independent distributor of agricultural inputs and professional non-crop products, 2007

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PART II

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

Our common stock is listed on the New York Stock Exchange under the ticker symbol FOE. On January 31, 2014, we had 1,253 shareholders of record for our common stock, and the closing price of the common stock was $12.58 per share.

The chart below compares Ferro s cumulative total shareholder return for the five years ended December 31, 2013, to that of the Standard & Poor s 500 Index and the Standard & Poor s MidCap Specialty Chemicals Index. In all cases, the information is presented on a dividend-reinvested basis and assumes investment of $100.00 on December 31, 2008. At December 31, 2013, the closing price of our common stock was $12.83 per share.

COMPARISON OF FIVE-YEAR

CUMULATIVE TOTAL RETURNS

The quarterly high and low intra-day sales prices and dividends declared per share for our common stock during 2013 and 2012 were as follows:

	2013			2012		
	High	**Low**	**Dividends**	**High**	**Low**	**Dividends**
First Quarter	$ 6.99	$ 3.60	$	$ 7.50	$ 4.84	$
Second Quarter	7.26	6.39		5.96	4.02	
Third Quarter	9.35	6.19		5.06	2.65	
Fourth Quarter	14.17	9.12		4.28	2.38	

The restrictive covenants contained in our credit facility limit the amount of dividends we can pay on our common stock. For further discussion, see Management s Discussion and Analysis of Financial Condition and Results of Operations under Item 7 of this Annual Report on Form 10-K.

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The following table summarizes purchases of our common stock by the Company and affiliated purchasers during the three months ended December 31, 2013:

	Total Number of Shares Purchased(1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
	(In thousands, except for per share amounts)			
October 1, 2013 to October 31, 2013		$		
November 1, 2013 to November 30, 2013				
December 1, 2013 to December 31, 2013				
Total				

(1) Consists of shares of common stock surrendered by employees to meet minimum tax withholding obligations under current and previous long-term incentive plans.

Item 6 ***Selected Financial Data***

The following table presents selected financial data for the last five years ended December 31st:

	2013	2012	2011	2010	2009
	(Dollars in thousands, except per share data)				
Net sales	$ 1,635,406	$ 1,744,613	$ 2,130,853	$ 2,077,989	$ 1,635,570
Income (loss) from continuing operations	80,866	(374,190)	2,958	14,960	(8,125)
Basic earnings (loss) per share from continuing operations attributable to Ferro Corporation common shareholders	0.93	(4.35)	0.02	0.15	(0.22)
Diluted earnings (loss) per share from continuing operations attributable to Ferro Corporation common shareholders	0.92	(4.35)	0.02	0.15	(0.22)
Cash dividends declared per common share					0.01
Total assets	1,008,192	1,079,103	1,440,651	1,434,355	1,526,355
Long-term debt, including current portion, and redeemable preferred stock	268,637	298,177	300,769	303,269	409,231

In 2013, we sold our Pharmaceuticals business, which is presented as discontinued operations in 2009 through 2013.

In 2012, we changed our method of recognizing defined benefit pension and other postretirement benefit expense. Under the new method, we recognize actuarial gains and losses in our operating results in the year in which the gains or losses occur. All prior periods have been adjusted to apply the new method retrospectively.

In 2008, we sold our Fine Chemicals business, which is presented as discontinued operations in 2009.

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

Overview

During 2013, we have made considerable progress against our value creation strategy. During the first quarter, we sold our solar pastes assets, generating approximately $11 million of cash, and sold the stock of our Pharmaceuticals business, generating approximately $17 million of cash. During the fourth quarter, we completed the sale of our North American and Asian metal powders product lines, which generated additional cash of approximately $13 million, and was the primary driver of the reduction in our precious metals consignment obligations of 73% compared with the prior year.

Further, we continued to streamline our operations and reduce operating costs through various cost reduction activities in 2013. We have taken actions that have a full year cost savings impact exceeding $47 million. Overall cost savings are estimated to be greater than $100 million by the end of 2015 after executing against remaining identified opportunities.

Outlook

For the full year 2014, we expect revenue growth to be approximately 3.5% to 4.0%, or global GDP plus 100 basis points, after considering the impact of businesses and product lines that were divested in 2013, and the impact of the plasticizer product that has been driving the underperformance in our Polymer Additives segment. We expect continued deterioration in the demand for this product in 2014, which we estimate will negatively impact sales by approximately $30 million. As previously announced, we have an active capital project to convert plasticizer production capabilities at our Antwerp, Belgium facility, to directly address this challenge, and we expect that this capacity will be online late 2014. We base our overall growth expectations on our underlying markets, and capital projects that are currently in process.

We expect continued competitive pressures in 2014, including pricing in multiple segments, most significantly in Performance Coatings. Despite the pressures, we anticipate being able to manage gross profit margins to be equal to, or slightly ahead of 2013 levels.

With respect to selling, general and administrative expenses (SG&A), we expect additional progress on our value creation strategy through further cost reductions, and normalized incentive compensation, to drive increased cost savings and profitability in 2014.

Results of Operations Consolidated

For the years ended December 31, 2012 and 2011, amounts originally reported have been adjusted for the effects of applying retrospectively the discontinued operations of Ferro Pfanstieh Laboratories, Inc. (FPL) as described in Note 16, Discontinued Operations, and the changes in our reportable segments as described in Note 19, Reporting for Segments. Both notes are part of the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

Comparison of the years ended December 31, 2013 and 2012

For the year ended December 31, 2013, Ferro net income was $72.4 million, compared with net loss of $373.0 million in 2012. For the year ended December 31, 2013, Ferro net income attributable to common shareholders was $71.9 million, or $0.83 per share, compared with Ferro net loss attributable to common shareholders of $374.3 million, or $4.34 per share in 2012.

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Net Sales

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Net sales excluding precious metals	$ 1,538,684	$ 1,571,863	$ (33,179)	(2.1)%
Sales of precious metals	96,722	172,750	(76,028)	(44.0)%
Net sales	1,635,406	1,744,613	(109,207)	(6.3)%
Cost of sales	1,305,682	1,455,043	(149,361)	(10.3)%
Gross profit	$ 329,724	$ 289,570	$ 40,154	13.9 %
Gross profit as a % of net sales excluding precious metals	21.4%	18.4%		

Net sales decreased by $109.2 million, or 6.3%, in the year ended December 31, 2013, compared with the prior year. Net sales excluding precious metals decreased $33.2 million, driven by decreased sales in our Pigments, Powders and Oxides segment, primarily due to the exit of solar pastes during the first quarter of 2013, and decreased sales in our Polymer Additives segment that are being driven by changing environmental regulations. Partially mitigating these decreases were increased sales in our Performance Colors and Glass and Performance Coatings segments. Sales of precious metals were down compared with the prior year due to the exit of solar pastes, and lower sales in our North American and Asian metal powders product lines prior to being sold during the fourth quarter.

Gross Profit

Gross profit increased $40.2 million, or 13.9%, in 2013 to $329.7 million, compared with $289.6 million in 2012. The significant drivers of the increased gross profit are strong performance in our Performance Coatings and Performance Colors and Glass segments.

Selling, General and Administrative Expense

The following table presents our segments summarized into their respective operating groups, with Pigments, Powders and Oxides, Performance Colors and Glass, and Performance Coatings comprising Performance Materials, and Polymer Additives and Specialty Plastics comprising Performance Chemicals. Corporate SG&A expenses exclude the impact of the annual mark-to-market adjustment on our pension and other postretirement benefit plans, as the volatility in this adjustment does not allow for a meaningful comparison of underlying Corporate SG&A costs between periods. In conjunction with the changes to segments, we also changed the profitability metric utilized by management to evaluate segment performance, as discussed in Note 19. The metric that was utilized historically was segment income, which included SG&A expenses that were directly incurred by each segment, as well as certain allocated costs. Segment gross profit is the metric that is now utilized. Further, we have refined our approach to managing SG&A expenses and are intensely focused on analyzing expenses at the individual site level, and also across functional areas within the Company, as opposed to the segment level, and will evaluate performance in this manner.

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Performance Materials	$ 150,572	$ 155,517	$ (4,945)	(3.2)%
Performance Chemicals	22,713	26,380	(3,667)	(13.9)%
Corporate	72,793	92,705	(19,912)	(21.5)%
Pension and other postretirement benefits mark-to-market adjustment	(69,796)	23,153	(92,949)	NM
Selling, general and administrative expenses	$ 176,282	$ 297,755	$ (121,473)	(40.8)%

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The following represent the components with significant changes between 2013 and 2012:

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Personnel expenses	$ 144,761	$ 173,927	$ (29,166)	(16.8)%
Incentive compensation	18,459	646	17,813	NM
Stock-based compensation	6,890	2,677	4,213	157.4%
Pension and other postretirement benefits	(71,845)	29,065	(100,910)	NM
Idle sites		2,077	(2,077)	NM
Bad debt	4,074	5,202	(1,128)	(21.7)%
Other	73,943	84,161	(10,218)	(12.1)%
Selling, general and administrative expenses	$ 176,282	$ 297,755	$ (121,473)	(40.8)%

SG&A expenses were $121.5 million lower in 2013 compared with the prior year. As a percentage of net sales excluding precious metals, SG&A expenses decreased 740 basis points from 18.9% in the prior year to 11.5% in 2013. The most significant driver of the decline in SG&A expenses in 2013 was the mark-to-market gain on our defined benefit pension plans and postretirement health care and life insurance benefit plans of $69.8 million, and is included within the pension and other postretirement benefits line above. In 2012, the mark-to-market adjustments resulted in an actuarial loss of $23.2 million. Excluding the impact of the mark-to-market adjustment, SG&A expenses decreased 150 basis points from 17.5% in the prior year to 16.0% in 2013. Various restructuring activities executed in 2013 drove the decrease in personnel expenses. Our expenses related to idle sites have decreased in 2013 as a result of selling the majority of our idle sites during the year. The decreases were partially offset by higher incentive compensation of approximately $18 million, or 120 basis points, due to strong performance in 2013. Incentive compensation in 2012 was less than $1 million, driven by not meeting respective performance targets. Strong performance in 2013 was the primary driver of increased stock-based compensation expense.

Restructuring and Impairment Charges

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Goodwill	$	$ 153,566	$ (153,566)	NM
Amortizable intangible assets	2,102		2,102	NM
Property, plant and equipment	7,484	46,800	(39,316)	NM
Assets held for sale		14,913	(14,913)	NM
Corporate plane	1,242	3,214	(1,972)	NM
Restructuring	30,905	7,231	23,674	NM
Restructuring and impairment charges	$ 41,733	$ 225,724	$ (183,991)	(81.5)%

NM Not meaningful

Restructuring and impairment charges decreased significantly in 2013 compared with 2012. The primary drivers of the decrease were the 2012 impairment charges of $153.6 million taken against goodwill related to our legacy Electronic Materials reporting unit and $46.8 million related to property, plant and equipment associated with solar and metal powders related assets in 2012. Restructuring charges increased $23.7 million in 2013 when compared to 2012 driven by various restructuring activities executed during the year.

Interest Expense

Interest expense in 2013 increased compared to the prior year, primarily due to the write-off of deferred financing fees resulting from amending our revolving credit facility and the commitment amount being reduced from $350.0 million to $250.0 million, and reduced capitalization of interest costs. The components of interest expense are as follows:

	2013	2012	$ Change	% Change
	(Dollars in thousands)			
Interest expense	$ 25,345	$ 25,396	$ (51)	(0.2)%
Interest capitalization	(917)	(780)	(137)	17.6%
Amortization of bank fees	2,905	1,845	1,060	57.5%
Interest expense	$ 27,333	$ 26,461	$ 872	3.3%

Income Tax Expense

In 2013, income tax expense was $14.9 million or 15.5% of income before income taxes, compared to an income tax expense of $108.9 million, or 41.0% of loss before income taxes in 2012. The 2013 effective tax rate was less than the statutory income tax rate of 35% primarily as a result of a $27.2 million benefit for the release of the valuation allowances related to deferred tax assets that were utilized in the current year, the reduction to deferred tax assets related to uncertain tax positions and the expiration of fully valued tax credits offset by a $6.8 million charge related to the expiration of the fully valued tax credits. The 2012 effective tax rate was a significant negative effective tax rate compared to the statutory income tax rate primarily as a result of a $182.7 million charge to increase the valuation allowances, a $4.1 million charge related to the expiration of certain tax credits, and the tax impact of the book goodwill impairment.

Comparison of the years ended December 31, 2012 and 2011

For the year ended December 31, 2012, Ferro net loss was $373.0 million, compared with net income of $5.1 million in 2011. For the year ended December 31, 2012, Ferro net loss attributable to common shareholders was $374.3 million, or $4.34 per share, compared with Ferro net income attributable to common shareholders of $4.2 million, or $0.05 per share in 2011.

Net Sales

	2012	2011	$ Change	% Change
	(Dollars in thousands)			
Net sales excluding precious metals	$ 1,571,863	$ 1,731,782	$ (159,919)	(9.2)%
Sales of precious metals	172,750	399,071	(226,321)	(56.7)%
Net sales	1,744,613	2,130,853	(386,240)	(18.1)%
Cost of sales	1,455,043	1,728,048	(273,005)	(15.8)%
Gross profit	$ 289,570	$ 402,805	$ (113,235)	(28.1)%
Gross profit as a % of net sales excluding precious metals	18.4%	23.3%		

Net sales decreased by 18.1% in the year ended December 31, 2012, compared with the prior year. Lower sales volumes in Pigments, Powders and Oxides, specifically for solar pastes and metal powders, in combination with unfavorable price and mix, and weakness in Europe due to macro-economic conditions, were the primary drivers of the decrease. Further, as a result of the decrease in Pigments, Powders and Oxides volumes, precious metals sales decreased 56.7% from 2011, or 58.6% of the overall decrease in net sales in 2012. Across our

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segments, changes in product prices and mix accounted for approximately 8% of sales decline, lower sales volumes reduced sales by approximately 8% and changes in foreign currency exchange rates reduced sales an additional 2%.

Gross Profit

Gross profit decreased 28.1% in 2012 to $289.6 million, compared with $402.8 million in 2011. The most significant driver was the performance of the Pigments, Powders and Oxides segment, which accounted for approximately 80% of the total decline. Weakness in Europe also contributed to the reduction in gross profit, particularly in the Performance Colors and Glass, Performance Coatings and Polymer Additives segments. Gross profit percentage declined to 18.4% of net sales excluding precious metals from 23.3% in 2011.

Selling, General and Administrative Expense

The following table presents our segments summarized into their respective operating groups, with Pigments, Powders and Oxides, Performance Colors and Glass, and Performance Coatings comprising Performance Materials, and Polymer Additives and Specialty Plastics comprising Performance Chemicals. Corporate SG&A expenses exclude the impact of the annual mark-to-market adjustment on our pension and other postretirement benefit plans, as the volatility in this adjustment does not allow for a meaningful comparison of underlying Corporate SG&A costs between periods. In conjunction with the changes to segments, we also changed the profitability metric utilized by management to evaluate segment performance, as discussed in Note 19. The metric that was utilized historically was segment income, which included SG&A that were directly incurred by each segment, as well as certain allocated costs. Segment gross profit is the metric that is now utilized. Further, we have refined our approach to managing SG&A expenses and are intensely focused on analyzing expenses at the individual site level, and also across functional areas within the Company, as opposed to the segment level, and will evaluate performance in this manner.

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Performance Materials	$ 155,517	$ 174,559	$ (19,042)	(10.9)%
Performance Chemicals	26,380	27,284	(904)	(3.3)%
Corporate	92,705	77,815	14,890	19.1%
Pension and other postretirement benefits mark-to-market adjustment	23,153	50,792	(27,639)	(54.4)%
Selling, general and administrative expenses	$ 297,755	$ 330,450	$ (32,695)	(9.9)%

The following represent the components with significant changes between 2012 and 2011:

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Personnel expenses	$ 173,927	$ 177,515	$ (3,588)	(2.0)%
Incentive compensation	646	2,808	(2,162)	(77.0)%
Stock-based compensation	2,677	6,201	(3,524)	(56.8)%
Pension and other postretirement benefits	29,065	57,611	(28,546)	(49.5)%
Idle sites	2,077	2,841	(764)	(26.9)%
Bad debt	5,202	2,349	2,853	121.5%
Other	84,161	81,125	3,036	3.7%
Selling, general and administrative expenses	$ 297,755	$ 330,450	$ (32,695)	(9.9)%

NM Not meaningful

SG&A expenses were $32.7 million lower in 2012 compared with the prior year. As a percentage of net sales excluding precious metals, SG&A expenses decreased 20 basis points from 19.1% in the prior year to 18.9% in 2012. The most significant driver of the decline in SG&A expenses in 2012 was a lower mark-to-market loss on our defined benefit pension plans and postretirement health care and life insurance benefit plans compared to the prior year. In 2012, the mark-to-market adjustments resulted in an actuarial loss of $23.2 million, compared to an actuarial loss of $50.8 million in 2011. Excluding the impact of the mark-to-market adjustment, SG&A expenses increased 140 basis points from 16.1% in the prior year to 17.5% in 2012, due to lower net sales excluding precious metals compared with the prior year. Lower personnel expenses and stock-based compensation expense compared with the prior year were the result of certain personnel actions during the year. Lower incentive compensation was driven by not meeting respective performance targets. Partially offsetting the favorability was higher bad debt expense and certain other corporate expenses.

Restructuring and Impairment Charges

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Goodwill	$ 153,566	$ 3,881	$ 149,685	NM
Property, plant and equipment	46,800	4,436	42,364	NM
Assets held for sale	14,913	3,809	11,104	NM
Corporate plane	3,214		3,214	NM
Restructuring	7,231	4,904	2,327	NM
Restructuring and impairment charges	$ 225,724	$ 17,030	$ 208,694	NM

NM Not meaningful

Restructuring and impairment charges increased significantly in 2012 compared with 2011. The primary driver of the increase was impairment charges taken against goodwill and property, plant and equipment in 2012 related to our legacy Electronic Materials reporting unit, and solar and metal powders related assets. Additionally, we continued to aggressively liquidate our portfolio of real estate related to idled facilities that were classified as held for sale, which drove incremental impairment charges during the year. Our idled facilities were principally located in Europe, which continued to experience difficult economic conditions. Idled assets in France, the Netherlands and the U.S. were sold in 2012. The restructuring charges incurred in 2012 primarily related to Performance Coatings in Europe and the disposal of the leased corporate plane.

Interest Expense

Interest expense in 2012 did not change significantly from 2011. The components of interest expense are as follows:

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Interest expense	$ 25,396	$ 25,887	$ (491)	(1.9)%
Interest capitalization	(780)	(499)	(281)	56.3%
Amortization of bank fees	1,845	1,802	43	2.4%
Interest expense	$ 26,461	$ 27,190	$ (729)	(2.7)%

Income Tax Expense

In 2012, income tax expense was $108.9 million, or 41.0% of loss before income taxes, compared to an income tax expense of $18.1 million, or 86.0% of income before income taxes in 2011. The effective tax rate was a significant negative effective tax rate compared to the statutory income tax rate of 35% primarily as a result of

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a $182.7 million charge to increase the valuation allowances to more accurately measure the portion of the deferred tax assets that more likely than not will be realized, a $4.1 million charge related to the expiration of certain tax credits, and the tax impact of the book goodwill impairment. The 2011 effective tax rate was greater than the statutory income tax rate of 35% primarily as a result of an $11.3 million charge to increase the valuation allowances.

Results of Operations Segment Information

Comparison of the years ended December 31, 2013 and 2012

Pigments, Powders and Oxides

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Net sales excluding precious metals	$ 137,185	$ 156,672	$ (19,487)	(12.4)%
Precious metal sales	53,141	122,353	(69,212)	(56.6)%
Segment net sales	190,326	279,025	(88,699)	(31.8)%
Segment gross profit	34,225	31,780	2,445	7.7 %
Segment gross profit as a % of net sales excluding precious metals	24.9%	20.3%		

Sales in Pigments, Powders and Oxides decreased primarily due to the exit of solar pastes during the first quarter of 2013, which comprised approximately $18 million of the decrease in net sales excluding precious metals from the prior year. Additionally, sales decreased approximately $1 million in our North American and Asian metal powders product lines from the prior year until they were sold during the fourth quarter of 2013. Regionally, the United States drove the decrease in sales, due to the exit of solar pastes. Gross profit increased from the prior year, primarily due to favorable raw material costs.

Performance Colors and Glass

	2013	2012	$ Change	% Change
		(Dollars in thousands)		
Net sales excluding precious metals	$ 346,426	$ 336,141	$ 10,285	3.1%
Precious metal sales	43,581	50,397	(6,816)	(13.5)%
Segment net sales	390,007	386,538	3,469	0.9%
Segment gross profit	112,825	101,847	10,978	10.8%
Segment gross profit as a % of net sales excluding precious metals	32.6%	30.3%		

Net sales excluding precious metals increased compared with the prior year, primarily driven by sales of our glass products. Sales of our glass products increased over the prior-year same period by approximately $9 million, with the remainder of the increase primarily comprised of our electronics products. Net sales were favorably impacted by volume and price. Regionally, Europe and Latin America drove the majority of the increase. Gross profit increased from the prior year as a result of favorable raw material costs, product pricing, and lower manufacturing costs.

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Performance Coatings

	2013	2012	$ Change	% Change
	(Dollars in thousands)			
Segment net sales	$ 591,975	$ 587,698	$ 4,277	0.7%
Segment gross profit	132,695	111,609	21,086	18.9%
Segment gross profit as a % of net sales	22.4%	19.0%		

Sales increased in Performance Coatings primarily due to increased sales of our porcelain enamel products, comprising approximately $6 million of the increase, which was partially offset by a decline of approximately $2 million in overall sales of tile products. The primary driver of the sales increase was favorable mix of our porcelain enamel products. Regionally, Europe and Asia Pacific increased approximately $9 million and $5 million, respectively, partially offset by decreased sales in Latin America of approximately $11 million. Gross profit increased from the prior year primarily due to increased volume in our tile products, favorable mix in our porcelain enamel products, and favorable manufacturing costs.

Polymer Additives

	2013	2012	$ Change	% Change
	(Dollars in thousands)			
Segment net sales	$ 292,568	$ 320,635	$ (28,067)	(8.8)%
Segment gross profit	27,139	29,951	(2,812)	(9.4)%
Segment gross profit as a % of net sales	9.3%	9.3%		

Sales decreased in Polymer Additives primarily due to the continued decline in sales volume of certain plasticizer products that is being driven by changing environmental regulations. Regionally, this drove a decrease in United States sales of approximately $24 million and Europe sales of approximately $5 million, which were partially mitigated by increased sales in Latin America of approximately $2 million. Gross profit decreased from the prior year as a result of the reduced sales volume and unfavorable raw material costs, partially mitigated by favorable pricing impacts.

Specialty Plastics

	2013	2012	$ Change	% Change
	(Dollars in thousands)			
Segment net sales	$ 170,530	$ 170,717	$ (187)	(0.1)%
Segment gross profit	28,366	29,186	(820)	(2.8)%
Segment gross profit as a % of net sales	16.6%	17.1%		

Sales decreased slightly in Specialty Plastics compared with the prior year. Regionally, the United States drove the majority of the decrease, approximately $4 million, which was partially mitigated by increases in Europe and Latin America that totaled approximately $4 million. Gross profit decreased from the prior year, primarily due to unfavorable pricing impacts and manufacturing costs, partially mitigated by favorable raw material costs and mix, and increased volume.

	2013	2012	$ Change	% Change
	(Dollars in thousands)			
Geographic Revenues				
United States	$ 644,354	$ 740,578	$ (96,224)	(13.0)%
International	991,052	1,004,035	(12,983)	(1.3)%
Total geographic revenues	$ 1,635,406	$ 1,744,613	$ (109,207)	(6.3)%

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Net sales declined in the United States and international regions compared with the prior year. Sales originating in the United States were 39% of total net sales in 2013, compared with 42% of net sales in the prior year. Approximately $66 million of the decline in sales in the United States was driven by the exit of solar pastes, including sales of precious metals, and approximately $20 million was due to reduced demand for certain plasticizer products, which is being driven by changing environmental regulations. International sales decreased approximately $13 million, primarily due to a $16 million decline associated with the exit of solar pastes during the first quarter, approximately $7 million of lower sales of metal powders products prior to the product line being sold during the third quarter, approximately $2 million of lower sales of certain plasticizer products being driven by changing environmental regulations and approximately $3 million in sales related to a mine that was sold in 2012. The lower sales were partially mitigated by increased sales across in other products totaling approximately $15 million.

Comparison of the years ended December 31, 2012 and 2011

Pigments, Powders and Oxides

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Net sales excluding precious metals	$ 156,672	$ 261,364	$ (104,692)	(40.1)%
Precious metal sales	122,353	340,178	(217,825)	(64.0)%
Segment net sales	279,025	601,542	(322,517)	(53.6)%
Segment gross profit	31,780	119,173	(87,393)	(73.3)%
Segment gross profit as a % of net sales excluding precious metals	20.3%	45.6%		

Sales declined in Pigments, Powders and Oxides primarily as a result of reduced demand for conductive pastes used in solar cells and metal powders used in other electronics applications. Further, sales of our polishing materials declined in 2012 compared with 2011 due to significantly lower costs for the key raw material used in the manufacture of the products. Unfavorable product pricing and mix and lower volumes were the primary drivers of the decrease. Sales of precious metals also declined significantly in 2012, in line with the overall reduction in volumes year over year, as the costs of precious metals are passed through to our customers. Pigments, Powders and Oxides operates principally in North America and Asia-Pacific, and both regions experienced significant declines in performance during 2012.

Performance Colors and Glass

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Net sales excluding precious metals	$ 336,141	$ 358,859	$ (22,718)	(6.3)%
Precious metal sales	50,397	58,893	(8,496)	(14.4)%
Segment net sales	386,538	417,752	(31,214)	(7.5)%
Segment gross profit	101,847	111,187	(9,340)	(8.4)%
Segment gross profit as a % of net sales excluding precious metals	30.3%	31.0%		

Performance Colors and Glass sales were affected by unfavorable impacts on volume which declined most significantly in Europe, with Asia-Pacific and Latin America also down, and foreign currency exchange. Partially offsetting the volume and foreign currency impacts were favorable price and mix. In addition to reduced sales, gross margin was also impacted unfavorably by higher costs of raw materials in 2012 compared with 2011.

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Performance Coatings

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Segment net sales	$ 587,698	$ 602,566	$ (14,868)	(2.5)%
Segment gross profit	111,609	120,752	(9,143)	(7.6)%
Segment gross profit as a % of net sales	19.0%	20.0%		

Sales in Performance Coatings declined in 2012 primarily due to unfavorable foreign currency exchange impacts of approximately $24 million. This was partially offset by increased volume impacts of approximately $6 million and slightly favorable price and mix of approximately $3 million. We experienced volume growth in Europe and Latin America. However, price was adversely impacted in Europe by overall European economic conditions and the highly price-competitive end markets into which Performance Coatings sells. This was partially mitigated by favorable pricing in Latin America. Gross margin declined in 2012 compared with 2011, and in addition to the unfavorable impacts on net sales, higher raw material costs also significantly impacted the Performance Coatings segment.

Polymer Additives

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Segment net sales	$ 320,635	$ 336,965	$ (16,330)	(4.8)%
Segment gross profit	29,951	33,829	(3,878)	(11.5)%
Segment gross profit as a % of net sales	9.3%	10.0%		

Sales in Polymer Additives were significantly impacted by declines in volume and price compared with 2011. The lower volume was primarily in Europe and North America, which are the principal markets for our Polymer Additives products, and driven by reduced demand for certain plasticizer products resulting from changing environmental regulations, as well as overall economic conditions in Europe.

Specialty Plastics

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Segment net sales	$ 170,717	$ 172,028	$ (1,311)	(0.8)%
Segment gross profit	29,186	25,043	4,143	16.5%
Segment gross profit as a % of net sales	17.1%	14.6%		

Sales in Specialty Plastics were relatively flat in 2012 compared with 2011. Reduced volumes in North America and Europe lowered sales by approximately $7 million, however we were able to mitigate the majority of the shortfall through pricing actions, which were favorable by approximately $6 million. Partially offsetting the favorable impact of price on gross margin were slightly higher raw material costs in 2012 compared with 2011.

	2012	2011	$ Change	% Change
		(Dollars in thousands)		
Geographic Revenues				
United States	$ 740,578	$ 997,181	$ (256,603)	(25.7)%
International	1,004,035	1,133,672	(129,637)	(11.4)%
Total geographic revenues	$ 1,744,613	$ 2,130,853	$ (386,240)	(18.1)%

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The primary driver of the decrease in net sales, both in the United States and in international regions, was the under-performance of Pigments, Powders and Oxides. Pigments, Powders and Oxides net sales were down approximately $323 million in 2012 compared with 2011. The decline in Pigments, Powders and Oxides in the United States was partially mitigated by higher sales in Performance Colors and Glass. In addition to the impact of Pigments, Powders and Oxides, the balance of the international sales decline was due to lower sales emanating from Europe in other segments. Sales that are recorded in each region include products exported to customers located in other regions.

Summary of Cash Flows for the years ended December 31, 2013, 2012, and 2011

	2013	2012	2011
		(Dollars in thousands)	
Net cash provided by operating activities	$ 18,464	$ 23,658	$ 53,233
Net cash provided by (used for) investing activities	17,168	(55,308)	(65,127)
Net cash (used for) provided by financing activities	(36,715)	36,457	5,904
Effect of exchange rate changes on cash	(165)	1,778	(54)
Increase (decrease) in cash and cash equivalents	$ (1,248)	$ 6,585	$ (6,044)

Operating activities. Cash flows from operating activities decreased $5.2 million in 2013 compared to 2012. While net income was higher in 2013 when compared to 2012, the increase was primarily offset with noncash adjustments from impairment charges in the prior year as well as cash payments for restructuring activities in 2013 of $18.3 million compared to $3.4 million in 2012. Also contributing to the decrease was a decline in accounts payable balances which were partially offset by decreases in receivable balances.

Investing activities. Cash flows from investing activities increased approximately $72.5 million from 2012 to 2013. The increase was driven primarily through cash proceeds from the sales of our metal powders, solar paste operations, and our pharmaceuticals business. Capital expenditures decreased $24.5 million from 2012 to 2013.

Financing activities. Cash flows from financing activities decreased $73.2 million from 2012 to 2013. The primary driver of the decrease is the substantial decrease in net borrowing on our credit facilities and receivables programs as well as payment of our 6.5% convertible bonds of $35.1 million upon maturity in the third quarter of 2013.

We had a net use of cash from all credit facilities of $34.3 million in 2013 and net proceeds of $34.8 million in 2012.

Proceeds associated with the sale of our Pharmaceuticals reporting segment were $16.9 million and are included within investing activities. The impact of the impairment associated with the fixed assets of the reportable segment of $8.7 million has been included within operating activities as a reconciling item between net income and cash provided by operating activities.

We have paid no dividends on our common stock since 2009. Dividends paid on our preferred stock totaled $0.2 million in 2011.

Capital Resources and Liquidity

Major debt instruments that were outstanding during 2013 are described below.

7.875% Senior Notes

In 2010, we issued $250 million of 7.875% Senior Notes due 2018 (the Senior Notes). The Senior Notes were issued at par and bear interest at a rate of 7.875% per year, payable semi-annually in arrears on February 15 and August 15 of each year. The Senior Notes mature on August 15, 2018, and are unsecured. The principal amount outstanding was $250.0 million at December 31, 2013. At December 31, 2013, we were in compliance with the covenants under the Senior Notes indenture.

6.50% Convertible Senior Notes

In 2008, Ferro issued $172.5 million of 6.50% Convertible Senior Notes due 2013 (the Convertible Notes). The Convertible Notes bear interest at a rate of 6.5% per year, payable semi-annually in arrears on February 15 and August 15 of each year. The Convertible Notes matured on August 15, 2013.

The 6.50% Convertible Notes were repaid at maturity on August 15, 2013. The principal amount outstanding at maturity was $35.1 million.

Revolving Credit Facility

In 2010, we entered into the Third Amended and Restated Credit Agreement with a group of lenders for a five-year, $350 million multi-currency senior revolving credit facility (the 2010 Credit Facility). In 2012, we amended the 2010 Credit Facility (the 2012 Amended Credit Facility) primarily to provide additional operating flexibility.

In March 2013, we again amended the 2010 Credit Facility (the 2013 Amended Credit Facility) to provide additional operating flexibility. The primary effects of the 2013 Amended Credit Facility were to:

- Decrease the Revolving Loan Commitment Amount from $350.0 million to $250.0 million;
- Amend the calculation of EBITDA to provide for a restructuring expense add-back attributable to the Company s restructuring programs of $30.0 million in 2013, $20.0 million in 2014 and $10.0 million in 2015, with no aggregate limit on restructuring expense;
- Increase the maximum permitted leverage ratio to the levels stated below.
- Amend the requirements for Permitted Acquisitions such that for the Company to consummate a Permitted Acquisition the Company must have minimum liquidity of $100.0 million and the Company s Secured Leverage Ratio must be less than 1.50.

The 2013 Amended Credit Facility matures on August 24, 2015, and is secured by substantially all of Ferro s assets. After reductions for borrowings and outstanding letters of credit secured by these facilities, we had $235.3 million of additional borrowings available at December 31, 2013, and $343.2 million at December 31, 2012. The interest rate under the 2013 Amended Credit Facility is the sum of (A) either (1) LIBOR or (2) the higher of the Federal Funds Rate plus 0.5%, the Prime Rate, or LIBOR plus 1.0% and (B) a variable margin based on the Company s leverage. At December 31, 2013, the interest rate was 3.4%.

Under the 2013 Amended Credit Facility, we are subject to a number of financial covenants, including limitations on the payment of common stock dividends. The covenants include requirements for a leverage ratio, an interest coverage ratio, and capital expenditures as follows:

The leverage ratio must be less than (i) 4.25 to 1.00 the first, second and third quarters of 2013 and (ii) 4.00 to 1.00 in the fourth quarter of 2013 and first quarter of 2014, (iii) 3.75 to 1.00 in the second and third quarters of 2014, and (iv) 3.50 to 1.00 thereafter. In the leverage ratio, the numerator is total debt, which consists of borrowings and certain letters of credit outstanding on the 2013 Amended Credit Facility and our international facilities, the principal amount outstanding on our senior notes, capitalized lease obligations, and amounts outstanding on our domestic and international receivables sales programs. The denominator is the sum of earnings before interest, income taxes, depreciation, and amortization (EBITDA), and adjusted for certain special charges over the last four fiscal quarters.

The interest coverage ratio must be not less than (i) 3.00 for the first quarter of 2013 and thereafter. In the interest coverage ratio, the numerator is EBITDA and the denominator is cash paid for interest expense and certain other financing expenses.

Capital expenditures are limited to (i) $65.0 million for the twelve months ended March 31, 2013, and (ii) $65.0 million for the 2013 fiscal year and each fiscal year thereafter. Certain unused capital expenditures from prior measurement periods are permitted to be carried forward to the following fiscal year.

Our ability to meet these covenants is primarily driven by our EBITDA; our total debt; our interest payments; and our capital expenditures. Our total debt is primarily driven by cash flow items, including net income before amortization, depreciation, and other noncash charges; our cash payments for restructuring; our capital expenditures; requirements for deposits from participants in our precious metals consignment program; our customers ability to make payments for purchases and the timing of such payments; and our ability to manage inventory and other working capital items. Our interest payments are driven by our debt level, external fees, and interest rates, primarily the Prime rate and LIBOR. Our capital expenditures are driven by our desire to invest in growth opportunities, to maintain existing property, plant and equipment, and to meet environmental, health and safety requirements. At December 31, 2013, we were in compliance with the covenants of the 2013 Amended Credit Facility.

Our ability to pay common stock dividends is limited by certain covenants in our 2013 Amended Credit Facility and the bond indenture governing the Senior Notes. The covenant in our 2013 Amended Credit Facility is the more limiting of the two covenants and limits our ability to make restricted payments, which include, but are not limited to, common stock dividends and the repurchase of equity interests. We are not permitted to make restricted payments in excess of $30 million in any calendar year. However, if we make less than $30 million of restricted payments in any calendar year, the unused amount can be carried over for restricted payments in future years, provided that the maximum amount of restricted payments in any calendar year does not exceed $60 million.

Domestic Receivable Sales Program

We have an asset securitization program for Ferro s U.S. trade accounts receivable. This program accelerates cash collections at favorable financing costs and helps us manage the Company s liquidity requirements. We sell undivided variable percentage interests in our domestic receivables to various purchasers, and we may obtain up to $50.0 million in the form of cash or letters of credit. Advances received under this program are accounted for as borrowings secured by the receivables and included in net cash provided by financing activities. The purchasers have no recourse to Ferro s other assets for failure of payment of the receivables as a result of the lack of creditworthiness, or financial inability to pay, of the related obligor. In May 2013, we extended the maturity of this credit facility through May 2014. At December 31, 2013, we had borrowed $41.0 million under this facility. After reductions for non-qualifying receivables, we had $0.6 million of additional borrowings available under the program at December 31, 2013. During the third quarter 2013,

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agreement to account for changes in the underlying funding source for the securitization process. The interest rate under the amended agreement is the sum of (A) either (1) LIBOR rates or (2) the federal funds rate plus 0.5% or the prime rate and (B) a fixed margin. At December 31, 2013, the interest rate was 0.6%.

International Receivable Sales Programs

We have several international programs to sell with recourse trade accounts receivable to financial institutions. Advances received under these programs are accounted for as borrowings secured by the receivables and included in net cash provided by financing activities. During the fourth quarter 2013, the international factoring programs expired and were not renewed.

Off Balance Sheet Arrangements

Consignment and Customer Arrangements for Precious Metals. We use precious metals, primarily silver, in the production of some of our products. We obtain most precious metals from financial institutions under consignment agreements (generally referred to as our precious metals consignment program). The financial institutions retain ownership of the precious metals and charge us fees based on the amounts we consign and the period of consignment. These fees were $3.0 million for 2013. At December 31, 2013, we had on hand $30.8 million worth of precious metals owned by participants in our precious metals consignment program, measured at fair value based on market prices for identical assets. We also process precious metals owned by our customers.

The consignment agreements under our precious metals program involve short-term commitments that typically mature within 30 to 90 days of each transaction and are typically renewed on an ongoing basis. As a result, the Company relies on the continued willingness of financial institutions to participate in these arrangements to maintain this source of liquidity. On occasion, we have been required to deliver cash collateral. While no deposits were outstanding at December 31, 2013, we may be required to furnish cash collateral in the future based on the quantity and market value of the precious metals under consignment and the amount of collateral-free lines provided by the financial institutions. The amount of cash collateral required is subject to review by the financial institutions and can be changed at any time at their discretion, based in part on their assessment of our creditworthiness.

Bank Guarantees and Standby Letters of Credit. At December 31, 2013, the Company and its subsidiaries had bank guarantees and standby letters of credit issued by financial institutions that totaled $10.1 million. These agreements primarily relate to Ferro s insurance programs, foreign energy purchase contracts and foreign tax payments.

Other Financing Arrangements

We maintain other lines of credit to provide global flexibility for Ferro s short-term liquidity requirements. These facilities are uncommitted lines for our international operations and totaled $17.1 million at December 31, 2013. We had $10.1 million of additional borrowings available under these lines at December 31, 2013.

Liquidity Requirements

Our primary sources of liquidity are available cash and cash equivalents, available lines of credit under the revolving credit facility, and cash flows from operating activities. As of December 31, 2013, we had $28.3 million of cash and cash equivalents. Substantially all of our cash and cash equivalents were held by foreign subsidiaries. Cash generated in the U.S. is generally used to pay down amounts outstanding under our revolving credit facility. If needed, we could repatriate the majority of cash held by foreign subsidiaries without the need to accrue and pay U.S. income taxes. We do not anticipate a liquidity need requiring such repatriation of these funds to the U.S.

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Our liquidity requirements primarily include debt service, purchase commitments, labor costs, working capital requirements, restructuring expenditures, capital investments, precious metals cash collateral requirements, and postretirement obligations. We expect to meet these requirements in the long term through cash provided by operating activities and availability under existing credit facilities or other financing arrangements. Cash flows from operating activities are primarily driven by earnings before noncash charges and changes in working capital needs. In 2013, cash flows from investing and operating activities were used to fund our financing activities. We had additional borrowing capacity of $235.3 million at December 31, 2013, under our revolving credit facility.

Our credit facilities and the indenture governing our senior notes contain a number of restrictive covenants, including those described in more detail in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K. These covenants include customary operating restrictions that limit our ability to engage in certain activities, including additional loans and investments; prepayments, redemptions and repurchases of debt; and mergers, acquisitions and asset sales. We are also subject to customary financial covenants under our credit facilities, including a leverage ratio and an interest coverage ratio. These covenants under our credit facilities restrict the amount of our borrowings, reducing our flexibility to fund ongoing operations and strategic initiatives. These facilities and our senior notes are described in more detail in Capital Resources and Liquidity under Item 7 and in Note 6 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K.

The most critical of these ratios is the leverage ratio for the revolving credit facility. As of December 31, 2013, we were in compliance with our maximum leverage ratio covenant of 4.00x as our actual ratio was 2.57x, providing $43.8 million of EBITDA cushion on the leverage ratio, as defined within our credit facilities and senior notes indenture. Our leverage ratio covenants decrease in 2013 to 3.50x. To the extent that economic conditions in key markets deteriorate or we are unable to meet our business projections and EBITDA falls below approximately $100 million for rolling four quarters, based on reasonably consistent debt levels with those as of December 31, 2013, we could become unable to maintain compliance with our leverage ratio covenant. In such case, our lenders could demand immediate payment of outstanding amounts and we would need to seek alternate financing sources to pay off such debts and to fund our ongoing operations. Such financing may not be available on favorable terms, if at all.

We may from time to time seek to retire or repurchase our outstanding debt through open market purchases, privately negotiated transactions, or other means. Such repurchases, if any, will depend on prevailing market conditions, our liquidity requirements, contractual restrictions, and other factors. The amounts involved may be material.

Difficulties experienced in global capital markets could affect the ability or willingness of counterparties to perform under our various lines of credit, receivable sales programs, forward contracts, and precious metals program. These counterparties are major, reputable, multinational institutions, all having investment-grade credit ratings, except for one, which is not rated. Accordingly, we do not anticipate counterparty default. However, an interruption in access to external financing could adversely affect our business prospects and financial condition.

We assess on an ongoing basis our portfolio of businesses, as well as our financial and capital structure, to ensure that we have sufficient capital and liquidity to meet our strategic objectives. As part of this process, from time to time we evaluate the possible divestiture of businesses that are not critical to our core strategic objectives and, where appropriate, pursue the sale of such businesses and assets such as our completed sales in 2013. We also evaluate and pursue acquisition opportunities that we believe will enhance our strategic position. Generally, we publicly announce divestiture and acquisition transactions only when we have entered into definitive agreements relating to those transactions.

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The Company s aggregate amount of contractual obligations for the next five years and thereafter is set forth below:

	2014	2015	2016	2017	2018	Thereafter	Totals
				(Dollars in thousands)			
Loans payable(1)	$ 43,062	$	$	$	$	$	$ 43,062
Long-term debt(2)	1,168	10,600	1,131	992	250,855	3,891	268,637
Interest(3)	19,688	19,688	19,688	19,688	19,688		98,440
Operating lease obligations	13,739	8,116	5,768	4,957	4,516	21,061	58,157
Purchase commitments(4)	19,302	8,544	6,484	4,498	1,495		40,323
Taxes(5)	1,135						1,135
Retirement and other postemployment benefits(6)	33,457	31,032					64,489
	$ 131,551	$ 77,980	$ 33,071	$ 30,135	$ 276,554	$ 24,953	$ 574,243

(1) Loans Payable includes our loans payable to banks as well our domestic accounts receivable program.
(2) Long-term debt excludes imputed interest and executory costs on capitalized lease obligations.
(3) Interest represents only contractual payments for fixed-rate debt.
(4) Purchased commitments are noncancelable contractual obligations for raw materials and energy.
(5) We have not projected payments past 2014 due to uncertainties in estimating the amount and period of any payments. We have $38.7 million in gross liabilities related to unrecognized tax benefits, including $2.3 million of accrued interest and penalties that are not included in the above table since we cannot reasonably predict the timing of cash settlements with various taxing authorities.
(6) The funding amounts are based on the minimum contributions required under our various plans and applicable regulations in each respective country. We have not projected contributions past 2015 due to uncertainties regarding the assumptions involved in estimating future required contributions.

Critical Accounting Policies

When we prepare our consolidated financial statements we are required to make estimates and assumptions that affect the amounts we report in the consolidated financial statements and footnotes. We consider the policies discussed below to be more critical than other policies because their application requires our most subjective or complex judgments. These estimates and judgments arise because of the inherent uncertainty in predicting future events. Management has discussed the development, selection and disclosure of these policies with the Audit Committee of the Board of Directors.

Revenue Recognition

We recognize sales typically when we ship goods to our customers and when all of the following criteria are met:

Persuasive evidence of an arrangement exists;

The selling price is fixed or determinable;

Collection is reasonably assured; and

Title and risk of loss has passed to our customers.

In order to ensure the revenue recognition in the proper period, we review material sales contracts for proper cut-off based upon the business practices and legal requirements of each country. For sales of products

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containing precious metals, we report revenues gross along with their corresponding cost of sales to arrive at gross profit. We record revenues this way because we act as the principal in the transactions into which we enter.

Restructuring and Cost Reduction Programs

In recent years, we have developed and initiated several restructuring programs across a number of our business segments with the objectives of leveraging our global scale, realigning and lowering our cost structure, and optimizing capacity utilization. The programs are primarily associated with North America, Europe and Asia-Pacific. Management continues to evaluate our businesses, and therefore, there may be additional provisions for new plan initiatives, as well as changes in estimates to amounts previously recorded, as payments are made or actions are completed.

Restructuring charges include both termination benefits and asset writedowns. We estimate accruals for termination benefits based on various factors including length of service, contract provisions, local legal requirements, projected final service dates, and salary levels. We also analyze the carrying value of long-lived assets and record estimated accelerated depreciation through the anticipated end of the useful life of the assets affected by the restructuring or record an asset impairment. In all likelihood, this accelerated depreciation will result in reducing the net book value of those assets to zero at the date operations cease. While we believe that changes to our estimates are unlikely, the accuracy of our estimates depends on the successful completion of numerous actions. Changes in our estimates could increase our restructuring costs to such an extent that it could have a material impact on the Company s results of operations, financial position, or cash flows. Other events, such as negotiations with unions and works councils, may also delay the resulting cost savings.

Accounts Receivable and the Allowance for Doubtful Accounts

Ferro sells its products to customers in diversified industries throughout the world. No customer or related group of customers represents greater than 10% of net sales or accounts receivable. We perform ongoing credit evaluations of our customers and require collateral principally for export sales, when industry practices allow and as market conditions dictate, subject to our ability to negotiate secured terms relative to competitive offers. We regularly analyze significant customer accounts and provide for uncollectible accounts based on historical experience, customer payment history, the length of time the receivables are past due, the financial health of the customer, economic conditions, and specific circumstances, as appropriate. Changes in these factors could result in additional allowances. Customer accounts we conclude to be uncollectible or to require excessive collection costs are written off against the allowance for doubtful accounts. Historically, write-offs of uncollectible accounts have been within our expectations.

Goodwill

We review goodwill for impairment each year using a measurement date of October 31st or more frequently in the event of an impairment indicator. We annually, or more frequently as warranted, evaluate the appropriateness of our reporting units utilizing operating segments as the starting point of our analysis. In the event of a change in our reporting units we would allocate goodwill based on the relative fair value. We estimate the fair values of the reporting units associated with these assets using the average of both the income approach and the market approach, which we believe provides a reasonable estimate of the reporting units fair values, unless facts and circumstances exist that indicate more representative fair values. The income approach uses projected cash flows attributable to the reporting units over their useful lives and allocates certain corporate expenses to the reporting units. We use historical results, trends and our projections of market growth, internal sales efforts and anticipated cost structure assumptions to estimate future cash flows. Using a risk-adjusted, weighted-average cost of capital, we discount the cash flow projections to the measurement date. The market approach estimates a price reasonably expected to be paid by a market participant in the purchase of similar businesses. If the fair value of any of the reporting units were determined to be less than its carrying value, we would proceed to the second step and obtain comparable market values or independent appraisals of its assets and liabilities to determine the amount of any impairment.

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The significant assumptions and ranges of assumptions we used in our impairment analyses of goodwill at October 31, 2013 and 2012, were as follows:

Significant Assumptions	**2013**	**2012**
Weighted-average cost of capital	12.0% - 12.5%	12.0% - 15.5%
Residual growth rate	3.0%	3.0%

Our estimates of fair value can be adversely affected by a variety of factors. Reductions in actual or projected growth or profitability at our reporting units due to unfavorable market conditions or significant increases in cost structure could lead to the impairment of any related goodwill. Additionally, an increase in inflation, interest rates or the risk-adjusted, weighted-average cost of capital could also lead to a reduction in the fair value of one or more of our reporting units and therefore lead to the impairment of goodwill.

Based on our 2013 annual impairment test performed as of October 31, 2013, the fair values of the remaining reporting units tested for impairment exceeded the carrying values of the respective reporting units by amounts ranging from 35% to 166% at the 2013 measurement date. The lowest cushion relates to the Pigments, Powders and Oxides reporting unit, which had a goodwill balance of $9.5 million at December 31, 2013. A future potential impairment is possible for any of these reporting units if actual results are materially less than forecasted results. Some of the factors that could negatively affect our cash flows and, as a result, not support the carrying values of our reporting units are: new environmental regulations or legal restrictions on the use of our products that would either reduce our product revenues or add substantial costs to the manufacturing process, thereby reducing operating margins; new technologies that could make our products less competitive or require substantial capital investment in new equipment or manufacturing processes; and substantial downturns in economic conditions.

Long-Lived Asset Impairment

The Company s long-lived assets include property, plant and equipment, and amortizable intangible assets. We review property, plant and equipment and amortizable intangible assets for impairment whenever events or circumstances indicate that their carrying values may not be recoverable. The following are examples of such events or changes in circumstances:

An adverse change in the business climate or market price of a long-lived asset or asset group;

An adverse change in the extent or manner in which a long-lived asset or asset group is used or in its physical condition;

Current operating losses for a long-lived asset or asset group combined with a history of such losses or projected or forecasted losses that demonstrate that the losses will continue; or

A current expectation that, more likely than not, a long-lived asset or asset group will be sold or otherwise significantly disposed of before the end of its previously estimated useful life.

The carrying amount of property, plant and equipment and amortizable intangible assets is not recoverable if the carrying value of the asset group exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset group. In the event of impairment, we recognize a loss for the excess of the recorded value over fair value. The long-term nature of these assets requires the estimation of cash inflows and outflows several years into the future and only takes into consideration technological advances known at the time of review.

Income Taxes

The breadth of our operations and complexity of income tax regulations require us to assess uncertainties and make judgments in estimating the ultimate amount of income taxes we will pay. Our income tax expense,

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deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect management s best assessment of estimated current and future taxes to be paid. The final income taxes we pay are based upon many factors, including existing income tax laws and regulations, negotiations with taxing authorities in various jurisdictions, outcomes of tax litigation, and resolution of disputes arising from federal, state and international income tax audits. The resolution of these uncertainties may result in adjustments to our income tax assets and liabilities in the future.

Deferred income taxes result from differences between the financial and tax basis of our assets and liabilities. We adjust our deferred income tax assets and liabilities for changes in income tax rates and income tax laws when changes are enacted. We record valuation allowances to reduce deferred income tax assets when it is more likely than not that a tax benefit will not be realized. Significant judgment is required in evaluating the need for and the magnitude of appropriate valuation allowances against deferred income tax assets. The realization of these assets is dependent on generating future taxable income, our ability to carry back or carry forward net operating losses and credits to offset tax liabilities in a prior year, as well as successful implementation of various tax strategies to generate tax where net operating losses or credit carryforwards exist. In evaluating our ability to realize the deferred income tax assets, we rely principally on the reversal of existing temporary differences, the availability of tax planning strategies, and forecasted income.

We recognize a tax benefit from an uncertain tax position when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits. Our estimate of the potential outcome of any uncertain tax positions is subject to management s assessment of relevant risks, facts, and circumstances existing at that time. We record a liability for the difference between the benefit recognized and measured based on a more-likely-than-not threshold and the tax position taken or expected to be taken on the tax return. To the extent that our assessment of such tax positions changes, the change in estimate is recorded in the period in which the determination is made. We report tax-related interest and penalties as a component of income tax expense.

Derivative Financial Instruments

We use derivative financial instruments in the normal course of business to manage our exposure to fluctuations in interest rates, foreign currency exchange rates, commodity prices, and precious metal prices. The accounting for derivative financial instruments can be complex and can require significant judgment. Generally, the derivative financial instruments that we use are not complex, and observable market-based inputs are available to measure their fair value. We do not engage in speculative transactions for trading purposes. Financial instruments, including derivative financial instruments, expose us to counterparty credit risk for nonperformance. We manage our exposure to counterparty credit risk through minimum credit standards and procedures to monitor concentrations of credit risk. We enter into these derivative financial instruments with major, reputable, multinational financial institutions. Accordingly, we do not anticipate counter-party default. We continuously evaluate the effectiveness of derivative financial instruments designated as hedges to ensure that they are highly effective. In the event the hedge becomes ineffective, we discontinue hedge treatment. Except as noted below, we do not expect any changes in our risk policies or in the nature of the transactions we enter into to mitigate those risks.

We manage foreign currency risks in a wide variety of foreign currencies principally by entering into forward contracts to mitigate the impact of currency fluctuations on transactions arising from international trade. Our objective in entering into these forward contracts is to preserve the economic value of nonfunctional currency cash flows. Our principal foreign currency exposures relate to the Euro, the British Pound Sterling, the Japanese Yen, and the Chinese Yuan. We mark these forward contracts to fair value based on market prices for comparable contracts and recognize the resulting gains or losses as other income or expense from foreign currency transactions.

Precious metals (primarily silver, gold, platinum and palladium) represent a significant portion of raw material costs in our electronic products. When we enter into a fixed price sales contract at the customer s

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request to establish the price for the precious metals content of the order, we also enter into a forward purchase arrangement with a precious metals supplier to completely cover the value of the precious metals content. Our current precious metal contracts are designated as normal purchase contracts, which are not marked to market.

We also purchase portions of our energy requirements, including natural gas and electricity, under fixed price contracts to reduce the volatility of cost changes. Our current energy contracts are designated as normal purchase contracts, which are not marked to market.

Pension and Other Postretirement Benefits

We sponsor defined benefit plans in the U.S. and many countries outside the U.S., and we also sponsor retiree medical benefits for a segment of our salaried and hourly work force within the U.S. The U.S. pension plans represent approximately 83% of pension plan assets, 75% of benefit obligations and 101% of net periodic pension income.

The assumptions we use in actuarial calculations for these plans have a significant impact on benefit obligations and annual net periodic benefit costs. We meet with our actuaries annually to discuss key economic assumptions used to develop these benefit obligations and net periodic costs.

We determine the discount rate for the U.S. pension and retiree medical plans based on a bond model. Using the pension plans projected cash flows, the bond model considers all possible bond portfolios that produce matching cash flows and selects the portfolio with the highest possible yield. These portfolios are based on bonds with a quality rating of AA or better under either Moody s Investor Services, Inc. or Standard & Poor s Rating Group, but exclude certain bonds, such as callable bonds, bonds with small amounts outstanding, and bonds with unusually high or low yields. The discount rates for the non-U.S. plans are based on a yield curve method, using AA-rated bonds applicable in their respective capital markets. The duration of each plan s liabilities is used to select the rate from the yield curve corresponding to the same duration.

For the market-related value of plan assets, we use fair value, rather than a calculated value that recognizes changes in fair value in a systematic and rational manner over several years. We calculate the expected return on assets at the beginning of the year for defined benefit plans as the weighted-average of the expected return for the target allocation of the principal asset classes held by each of the plans. In determining the expected returns, we consider both historical performance and an estimate of future long-term rates of return. The Company consults with and considers the opinion of its actuaries in developing appropriate return assumptions. Our target asset allocation percentages are 35% fixed income, 60% equity, and 5% other investments for U.S. plans and 75% fixed income, 24% equity, and 1% other investments for non-U.S. plans. In 2013, investment returns on average plan assets were approximately 15% within U.S. plans and 6% within non-U.S. plans. In 2012, investment returns on average plan assets were approximately 14% within U.S. plans and 14% within non-U.S. plans. Future actual pension expense will depend on future investment allocation and performance, changes in future discount rates and various other factors related to the population of participants in the Company s pension plans.

All other assumptions are reviewed periodically by our actuaries and us and may be adjusted based on current trends and expectations as well as past experience in the plans.

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The following table provides the sensitivity of net annual periodic benefit costs for our pension plans, including a U.S. nonqualified retirement plan, and the retiree medical plan to a 25-basis-point decrease in both the discount rate and asset return assumption:

	25-Basis-Point Decrease in Discount Rate	25-Basis-Point Decrease in Asset Return Assumption
	(Dollars in thousands)	
U.S. pension plans	$ (369)	$ 887
U.S. retiree medical plan	(39)	
Non-U.S. pension plans	(56)	198
Total	$ (464)	$ 1,085

The following table provides the rates used in the assumptions and the changes between 2013 and 2012:

	2013	2012	Change
Discount rate used to measure benefit cost:			
U.S. pension plans	4.30%	5.10%	(0.80)%
U.S. retiree medical plan	3.85%	4.85%	(1.00)%
Non-U.S. pension plans	4.00%	5.01%	(1.01)%
Discount rate used to measure benefit obligations:			
U.S. pension plans	5.25%	4.30%	0.95%
U.S. retiree medical plan	4.90%	3.85%	1.05%
Non-U.S. pension plans	4.12%	4.00%	0.12%
Expected return on plan assets:			
U.S. pension plans	8.20%	8.20%	%
Non-U.S. pension plans	4.45%	4.86%	(0.41)%

Our overall net periodic benefit income for all defined benefit plans increased $100.9 million to $71.8 million in 2013 from net periodic benefit cost of $29.1 million in 2012. The change is the result of higher mark to market actuarial net gains and returns on plan assets than in the prior year.

For 2014, assuming expected returns on plan assets and no actuarial gains or losses, we expect our overall net periodic benefit income to be approximately $4.5 million, compared with income of approximately $2.5 million in 2013 on a comparable basis. The change is the result of higher expected returns from a larger asset base, partially offset by higher interest costs due to higher discount rates.

Inventories

We value inventory at the lower of cost or market, with cost determined utilizing the first-in, first-out (FIFO) method. We periodically evaluate the net realizable value of inventories based primarily upon their age, but also upon assumptions of future usage in production, customer demand and market conditions. Inventories have been reduced to the lower of cost or realizable value by allowances for slow moving or obsolete goods. If actual circumstances are less favorable than those projected by management in its evaluation of the net realizable value of inventories, additional write-downs may be required. Slow moving, excess or obsolete materials are specifically identified and may be physically separated from other materials, and we rework or dispose of these materials as time and manpower permit.

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Environmental Liabilities

Our manufacturing facilities are subject to a broad array of environmental laws and regulations in the countries in which they are located. The costs to comply with complex environmental laws and regulations are significant and will continue for the foreseeable future. We expense these recurring costs as they are incurred. While these costs may increase in the future, they are not expected to have a material impact on our financial position, liquidity or results of operations.

We also accrue for environmental remediation costs when it is probable that a liability has been incurred and we can reasonably estimate the amount. We determine the timing and amount of any liability based upon assumptions regarding future events. Inherent uncertainties exist in such evaluations primarily due to unknown conditions, changing governmental regulations and legal standards regarding liability, and evolving technologies. We adjust these liabilities periodically as remediation efforts progress or as additional technical or legal information becomes available.

Impact of Newly Issued Accounting Pronouncements

Refer to Note 2 to the consolidated financial statements under Item 8 of this Annual Report on Form 10-K for a discussion of accounting standards we recently adopted or will be required to adopt.

Item 7A ***Quantitative and Qualitative Disclosures about Market Risk***

The primary objective of the following information is to provide forward-looking quantitative and qualitative information about our exposure to instruments that are sensitive to fluctuations in interest rates, foreign currency exchange rates, and costs of raw materials and energy.

Our exposure to interest rate risk arises from our debt portfolio. We manage this risk by controlling the mix of fixed versus variable-rate debt after considering the interest rate environment and expected future cash flows. Our objective is to limit variability in earnings, cash flows and overall borrowing costs caused by changes in interest rates, while preserving operating flexibility.

We operate internationally and enter into transactions denominated in foreign currencies. These transactions expose us to gains and losses arising from exchange rate movements between the dates foreign currencies are recorded and the dates they are settled. We manage this risk by entering into forward currency contracts that substantially offset these gains and losses.

We are subject to cost changes with respect to our raw materials and energy purchases. We attempt to mitigate raw materials cost increases through product reformulations, price increases, and other productivity improvements. We enter into forward purchase arrangements with precious metals suppliers to completely cover the value of the precious metals content of fixed price sales contracts. These agreements are designated as normal purchase contracts, which are not marked to market, and had purchase commitments totaling $2.8 million at December 31, 2013. In addition, we purchase portions of our natural gas and electricity requirements under fixed price contracts to reduce the volatility of these costs. These energy contracts are designated as normal purchase contracts, which are not marked to market, and had purchase commitments totaling $33.2 million at December 31, 2013.

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The notional amounts, carrying amounts of assets (liabilities), and fair values associated with our exposure to these market risks and sensitivity analysis about potential gains (losses) resulting from hypothetical changes in market rates are presented below:

	2013	2012
	(Dollars in thousands)	
Variable-rate debt and utilization of asset securitization program:		
Change in annual interest expense from 1% change in interest rates	$ 516	$ 543
Fixed-rate debt:		
Carrying amount	253,617	289,148
Fair value	269,238	270,240
Change in fair value from 1% increase in interest rate	(10,061)	(10,113)
Change in fair value from 1% decrease in interest rate	10,546	10,668
Foreign currency forward contracts:		
Notional amount	244,921	250,680
Carrying amount and fair value	(2,255)	(4,758)
Change in fair value from 10% appreciation of U.S. dollar	12,867	13,205
Change in fair value from 10% depreciation of U.S. dollar	(15,727)	(16,140)

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Item 8 ***Financial Statements and Supplementary Data***

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Ferro Corporation

Cleveland, Ohio

We have audited the accompanying consolidated balance sheets of Ferro Corporation and subsidiaries (the Company) as of December 31, 2013 and 2012, and the related consolidated statements of operations, comprehensive income (loss), equity, and cash flows for each of the three years in the period ended December 31, 2013. Our audits also included the financial statement schedule listed in the Index at Item 15. These financial statements and financial statement schedule are the responsibility of the Company s management. Our responsibility is to express an opinion on the financial statements and financial statement schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). 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, such consolidated financial statements present fairly, in all material respects, the financial position of Ferro Corporation and subsidiaries as of December 31, 2013 and 2012, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2013, in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, such financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

As discussed in Note 16 to the consolidated financial statements, the Company sold its Pharmaceuticals business in the first quarter of 2013. The operations prior to the sale are included in (loss) income from discontinued operations in the accompanying consolidated financial statements.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company s internal control over financial reporting as of December 31, 2013, based on the criteria established in *Internal Control Integrated Framework* (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 24, 2014 expressed an unqualified opinion on the Company s internal control over financial reporting.

/s/ Deloitte & Touche LLP

Cleveland, Ohio

February 24, 2014

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FERRO CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2013	2012	2011
	(In thousands, except per share amounts)		
Net sales	$ 1,635,406	$ 1,744,613	$ 2,130,853
Cost of sales	1,305,682	1,455,043	1,728,048
Gross profit	329,724	289,570	402,805
Selling, general and administrative expenses	176,282	297,755	330,450
Restructuring and impairment charges	41,733	225,724	17,030
Other expense (income):			
Interest expense	27,333	26,461	27,190
Interest earned	(271)	(311)	(285)
Losses on extinguishment of debt			45
Foreign currency losses, net	4,183	2,186	4,758
Miscellaneous (income) expense, net	(15,269)	3,095	2,527
Income (loss) before income taxes	95,733	(265,340)	21,090
Income tax expense	14,867	108,850	18,132
Net income (loss) from continuing operations	80,866	(374,190)	2,958
(Loss) income from discontinued operations, net of income tax	(8,421)	1,156	2,176
Net income (loss)	72,445	(373,034)	5,134
Less: Net income attributable to noncontrolling interests	503	1,234	730
Net income (loss) attributable to Ferro Corporation	71,942	(374,268)	4,404
Dividends on preferred stock			(165)
Net income (loss) attributable to Ferro Corporation common shareholders	71,942	(374,268)	4,239
Amounts attributable to Ferro Corporation:			
Income (loss) from continuing operations, net of income tax	80,363	(375,424)	2,228
(Loss) income from discontinued operations, net of income tax	(8,421)	1,156	2,176
Income (loss) attributable to Ferro Corporation	$ 71,942	$ (374,268)	$ 4,404
Weighted-average common shares outstanding	86,484	86,288	86,119
Incremental common shares attributable to convertible preferred stock, performance shares, deferred stock units, and stock options	1,013		659
Weighted-average diluted shares outstanding	87,497	86,288	86,778
Earnings (loss) per share attributable to Ferro Corporation common shareholders:			
Basic earnings (loss) per share:			
From continuing operations	$ 0.93	$ (4.35)	$ 0.02
From discontinued operations	(0.10)	0.01	0.03
	$ 0.83	$ (4.34)	$ 0.05
Diluted earnings (loss) per share:			
From continuing operations	$ 0.92	$ (4.35)	$ 0.02
From discontinued operations	(0.10)	0.01	0.03
	$ 0.82	$ (4.34)	$ 0.05

See accompanying notes to consolidated financial statements.

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FERRO CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

	Years Ended December 31,		
	2013	2012	2011
	(Dollars in thousands)		
Net income (loss)	$ 72,445	$ (373,034)	$ 5,134
Other comprehensive income (loss), net of tax:			
Foreign currency translation	(7,459)	(4,253)	(3,473)
Postretirement benefit liabilities	(705)	(910)	(220)
Other	7	(25)	
Other comprehensive income (loss), net of income tax	(8,157)	(5,188)	(3,693)
Total comprehensive income (loss)	64,288	(378,222)	1,441
Less: Comprehensive income attributable to noncontrolling interests	732	3,295	930
Comprehensive income (loss) attributable to Ferro Corporation	$ 63,556	$ (381,517)	$ 511

See accompanying notes to consolidated financial statements.

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FERRO CORPORATION AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31, 2013	December 31, 2012
	(Dollars in thousands)	
ASSETS		
Current assets		
Cash and cash equivalents	$ 28,328	$ 29,576
Accounts receivable, net	287,925	306,463
Inventories	190,216	200,824
Deferred income taxes	6,584	7,995
Other receivables	25,775	31,554
Other current assets	16,561	10,802
Current assets of discontinued operations		6,289
Total current assets	555,389	593,503
Other assets		
Property, plant and equipment, net	297,104	309,374
Goodwill	63,473	62,975
Amortizable intangible assets, net	13,027	14,410
Deferred income taxes	19,451	21,554
Other non-current assets	59,748	61,941
Other assets of discontinued operations		15,346
Total assets	$ 1,008,192	$ 1,079,103
LIABILITIES and EQUITY		
Current liabilities		
Loans payable and current portion of long-term debt	$ 44,230	$ 85,152
Accounts payable	153,877	182,024
Accrued payrolls	44,509	31,643
Accrued expenses and other current liabilities	71,115	76,384
Current liabilities of discontinued operations		1,300
Total current liabilities	313,731	376,503
Other liabilities		
Long-term debt, less current portion	267,469	261,624
Postretirement and pension liabilities	120,527	216,167
Other non-current liabilities	32,622	18,135
Total liabilities	734,349	872,429
Equity		
Ferro Corporation shareholders equity:		
Common stock, par value $1 per share; 300.0 million shares authorized and 93.4 million shares issued at December 31, 2013 and 2012; 86.7 million and 86.5 million shares outstanding at December 31, 2013 and 2012, respectively	93,436	93,436
Paid-in capital	318,055	321,652
Accumulated deficit	(14,664)	(86,606)
Accumulated other comprehensive income	8,493	16,650
Common shares in treasury, at cost	(143,802)	(151,605)
Total Ferro Corporation shareholders equity	261,518	193,527
Noncontrolling interests	12,325	13,147
Total equity	273,843	206,674
Total liabilities and equity	$ 1,008,192	$ 1,079,103

See accompanying notes to consolidated financial statements.

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FERRO CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF EQUITY

	Ferro Corporation Shareholders							
	Common Shares In Treasury							
	Shares	Amount	Common Stock	Paid-in Capital	Retained Earnings (Deficit)	Accumulated Other Comprehensive Income (Loss)(a)	Non-controlling Interests	Total Equity
	(In thousands, except per share data)							
Balances at December 31, 2010	7,242	$ (164,257)	$ 93,436	$ 323,015	$ 283,423	$ 27,792	$ 10,771	$ 574,180
Net income					4,404		730	5,134
Other comprehensive (loss) income						(3,893)	200	(3,693)
Cash dividends on preferred shares(b)					(165)			(165)
Stock-based compensation transactions	(377)	10,640		(2,133)				8,507
Distributions to noncontrolling interests							(1,469)	(1,469)
Balances at December 31, 2011	6,865	(153,617)	93,436	320,882	287,662	23,899	10,232	582,494
Net (loss) income					(374,268)		1,234	(373,034)
Other comprehensive (loss) income						(7,249)	2,061	(5,188)
Stock-based compensation transactions	97	2,012		770				2,782
Distributions to noncontrolling interests							(380)	(380)
Balances at December 31, 2012	6,962	(151,605)	93,436	321,652	(86,606)	16,650	13,147	206,674
Net income					71,942		503	72,445
Other comprehensive (loss) income						(8,157)	229	(7,928)
Stock-based compensation transactions	(232)	7,803		(3,597)				4,206
Distributions to noncontrolling interests							(1,554)	(1,554)
Balances at December 31, 2013	6,730	$ (143,802)	$ 93,436	$ 318,055	$ (14,664)	$ 8,493	$ 12,325	$ 273,843

(a) Accumulated translation adjustments were $6,621, $14,080, and $20,394 and accumulated postretirement benefit liability adjustments were $1,942, $2,647, and $3,557 at December 31, 2013, 2012, and 2011, respectively, all net of tax.

(b) Dividends per share of convertible preferred stock were $0.8125 in 2011.

See accompanying notes to consolidated financial statements.

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FERRO CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2013	2012	2011
	(Dollars in thousands)		
Cash flows from operating activities			
Net income (loss)	$ 72,445	$ (373,034)	$ 5,134
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
(Gain) loss on sale of assets and businesses	(15,604)	505	(244)
Depreciation and amortization	50,028	57,384	63,493
Restructuring and impairment charges	20,581	221,596	7,472
Losses on extinguishment of debt			45
Provision for allowance for doubtful accounts	4,074	5,217	2,349
Retirement benefits	(97,053)	339	8,337
Deferred income taxes	7,853	107,575	20,575
Non-cash foreign currency (losses) gains	(13,028)	(6,815)	12,443
Changes in current assets and liabilities, net of effects of acquisitions:			
Accounts receivable	16,224	(5,258)	(13,444)
Inventories	18,056	22,287	(29,790)
Deposits for precious metals			28,086
Other receivables and other current assets	(826)	13,192	(19,673)
Accounts payable	(27,963)	(18,359)	4,715
Accrued expenses and other current liabilities	(6,939)	4,409	(31,205)
Other operating activities	(9,384)	(5,380)	(5,060)
Net cash provided by operating activities	18,464	23,658	53,233
Cash flows from investing activities			
Capital expenditures for property, plant and equipment and other long-lived assets	(34,220)	(58,685)	(72,713)
Proceeds from sale of assets and businesses	50,173	3,043	6,441
Other investing activities	1,215	334	1,145
Net cash provided by (used for) investing activities	17,168	(55,308)	(65,127)
Cash flows from financing activities			
Net (repayments) borrowings under loans payable(1)	(5,884)	39,934	8,661
Proceeds from revolving credit facility	449,268	395,576	646,834
Payments on revolving credit facility	(442,659)	(400,687)	(639,128)
Extinguishment of Convertible Senior Notes	(35,066)		(725)
Redemption of convertible preferred stock			(9,427)
Cash dividends			(165)
Proceeds from exercise of stock options	666	107	1,053
Other financing activities	(3,040)	1,527	(1,199)
Net cash (used for) provided by financing activities	(36,715)	36,457	5,904
Effect of exchange rate changes on cash and cash equivalents	(165)	1,778	(54)
(Decrease) increase in cash and cash equivalents	(1,248)	6,585	(6,044)
Cash and cash equivalents at beginning of period	29,576	22,991	29,035
Cash and cash equivalents at end of period	$ 28,328	$ 29,576	$ 22,991
Cash paid during the period for:			
Interest	$ 26,775	$ 26,468	$ 25,920
Income taxes	5,815	4,657	22,060

(1) Includes cash flows related to our domestic accounts receivable program, international accounts receivable sales programs as well as loans payable to banks.

See accompanying notes to condensed consolidated financial statements.

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FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011

1. Our Business

Ferro Corporation (Ferro, we, us or the Company) produces performance materials for a broad range of manufacturers in diversified industries throughout the world. Our products are classified as performance materials, rather than commodities, because they are formulated to perform specific and important functions both in the manufacturing processes and in the finished products of our customers. We use inorganic and organic chemical processes, polymer science and materials science to develop and produce these performance materials. Performance materials require a high degree of technical service on an individual customer basis. The value of our products stems from the results and performance they achieve in actual use. We manage our diverse businesses through six business units that are differentiated from one another by product type. We have grouped these units by their product group below:

Performance Materials	Performance Chemicals
Tile Coating Systems	Polymer Additives
Porcelain Enamel	Specialty Plastics
Performance Colors and Glass	
Pigments, Powders and Oxides	

We produce our products primarily in the United States (U.S.), Europe-Middle East-Africa, the Asia-Pacific region, and Latin America.

We sell our products directly to customers and through the use of agents or distributors throughout the world. Our products are sold principally in the U.S., Europe, the Asia-Pacific region, and Latin America. Our customers manufacture products to serve a variety of end markets, including building and renovation, electronics, automobiles, appliances, household furnishings, packaging, and industrial products.

2. Significant Accounting Policies

Principles of Consolidation

Our consolidated financial statements include the accounts of the parent company and the accounts of its subsidiaries. When we consolidate our financial statements, we eliminate intercompany transactions, accounts and profits. When we exert significant influence over an investee but do not control it, we account for the investment and the investment income using the equity method. These investments are reported in the other non-current assets section of our balance sheet. We consolidate five legal entities in which we do not own 100% of the equity interests, either directly or indirectly through our subsidiaries. These entities have non-controlling interest ownerships ranging from 5% to 49%.

When we acquire a subsidiary, its financial results are included in our consolidated financial statements from the date of the acquisition. When we dispose of a subsidiary, its financial results are included in our consolidated financial statements until the date of the disposition. In the event that a disposal group meets the criteria for discontinued operations, prior periods are adjusted to reflect the disposition.

Use of Estimates and Assumptions in the Preparation of Financial Statements

We prepare our consolidated financial statements in conformity with accounting principles generally accepted in the United States, which requires us to make estimates and to use judgments and assumptions that affect the timing and amount of assets, liabilities, equity, revenues and expenses recorded and disclosed. The more significant estimates and judgments relate to revenue recognition, restructuring and cost reduction programs, goodwill, asset impairment, income taxes, pension and other postretirement benefits, inventories, and

FERRO CORPORATION AND SUBSIDIARIES

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Years ended December 31, 2013, 2012 and 2011 (Continued)

environmental liabilities. Actual outcomes could differ from our estimates, resulting in changes in revenues or costs that could have a material impact on the Company s results of operations, financial position, or cash flows.

Foreign Currency Translation

The financial results of our operations outside of the U.S. are recorded in local currencies, which generally are also the functional currencies for financial reporting purposes. The results of operations outside of the U.S. are translated from these functional currencies into U.S. dollars using the average monthly currency exchange rates. We use the average currency exchange rate for these results of operations as a reasonable approximation of the results had specific currency exchange rates been used for each individual transaction. Foreign currency transaction gains and losses are recorded as incurred as other expense (income) in the consolidated statements of operations. Assets and liabilities are translated into U.S. dollars using exchange rates at the balance sheet dates, and we record the resulting foreign currency translation adjustment as a separate component of accumulated other comprehensive loss in equity.

Revenue Recognition

We typically recognize sales when we ship goods to our customers and when all of the following criteria are met:

Persuasive evidence of an arrangement exists;

The selling price is fixed or determinable;

Collection is reasonably assured; and

Title and risk of loss has passed to our customers.

In order to ensure the revenue recognition in the proper period, we review material sales contracts for proper cut-off based upon the business practices and legal requirements of each country. For sales of all products, including those containing precious metals, we report revenues gross along with their corresponding cost of sales to arrive at gross profit. We record revenues this way because we act as the principal in the transactions into which we enter.

The amount of shipping and handling fees invoiced to our customers at the time our product is shipped is included in net sales. Credit memos issued to customers for sales returns, discounts allowed and sales adjustments are recorded when they are incurred as a reduction of sales.

Additionally, we provide certain of our customers with incentive rebate programs to promote customer loyalty and encourage greater product sales. We accrue customer rebates over the rebate periods based upon estimated attainments of the provisions in the rebate agreements using available information and record these rebate accruals as reductions of sales.

Research and Development Expenses

Research and development expenses are expensed as incurred and are included in selling, general and administrative expenses. Expenditures for company-sponsored research and development activities were approximately $ 26.9 million for 2013 and $30.0 million for 2012, and $30.4 million for 2011.

Restructuring Programs

We expense costs associated with exit and disposal activities designed to restructure operations and reduce ongoing costs of operations when we incur the related liabilities or when other triggering events occur. After the appropriate level of management having the authority approves the detailed restructuring plan and the

FERRO CORPORATION AND SUBSIDIARIES

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appropriate criteria for recognition are met, we establish accruals for employee termination costs. The accruals are estimates that are based upon factors including statutory and union requirements, affected employees lengths of service, contract provisions, salary level, and health care benefit choices. We also analyze the carrying value of affected long-lived assets for impairment and reductions in their remaining estimated useful lives. In addition, we record the fair value of any new or remaining obligations when existing operating lease contracts are terminated or abandoned as a result of our exit and disposal activities.

Asset Impairment

The Company s long-lived assets include property, plant and equipment, goodwill, and amortizable intangible assets. We review property, plant and equipment and amortizable intangible assets for impairment whenever events or circumstances indicate that their carrying values may not be recoverable. The following are examples of such events or changes in circumstances:

- An adverse change in the business climate or market price of a long-lived asset or asset group;
- An adverse change in the extent or manner in which a long-lived asset or asset group is used or in its physical condition;
- Current operating losses for a long-lived asset or asset group combined with a history of such losses or projected or forecasted losses that demonstrate that the losses will continue; or
- A current expectation that, more likely than not, a long-lived asset or asset group will be sold or otherwise significantly disposed of before the end of its previously estimated useful life.

The carrying amount of property, plant and equipment and amortizable intangible assets is not recoverable if the carrying value of the asset group exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset group. In the event of impairment, we recognize a loss for the excess of the recorded value over fair value. The long-term nature of these assets requires the estimation of cash inflows and outflows several years into the future and only takes into consideration technological advances known at the time of review.

We review goodwill for impairment annually using a measurement date of October 31st, primarily due to the timing of our annual budgeting process, or more frequently in the event of an impairment indicator. The fair value of each reporting unit that has goodwill is estimated using the average of both the income approach and the market approach, which we believe provides a reasonable estimate of the reporting unit s fair value, unless facts or circumstances exist which indicate a more representative fair value. The income approach is a discounted cash flow model, which uses projected cash flows attributable to the reporting unit, including an allocation of certain corporate expenses based primarily on a proportional sales method. We use historical results, trends and our projections of market growth, internal sales efforts and anticipated cost structure assumptions to estimate future cash flows. Using a risk-adjusted, weighted-average cost of capital, we discount the cash flow projections to the measurement date. The market approach estimates a price reasonably expected to be paid by a market participant in the purchase of the reporting units based on a comparison to similar businesses. If the fair value of any of the reporting units were determined to be less than its carrying value, we would obtain comparable market values or independent appraisals of its net assets.

Derivative Financial Instruments

As part of our risk management activities, we employ derivative financial instruments, primarily foreign currency forward contracts, to hedge certain anticipated transactions, firm commitments, or assets and liabilities denominated in foreign currencies. We also purchase portions of our

energy and precious metal requirements under fixed price forward purchase contracts designated as normal purchase contracts.

FERRO CORPORATION AND SUBSIDIARIES

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Years ended December 31, 2013, 2012 and 2011 (Continued)

We record derivatives on our balance sheet as either assets or liabilities that are measured at fair value. For derivative instruments that are designated and qualify as cash flow hedges, the gain or loss on the derivative is reported as a component of other comprehensive income and reclassified from accumulated other comprehensive income into earnings when the hedged transaction affects earnings. As of December 31, 2013, we did not have any derivative instruments classified as cash flow hedges. The ineffective portion, if any, in the change in value of these derivatives is immediately recognized in earnings. For derivatives that are not designated as hedges, the gain or loss on the derivative is recognized in current earnings. We use derivatives only to manage well-defined risks and do not use derivatives for speculative purposes.

Postretirement and Other Employee Benefits

We recognize postretirement and other employee benefits as employees render the services necessary to earn those benefits. We determine defined benefit pension and other postretirement benefit costs and obligations with the assistance of actuarial calculations performed by third parties. The calculations and the resulting amounts recorded in our consolidated financial statements are affected by assumptions including the discount rate, expected long-term rate of return on plan assets, the annual rate of change in compensation for plan-eligible employees, estimated changes in costs of healthcare benefits, and other factors. We evaluate the assumptions used on an annual basis.

Income Taxes

We account for income taxes in accordance with Accounting Standards Codification (ASC) Topic 740, Income Taxes, which requires the recognition of deferred tax assets and liabilities for the expected future tax effects of events that have been included in the financial statements. Under this method, deferred tax assets and liabilities are determined based on the differences between the financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We record deferred tax assets to the extent we believe these assets will more likely than not be realized. In making such determination, we consider all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future income, tax planning strategies, and recent financial operations.

We recognize a tax benefit from an uncertain tax position when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits.

We recognize interest and penalties related to unrecognized tax benefits within the income tax expense line in the accompanying consolidated statements of operations.

Cash Equivalents

We consider all highly liquid instruments with original maturities of three months or less when purchased to be cash equivalents. These instruments are carried at cost.

Accounts Receivable and the Allowance for Doubtful Accounts

Ferro sells its products to customers in diversified industries throughout the world. No customer or related group of customers represents greater than 10% of net sales or accounts receivable. We perform ongoing credit evaluations of our customers and require collateral principally for export sales, when industry practices allow and as

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

market conditions dictate, subject to our ability to negotiate secured terms relative to competitive offers. We regularly analyze significant customer accounts and provide for uncollectible accounts based on historical experience, customer payment history, the length of time the receivables are past due, the financial health of the customer, economic conditions and specific circumstances, as appropriate. Changes in these factors could result in additional allowances. Customer accounts we conclude to be uncollectible or to require excessive collection costs are written off against the allowance for doubtful accounts. Historically, write-offs of uncollectible accounts have been within our expectations. Detailed information about the allowance for doubtful accounts is provided below:

	2013	2012	2011
	(Dollars in thousands)		
Allowance for doubtful accounts	$ 12,428	$ 14,353	$ 10,443
Bad debt expense	4,074	5,202	2,349

We have receivables sales programs in place for the U.S. where we sell our receivables to various purchasers. Due to the terms of such programs, these programs are recorded similar to secured borrowings on our balance sheet. The underlying receivables are derecognized when collection occurs, at which time repayment of the borrowings is made to the purchasers. The cash flows for the underlying receivables are categorized as operating activities. The related cash flows for the secured borrowings are categorized as financing activities and presented net as the turnover of such activities is quick, the amounts are large, and the maturities are short, generally three months or less. These programs accelerate cash collections at favorable financing costs. In December 2013, the international factoring program expired and was not renewed.

Inventories

We value inventory at the lower of cost or market, with cost determined utilizing the first-in, first-out (FIFO) method. We periodically evaluate the net realizable value of inventories based primarily upon their age, but also upon assumptions of future usage in production, customer demand and market conditions. Inventories have been reduced to the lower of cost or realizable value by allowances for slow moving or obsolete goods.

We maintain raw materials on our premises that we do not own, including precious metals consigned from financial institutions and customers, and raw materials consigned from vendors. Although we have physical possession of the goods, their value is not reflected on our balance sheet because we do not have title.

We obtain precious metals under consignment agreements with financial institutions for periods of one year or less. These precious metals are primarily silver, gold, platinum, and palladium and are used in the production of certain products for our customers. Under these arrangements, the financial institutions own the precious metals, and accordingly, we do not report these precious metals as inventory on our consolidated balance sheet although they physically are in our possession. These agreements are cancelable by either party at the end of each consignment period, however, because we have access to a number of consignment arrangements with available capacity, our consignment needs can be shifted among the other participating institutions in order to ensure our supply. In certain cases, these financial institutions require cash deposits to provide additional collateral beyond the value of the underlying precious metals. The financial institutions charge us fees for these consignment arrangements, and these fees are recorded as cost of sales.

Property, Plant and Equipment

We record property, plant and equipment at historical cost. In addition to the original purchased cost, including transportation, installation and taxes, we capitalize expenditures that increase the utility or useful life of

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Years ended December 31, 2013, 2012 and 2011 (Continued)

existing assets. For constructed assets, we capitalize interest costs incurred during the period of construction. We expense repair and maintenance costs, including the costs of major planned overhauls of equipment, as incurred. We depreciate property, plant and equipment on a straight-line basis, generally over the following estimated useful lives of the assets:

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

Other Capitalized Costs

We capitalize the costs of computer software developed or obtained for internal use after the preliminary project stage has been completed, and management, with the relevant authority, authorizes and commits to funding a computer software project, and it is probable that the project will be completed and the software will be used to perform the function intended. External direct costs of materials and services consumed in developing or obtaining internal-use computer software, payroll and payroll-related costs for employees who are directly associated with the project, and interest costs incurred when developing computer software for internal use are capitalized within other non-current assets. Capitalization ceases when the project is substantially complete, generally after all substantial testing is completed. We expense training costs and data conversion costs as incurred. We amortize software on a straight-line basis over its estimated useful life, which has historically been in a range of 1 to 12 years.

Environmental Liabilities

As part of the production of some of our products, we handle, process, use and store hazardous materials. As part of these routine processes, we expense recurring costs associated with control and disposal of hazardous materials as they are incurred. Occasionally we are subject to ongoing, pending or threatened litigation related to the handling of these materials or other matters. If, based on available information, we believe that we have incurred a liability and we can reasonably estimate the amount, we accrue for environmental remediation and other contingent liabilities. We disclose material contingencies if the likelihood of the potential loss is reasonably possible but the amount is not reasonably estimable.

In estimating the amount to be accrued for environmental remediation, we use assumptions about:

- Remediation requirements at the contaminated site;
- The nature of the remedy;
- Existing technology;
- The outcome of discussions with regulatory agencies;
- Other potentially responsible parties at multi-party sites; and

The number and financial viability of other potentially responsible parties.

We actively monitor the status of sites, and, as assessments and cleanups proceed, we update our assumptions and adjust our estimates as necessary. Because we are uncertain about the timing of related payments, we do not discount the estimated remediation costs.

Recently Adopted Accounting Pronouncements

On January 1, 2013, we adopted Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) 2011-11, Disclosures about Offsetting Assets and Liabilities, and ASU 2013-01, Clarifying the

FERRO CORPORATION AND SUBSIDIARIES

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Years ended December 31, 2013, 2012 and 2011 (Continued)

Scope of Disclosures about Offsetting Assets and Liabilities. These pronouncements are codified in ASC Topic 210, Balance Sheet, and contain new disclosure requirements about a company s right of setoff and related arrangements associated with its financial and derivative instruments. Adoption of this pronouncement did not have a material effect on our consolidated financial statements.

On January 1, 2013, we adopted FASB ASU 2013-02, Reporting of Amounts Reclassified Out of Accumulated Other Comprehensive Income, which is codified in ASC Topic 220, Comprehensive Income. This pronouncement adds new disclosure requirements for items reclassified out of accumulated other comprehensive income. Adoption of this pronouncement did not have a material effect on our consolidated financial statements.

New Accounting Pronouncements Not Yet Adopted

In March 2013, the FASB issued ASU 2013-05, *Parent s Accounting for the Cumulative Translation Adjustments upon Derecognition of Certain Subsidiaries or Groups of Assets within a Foreign Entity or of an Investments in a Foreign Entity*, which is codified in ASC Topic 830, Foreign Currency Matters. This pronouncement clarifies the application of Subtopic 810-10, Consolidation Overall, and Subtopic 830-30, Foreign Currency Matters Translation of Financial Statements, to the release of the cumulative translation adjustment into net income when a parent either sells a part or all of its investment in a foreign entity or no longer holds a controlling financial interest in a foreign entity, and the treatment of business combinations achieved in stages involving a foreign entity. The pronouncement is effective for our fiscal year that begins January 1, 2014. We do not expect that the adoption of this pronouncement will have a material effect on our consolidated financial statements.

3. Inventories

	December 31,	
	2013	**2012**
	(Dollars in thousands)	
Raw materials	$ 58,765	$ 64,923
Work in process	30,266	35,028
Finished goods	101,185	100,873
Total	$ 190,216	$ 200,824

In the production of some of our products, we use precious metals, some of which we obtain from financial institutions under consignment agreements with terms of one year or less. The financial institutions retain ownership of the precious metals and charge us fees based on the amounts we consign. These fees were $3.0 million for 2013, $6.5 million for 2012, and $9.5 million for 2011. We had on hand precious metals owned by participants in our precious metals consignment program of $30.8 million at December 31, 2013, and $112.2 million at December 31, 2012, measured at fair value based on market prices for identical assets. The decline in precious metals is primarily the result of the sale of both our solar pastes and metal powders operations during 2013.

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Years ended December 31, 2013, 2012 and 2011 (Continued)

4. Property, Plant and Equipment

	December 31,	
	2013	2012
	(Dollars in thousands)	
Land	$ 12,388	$ 14,179
Buildings	211,084	228,348
Machinery and equipment	678,392	706,008
Construction in progress	20,889	18,961
Total property, plant and equipment	922,753	967,496
Total accumulated depreciation	(625,649)	(658,122)
Property, plant and equipment, net	$ 297,104	$ 309,374

Depreciation expense was $44.9 million for 2013, $49.5 million for 2012, and $53.7 million for 2011. Noncash investing activities for capital expenditures, consisting of new capital leases during the year and unpaid capital expenditure liabilities at year end, were $8.8 million for 2013, $5.6 million for 2012, and $19.0 million for 2011.

In 2013, we tested certain property, plant, and equipment held for use for impairment under ASC Topic 360, Property, Plant, and Equipment. Triggered by a change in expected use of one of our Performance Coatings operating facilities in Suzhou, China in the fourth quarter of 2013, we performed the two step impairment analysis as prescribed by ASC Topic 360. As that analysis indicated that the carrying value of those assets were no longer recoverable, we estimated the fair value of the assets within the asset group using adjusted market prices for similar assets, a level 3 classification in the fair value hierarchy. As a result of the analysis, assets held for use with a carrying value of $20.5 million were written down to $13.0 million. The impairment charge of $7.5 million is included in restructuring and impairment charges in our statements of operations.

In the first quarter of 2013, prior to the sale of Ferro Pfanstiehl Laboratories, Inc, we recorded an impairment loss of $8.7 million, which is recorded in loss from discontinued operations on our statements of operations. Refer to Note 16 for additional detail regarding the sale of the reportable segment.

In 2012, due to deterioration in our forecast for our solar assets, we tested certain property, plant, and equipment held for use for impairment under ASC Topic 360, Property, Plant, and Equipment. We estimated the fair value of these assets using discounted cash flow models, Level 3 measurements within the fair value hierarchy. As a result, assets held for use with a carrying value of $38.9 million were written off, and the impairment charge of $38.9 million is included in restructuring and impairment charges in our statements of operations. Further, additional assets with a carrying value of $12.5 million were written down to $4.6 million under ASC Topic 350, Intangibles Goodwill and Other. The $7.9 million impairment charge is included in restructuring and impairment charges in our statements of operations.

In 2011, assets held for use with a carrying value of $4.4 million were written off, and the impairment charge of $4.4 million is included in restructuring and impairment charges in our statements of operations. Various operational challenges indicated possible impairment of the property, plant and equipment at our facilities in Argentina and Belgium. The impairment charges by segment were $2.6 million in Performance Coatings and $1.8 million in Polymer Additives. We estimated the fair values of these assets using discounted cash flow models.

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Description	Fair Value	Level 1	Fair Value Measurements Using Level 2 (Dollars in thousands)	Level 3	Total Gains (Losses)
Assets held for use:					
2013	$ 13,000	$	$	$ 13,000	$ (7,484)
2012					(38,942)
2011					(4,436)

The inputs to the valuation techniques used to measure fair value are classified into the following categories:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market-based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

5. Goodwill and Other Intangible Assets

During the first quarter of 2013, the Company reorganized its operating segments to reflect the current structure under which performance is evaluated, strategic decisions are made and resources are allocated. The change in the operating segments resulted in a change in reporting units and consequently a change in the allocation of goodwill. The goodwill previously recorded within the Color and Glass Performance Materials segment was allocated between the Pigments, Powders and Oxides and Performance Colors and Glass Segments based on relative fair value at the time of the change in operating segments. The Performance Coatings, Polymer Additives and Specialty Plastics segments remain unchanged.

Details and activity of goodwill by segment follow:

	Electronic Materials	Performance Coatings	Color and Glass Performance Materials	Pigments, Powders and Oxides	Performance Colors and Glass	Total
			(Dollars in thousands)			
Balance at December 31, 2011:						
Gross goodwill	$ 152,950	$ 45,841	$ 62,079	$	$	$ 260,870
Accumulated impairment losses		(45,269)				(45,269)
	152,950	572	62,079			215,601
Impairments	(153,566)					(153,566)
Other adjustments	(1)		(21)			(22)
Foreign currency adjustment	617	3	342			962
Balance at December 31, 2012:						
Gross goodwill	153,566	45,844	62,400			261,810
Accumulated impairment losses	(153,566)	(45,269)				(198,835)
		575	62,400			62,975
Segment reorganization(1)			(62,400)	9,435	52,965	
Other adjustments				(3)	(15)	(18)
Foreign currency adjustment		11		76	429	516

Balance at December 31, 2013:						
Gross goodwill		45,855		9,508	53,379	108,742
Accumulated impairment losses		(45,269)				(45,269)
	$	$ 586	$	$ 9,508	$ 53,379	$ 63,473

(1) Reallocation of goodwill based on changes in reportable segments. Refer to footnote 19 for additional detail.

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Years ended December 31, 2013, 2012 and 2011 (Continued)

The significant assumptions and ranges of assumptions we used in our impairment analysis of goodwill follow:

Significant Assumptions	2013	2012
Weighted-average cost of capital	12.0% - 12.5%	12.0% - 15.5%
Residual growth rate	3.0%	3.0%

During the fourth quarter of 2013 we performed our annual goodwill impairment testing. The test involved comparing the fair value of our new reporting units to their carrying value as of the measurement date of October 31, 2013. We performed step 1 of the annual impairment test as defined in ASC Topic 350, Intangibles Goodwill and Other. The result of that test was that there were no indicators of impairment.

During 2012, deterioration in our forecast for our Electronic Materials reporting unit indicated that the carrying value of the Electronic Materials reporting unit exceeded its fair value. We estimated this fair value using the average of both the income approach and the market approach, resulting in a full impairment of its goodwill with an impairment charge of $153.6 million being included in restructuring and impairment charges in our statements of operations.

During 2011, our Tile Coating Systems reporting unit in our Performance Coatings segment experienced a decline in profitability, as well as a reduction in anticipated profitability levels, thereby decreasing the reporting unit s fair value below its carrying value. As a result, a measurement of the reporting unit s fair value indicated a full impairment of its goodwill. We estimated its fair value using the average of both the income approach and the market approach. An impairment loss of $3.9 million for the Performance Coatings segment has been included in restructuring and impairment charges in the consolidated statements of operations.

		Fair Value Measurements Using			
Description	Fair Value	Level 1	Level 2	Level 3	Total Gains (Losses)
		(Dollars in thousands)			
Goodwill:					
2012	$	$	$	$	$ (153,566)
2011					(3,881)

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

Details of amortizable intangible assets follow:

	Estimated Economic Life	December 31, 2013	December 31, 2012
		(Dollars in thousands)	
Gross amortizable intangible assets:			
Patents	10 - 16 years	$ 5,634	$ 5,560
Land rights	20 - 40 years	5,172	5,078
Technological know-how and other	5 - 30 years	15,996	16,710
Total gross amortizable intangible assets		26,802	27,348
Accumulated amortization:			
Patents		(4,880)	(4,659)
Land rights		(2,529)	(2,391)
Technological know-how and other		(6,366)	(5,888)
Total accumulated amortization		(13,775)	(12,938)
Amortizable intangible assets, net		$ 13,027	$ 14,410

In the fourth quarter of 2013, we began to explore options related to the sale of an intangible asset associated with our grinding fluids operations, and determined it was more likely than not that the intangible asset would be disposed of significantly before the end of its previously determined useful life. At December 31, 2013, the net book value of the intangible asset was approximately $2.1 million and it had a remaining useful life of approximately 11 years. We performed the analysis required under ASC Topic 350 Intangibles Goodwill and Other, and concluded under step 1 that the carrying value of the intangible asset was not recoverable. Further analysis under step 2 resulted in an impairment of $2.1 million. The fair value of the asset was determined utilizing the market approach based on bona fide third party offers for the asset, a level 3 classification in the fair value hierarchy.

Description	Fair Value	Level 1	Level 2	Level 3	Total Gains (Losses)
	Fair Value Measurements Using				
	(Dollars in thousands)				
Amortizable intangible asset:					
2013	$	$	$	$	$ (2,102)

We amortize amortizable intangible assets on a straight-line basis over the estimated useful lives of the assets. Amortization expense related to amortizable intangible assets was $2.5 million for 2013, $1.9 million for 2012, and $1.0 million for 2011. Aggregate amortization expense for amortizable intangible assets is expected to be approximately $1.6 million annually for 2014 through 2016 and approximately $1.0 million annually for 2017 and 2018.

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Years ended December 31, 2013, 2012 and 2011 (Continued)

6. Debt and Other Financing

Loans payable and current portion of long-term debt at December 31st consisted of the following:

	2013	2012
	(Dollars in thousands)	
Loans payable to banks	$ 2,062	$ 2,477
Domestic accounts receivable asset securitization program	41,000	40,000
International accounts receivable sales programs		6,122
Current portion of long-term debt	1,168	36,553
Total loans payable and current portion of long-term debt	$ 44,230	$ 85,152

Long-term debt at December 31st consisted of the following:

	2013	2012
	(Dollars in thousands)	
7.875% Senior Notes	$ 250,000	$ 250,000
6.50% Convertible Senior Notes, net of unamortized discounts		34,417
Revolving credit facility	9,204	2,596
Capitalized lease obligations (see Note 14)	5,816	6,433
Other notes	3,617	4,731
Total long-term debt	268,637	298,177
Current portion	(1,168)	(36,553)
Long-term debt, less current portion	$ 267,469	$ 261,624

The annual maturities of long-term debt for each of the five years after December 31, 2013, were as follows:

	(Dollars in thousands)
2014	$ 1,555
2015	10,955
2016	1,407
2017	1,235
2018	251,063
Thereafter	4,673
Total maturities of long-term debt	270,888
Imputed interest and executory costs on capitalized lease obligations	(2,251)
Total long-term debt	$ 268,637

Receivable Sales Programs

We have an asset securitization program for Ferro s U.S. trade accounts receivable. We sell undivided variable percentage interests in our domestic receivables to various purchasers, and we may obtain up to

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$50.0 million in the form of cash or letters of credit. Advances received under this program are accounted for as borrowings secured by the receivables and included in net cash provided by financing activities. The purchasers have no recourse to Ferro s other assets for failure of payment of the receivables as a result of the lack of creditworthiness, or financial inability to pay, of the related obligor. In May 2013, we extended the maturity of this credit facility through May 2014. At December 31, 2013, advances received of $41.0 million were secured by $63.8 million of accounts receivable. After reductions for any non-qualifying receivables and outstanding letters of credit, we had additional borrowings available under the program of $0.6 million at December 31, 2013, and $9.0 million at December 31, 2012. During the third quarter 2013, we amended the agreement to account for changes in the underlying funding source for the securitization process. The interest rate under the amended agreement is the sum of (A) either (1) LIBOR rates or (2) the federal funds rate plus 0.5% or the prime rate and (B) a fixed margin. At December 31, 2013, the interest rate was 0.6%.

Ferro Finance Corporation (FFC), a wholly-owned, consolidated subsidiary, holds Ferro s U.S. trade accounts receivable. The program contains operating covenants that limit FFC s ability to engage in certain activities, including borrowings, creation of liens, mergers, and investing in other companies. The program also requires FFC and Ferro to provide periodic financial statements and reports on the accounts receivable and limits our ability to make significant changes in receivable collection practices. In addition, FFC is required to maintain a minimum tangible net worth. The program is subject to customary termination events, including nonperformance, deterioration in the quality of the accounts receivable pool, and cross-default provisions with Ferro s 2013 revolving credit facility (described below) and other debt obligations with principal outstanding of at least $5 million. If a termination event occurs and is not cured, the program may be terminated or a third party may be selected to act as administrator in collecting the accounts receivable.

In 2011, we entered into several international programs to sell with recourse trade accounts receivable to financial institutions. Advances received under these programs are accounted for as borrowings secured by the receivables and included in net cash provided by financing activities. During the fourth quarter of 2013, the international factoring programs expired and were not renewed. Ferro had no commitments supporting these programs at December 31, 2013, and $18.5 million at December 31, 2012. There were no advances at December 31, 2013, and $6.1 million at December 31, 2012 was secured by $9.3 million of accounts receivables at December 31, 2012. Additional borrowings available under the programs was $0.2 million at December 31, 2012. The interest rates under these programs are based on EURIBOR rates plus 1.75%.

7.875% Senior Notes

In 2010, we issued $250 million of 7.875% Senior Notes due 2018 (the Senior Notes). The Senior Notes were issued at par and bear interest at a rate of 7.875% per year, payable semi-annually in arrears on February 15 and August 15 of each year.

The Senior Notes mature on August 15, 2018. We may redeem some or all of the Senior Notes prior to August 15, 2014, at a price equal to the principal amount plus a defined applicable premium. The applicable premium on any redemption date is the greater of 1.0% of the principal amount of the note or the excess of (1) the present value at such redemption date of the redemption price of the note at August 15, 2014, plus all required interest payments due on the note through August 15, 2014, computed using a discount rate equal to the Treasury Rate as of the redemption date plus 50 basis points; or (2) the principal amount of the note. In addition, we may redeem some or all of the Senior Notes beginning August 15, 2014, at prices ranging from 100% to 103.938% of the principal amount.

The Senior Notes are unsecured obligations and rank equally in right of payment with any other unsecured, unsubordinated obligations. The Senior Notes contain certain affirmative and negative covenants customary for

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high-yield debt securities, including, without limitation, restrictions on our ability to incur additional debt, create liens, pay dividends or make other distributions or repurchase our common stock and sell assets outside the ordinary course of business. At December 31, 2013, we were in compliance with the covenants under the Senior Notes indenture.

6.50% Convertible Senior Notes

In 2008, Ferro issued $172.5 million of 6.50% Convertible Senior Notes due 2013 (the Convertible Notes). The Convertible Notes bear interest at a rate of 6.5% per year, payable semi-annually in arrears on February 15 and August 15 of each year.

The 6.50% Convertible Notes were repaid at maturity on August 15, 2013. The principal amount outstanding at maturity was $35.1 million.

Revolving Credit Facilities

In 2010, we entered into the Third Amended and Restated Credit Agreement with a group of lenders for a five-year, $350 million multi-currency senior revolving credit facility (the 2010 Credit Facility). In 2012, we amended the 2010 Credit Facility (the 2012 Amended Credit Facility) primarily to provide additional operating flexibility.

In March 2013, we again amended the 2010 Credit Facility (the 2013 Amended Credit Facility) to provide additional operating flexibility. The primary effects of the 2013 Amended Credit Facility were to:

- Decrease the Revolving Loan Commitment Amount from $350.0 million to $250.0 million;
- Amend the calculation of EBITDA to provide for a restructuring expense add-back attributable to the Company s restructuring programs of $30.0 million in 2013, $20.0 million in 2014 and $10.0 million in 2015, with no aggregate limit on restructuring expense;
- Increase the maximum permitted leverage ratio to the levels stated below.
- Amend the requirements for Permitted Acquisitions such that for the Company to consummate a Permitted Acquisition the Company must have minimum liquidity of $100.0 million and the Company s Secured Leverage Ratio must be less than 1.50.

The 2013 Amended Credit Facility matures on August 24, 2015, and is secured by substantially all of Ferro s assets. After reductions for borrowings and outstanding letters of credit secured by these facilities, we had $235.3 million of additional borrowings available at December 31, 2013, and $343.2 million at December 31, 2012. The interest rate under the 2013 Amended Credit Facility is the sum of (A) either (1) LIBOR or (2) the higher of the Federal Funds Rate plus 0.5%, the Prime Rate, or LIBOR plus 1.0% and (B) a variable margin based on the Company s leverage. At December 31, 2013, the interest rate was 3.4%.

Under the 2013 Amended Credit Facility, we are subject to a number of financial covenants, including limitations on the payment of common stock dividends. The covenants include requirements for a leverage ratio, an interest coverage ratio, and capital expenditures as follows:

The leverage ratio must be less than (i) 4.25 to 1.00 the first, second and third quarters of 2013 and (ii) 4.00 to 1.00 in the fourth quarter of 2013 and first quarter of 2014, (iii) 3.75 to 1.00 for the second and third quarters of 2014, and (iv) 3.50 to 1.00 thereafter. In the leverage ratio, the numerator is total debt, which consists of borrowings and certain letters of credit outstanding on the 2013 Amended Credit

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Facility and our international facilities, the principal amount outstanding on our senior notes, capitalized lease obligations, and amounts outstanding on our domestic receivables sales programs. The denominator is the sum of earnings before interest, income taxes, depreciation, and amortization (EBITDA), and as adjusted for certain special charges over the last four fiscal quarters.

The interest coverage ratio must be not less than (i) 3.00 for the first quarter of 2013 and thereafter. In the interest coverage ratio, the numerator is EBITDA and the denominator is cash paid for interest expense and certain other financing expenses.

Capital expenditures are limited to (i) $20.0 million for the three months ended June 30, 2012, (ii) $35.0 million for the six months ended September 30, 2012, (iii) $50.0 million for the nine months ended December 31, 2012. Currently, (i) $65.0 million for the twelve months ended March 31, 2013, and (ii) $65.0 million for the 2013 fiscal year and each fiscal year thereafter. Certain unused capital expenditures will be permitted to be carried forward to the following fiscal year.

Our ability to meet these covenants is primarily driven by our EBITDA; our total debt; our interest payments; and our capital expenditures. Our total debt is primarily driven by cash flow items, including net income before amortization, depreciation, and other noncash charges; our capital expenditures; requirements for deposits from participants in our precious metals consignment program; our customers ability to make payments for purchases and the timing of such payments; and our ability to manage inventory and other working capital items. Our interest payments are driven by our debt level, external fees, and interest rates, primarily the Prime rate and LIBOR. Our capital expenditures are driven by our desire to invest in growth opportunities, to maintain existing property, plant and equipment, and to meet environmental, health and safety requirements. At December 31, 2013, we were in compliance with the covenants of the 2013 Amended Credit Facility.

Our ability to pay common stock dividends is limited by certain covenants in our 2013 Amended Credit Facility and the bond indenture governing the Senior Notes. The covenant in our 2013 Amended Credit Facility is the more limiting of the two covenants and limits our ability to make restricted payments, which include, but are not limited to, common stock dividends and the repurchase of equity interests. We are not permitted to make restricted payments in excess of $30 million in any calendar year. However, if we make less than $30 million of restricted payments in any calendar year, the unused amount can be carried over for restricted payments in future years, provided that the maximum amount of restricted payments in any calendar year does not exceed $60 million.

Other Financing Arrangements

We maintain other lines of credit to provide global flexibility for Ferro s short-term liquidity requirements. These facilities are uncommitted lines for our international operations and totaled $17.1 million at December 31, 2013, and $21.5 million at December 31, 2012. The unused portions of these lines provided additional liquidity of $10.1 million at December 31, 2013, and $9.1 million at December 31, 2012.

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Years ended December 31, 2013, 2012 and 2011 (Continued)

7. Financial Instruments

The following financial instrument assets (liabilities) are presented at carrying amount, fair value and classification within the fair value hierarchy:

	December 31, 2013					December 31, 2012	
		Fair Value					
	Carrying Amount	Total	Level 1	Level 2	Level 3	Carrying Amount	Fair Value
	(Dollars in thousands)						
Cash and cash equivalents	$ 28,328	$ 28,328	$ 28,328	$	$	$ 29,576	$ 29,576
Loans payable	(43,062)	(43,062)		(43,062)		(48,599)	(48,599)
7.875% Senior Notes	(250,000)	(266,250)	(266,250)			(250,000)	(231,500)
6.50% Convertible Senior Notes, net of unamortized discounts						(34,417)	(34,803)
Revolving credit facility	(9,204)	(9,496)		(9,496)		(2,596)	(2,634)
Other long-term notes	(3,617)	(2,988)		(2,988)		(4,731)	(3,937)
Foreign currency forward contracts, net	(2,255)	(2,255)		(2,255)		(4,758)	(4,758)

The fair values of cash and cash equivalents are based on the fair values of identical assets. The fair values of loans payable are based on the present value of expected future cash flows and approximate their carrying amounts due to the short periods to maturity. The fair value of the 7.875% Senior Notes is based on trades in an active market. At December 31, 2013, the quoted market price was $106.50 per $100 reflecting a yield of 6.23%. The fair value of the 6.50% Convertible Notes was historically based on third-party estimated bid prices. The fair values of the revolving credit facility and the other long-term notes are based on the present value of expected future cash flows and assumptions about current interest rates and the creditworthiness of the Company that market participants would use in pricing the debt.

Derivative Instruments

Foreign currency forward contracts. We manage foreign currency risks principally by entering into forward contracts to mitigate the impact of currency fluctuations on transactions. These forward contracts are not formally designated as hedges. Gains and losses on these foreign currency forward contracts are netted with gains and losses from currency fluctuations on transactions arising from international trade and reported as foreign currency losses, net in the consolidated statements of operations. Net foreign currency loss was approximately $4.2 million in 2013, $2.2 million in 2012, and $4.8 million in 2011, which is primarily comprised of the foreign exchange impact on transactions in countries where it is not economically feasible for us to enter into hedging arrangements and hedging inefficiencies, such as timing of transactions. We incurred net losses of $8.1 million in 2013, and recognized net gains of $0.5 million in 2012 respectively, arising from the change in fair value of our financial instruments, which offset the related net gains and losses on international trade transactions of approximately the same amounts. The fair values of these contracts are based on market prices for comparable contracts. The notional amount of foreign currency forward contracts was $244.9 million at December 31, 2013, and $250.7 million at December 31, 2012.

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The following table presents the effect on our consolidated statements of operations of foreign currency forward contracts:

	Amount of (Loss) Gain Recognized in Income 2013	2012	Location of (Loss) Gain in Income
	(Dollars in thousands)		
Foreign currency forward contracts	$ (8,060)	$ 474	Foreign currency losses, net

The following table presents the fair value on our consolidated balance sheets at December 31st of foreign currency forward contracts:

	2013	2012	Balance Sheet Location
	(Dollars in thousands)		
Asset derivatives:			
Foreign currency forward contracts	$ 186	$	Other current assets
Foreign currency forward contracts		213	Accrued expenses and other current liabilities
Total fair value	$ 186	$ 213	
Liability derivatives:			
Foreign currency forward contracts	$ (2,441)	$ (4,971)	Accrued expenses and other current liabilities
Total fair value	$ (2,441)	$ (4,971)	

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8. Income Taxes

Income tax expense (benefit) is based on our earnings (losses) before income taxes as presented in the following table:

	2013	2012	2011
		(Dollars in thousands)	
U.S.	$ 98,839	$ (218,314)	$ 23,862
Foreign	(3,106)	(47,026)	(2,772)
Total	$ 95,733	$ (265,340)	$ 21,090

Our income tax expense (benefit) consists of the following components:

	2013	2012	2011
		(Dollars in thousands)	
Current:			
U.S. federal	$ (10,370)	$ (1,825)	$ (11,250)
Foreign	17,219	2,525	8,704
State and local	165	575	517
Total current	7,014	1,275	(2,029)
Deferred:			
U.S. federal	12,145	77,875	18,380
Foreign	(4,292)	21,399	2,944
State and local		8,301	(1,163)
Total deferred	7,853	107,575	20,161
Total income tax expense	$ 14,867	$ 108,850	$ 18,132

In addition, income tax (benefit) expense that we allocated directly to Ferro Corporation shareholders equity is detailed in the following table:

	2013	2012	2011
		(Dollars in thousands)	
Foreign currency translation adjustments	$	$ 144	$ 38
Postretirement benefit liability adjustments	(244)	(140)	(139)
Stock options exercised		249	(1,184)
Total income tax (benefit) expense allocated to Ferro Corporation shareholders equity	$ (244)	$ 253	$ (1,285)

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A reconciliation of the U.S. federal statutory income tax rate and our effective tax rate follows:

	2013	2012	2011
U.S. federal statutory income tax rate	35.0%	35.0%	35.0%
Adjustment of valuation allowance	(28.4)	(68.9)	52.8
State taxes	0.1	2.0	3.7
Goodwill dispositions and impairments	(0.2)	(4.2)	3.5
Uncertain tax positions	0.3	(0.1)	3.3
Foreign tax rate difference	0.3	(1.0)	0.2
Research and development credit		0.2	(10.9)
Domestic production activities deduction			(5.8)
Net adjustment of prior-year accrual	1.6	(1.0)	(1.9)
U.S. tax cost of foreign dividends	1.3	(0.2)	(0.2)
Stock options			(0.4)
Medicare subsidy			(0.2)
Book to tax difference on sale of asset	(2.4)		
Expired tax credits	7.2	(1.5)	
Miscellaneous	0.7	(1.3)	6.9
Effective tax rate	15.5%	(41.0)%	86.0%

We have refundable income taxes of $3.6 million at December 31, 2013, and $9.8 million at December 31, 2012, classified as other receivables on our balance sheets. We also have income taxes payable of $1.0 million at December 31, 2013, and $2.5 million at December 31, 2012, classified as accrued expenses and other current liabilities on our balance sheets.

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

	2013	2012
	(Dollars in thousands)	
Deferred tax assets:		
Pension and other benefit programs	$ 31,545	$ 68,522
Foreign operating loss carryforwards	62,256	66,993
Domestic operating loss carryforwards	17,484	
Foreign tax credit carryforwards	30,322	29,188
Other credit carryforwards	16,294	14,259
Capitalized research costs	3,578	5,409
Accrued liabilities	18,066	16,414
State operating loss carryforwards	8,956	4,258
Allowance for doubtful accounts	3,062	2,937
Property, equipment and intangibles depreciation and amortization	9,932	18,613
Capitalized interest	4,903	4,712
Inventories	3,756	5,656
Other	7,979	10,103
Total deferred tax assets	218,133	247,064
Deferred tax liabilities:		
Convertible debt instruments		227
Unremitted earnings of foreign subsidiaries	1,795	1,363
Other	357	767
Total deferred tax liabilities	2,152	2,357
Net deferred tax assets before valuation allowance	215,981	244,707
Valuation allowance	(193,984)	(216,882)
Net deferred tax assets	$ 21,997	$ 27,825

The amounts of foreign operating loss carryforwards, foreign tax credit carryforwards, and other credit carryforwards included in the table of temporary differences are net of reserves for unrecognized tax benefits.

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At December 31, 2013, we had $21.1 million of tax benefits from state operating loss carryforwards and $71.9 million from foreign operating loss carryforwards, some of which can be carried forward indefinitely and others expire in one to twenty years. At December 31, 2013, we had $62.0 million of tax benefits from tax credit carryforwards, some of which can be carried forward indefinitely. These operating loss carryforwards and tax credit carryforwards expire as follows:

	Operating Loss Carryforwards	Tax Credit Carryforwards
	(Dollars in thousands)	
Expiring in:		
2014	$ 5,108	$ 4,901
2015-2019	20,567	32,516
2020-2024	2,889	13,360
2025-2029	7,146	7,864
2030-2034	17,623	1,314
2035-Indefinitely	39,716	2,068
Total	$ 93,049	$ 62,023

We assess the available positive and negative evidence to estimate if sufficient future taxable income will be generated to utilize the existing deferred tax assets. A significant piece of objective negative evidence evaluated by jurisdiction is cumulative loss incurred over the three-year period ended December 31, 2013. Such objective evidence limits the ability to consider other subjective evidence, such as our projections for future income.

Based on this assessment, the Company has recorded a valuation allowance of $194.0 million in order to measure only the portion of the deferred tax asset that more likely than not will be realized. The decrease in valuation allowances in 2013 was driven by release of valuation allowances related to deferred tax assets that were utilized or expired in the current year offset by additions to operating losses in certain jurisdictions where it is not more likely than not that these assets will be realized.

We classified net deferred income tax assets as of December 31st as detailed in the following table:

	2013	2012
	(Dollars in thousands)	
Current assets	$ 6,584	$ 7,995
Non-current assets	19,451	21,554
Current liabilities	(1,660)	(950)
Non-current liabilities	(2,378)	(774)
Net deferred tax assets	$ 21,997	$ 27,825

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Activity and balances of unrecognized tax benefits are summarized below:

	2013	2012	2011
		(Dollars in thousands)	
Balance at beginning of year	$ 28,686	$ 32,131	$ 33,455
Additions based on tax positions related to the current year	3,701	4,567	1,886
Additions for tax positions of prior years	8,524	560	487
Reductions for tax positions of prior years	(153)	(354)	(167)
Reductions as a result of expiring statutes of limitations	(449)	(5,272)	(2,455)
Foreign currency translation of non-U.S. dollar denominated reserves	292	222	(449)
Settlements with taxing authorities	(1,862)	(3,168)	(626)
Balance at end of year	$ 38,739	$ 28,686	$ 32,131

Additions for tax positions of prior years for 2013 in the above table are primarily comprised of immaterial prior period adjustments recorded in the current year. The impact in the 2013 income tax provision for these prior period adjustments is $3.4 million.

The total amount of unrecognized tax benefits that, if recognized, would affect the effective rate was $13.2 million at December 31, 2013, and $12.9 million at December 31, 2012. The Company recognizes interest accrued and penalties related to unrecognized tax benefits as part of income tax expense. The Company recognized $1.3 million of expense in 2013, $0.3 million of benefit in 2012, and $0.3 million of benefit in 2011 for interest, net of tax, and penalties. The Company accrued $2.3 million at December 31, 2013, and $1.3 million at December 31, 2012, for payment of interest, net of tax, and penalties.

We anticipate that $6.6 million of liabilities for unrecognized tax benefits, including accrued interest and penalties, may be reversed within the next 12 months. These liabilities relate to international tax issues and are expected to reverse due to the expiration of the applicable statute of limitations periods and the anticipation of the closure of tax examinations.

The Company conducts business globally, and, as a result, the U.S. parent company or one of its subsidiaries files income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. In the normal course of business, the U.S. parent company and its subsidiaries are subject to examination by taxing authorities throughout the world. With few exceptions, we are not subject to U.S. federal, foreign, or state and local income tax examinations for years before 2004.

At December 31, 2013, we provided $1.8 million for deferred income taxes on $12.3 million of undistributed earnings of foreign subsidiaries. We have not provided deferred income taxes on undistributed earnings of approximately $101.7 million, since we intend to indefinitely reinvest the earnings and it is not practicable to estimate the additional taxes that might be payable on the eventual remittance of such earnings.

9. Contingent Liabilities

The Company had bank guarantees and standby letters of credit issued by financial institutions that totaled $10.1 million at December 31, 2013, and $9.7 million at December 31, 2012. These agreements primarily relate to Ferro s insurance programs, foreign energy purchase contracts and foreign tax payments. If the Company fails to perform its obligations, the guarantees and letters of credit may be drawn down by their holders, and we would be liable to the financial institutions for the amounts drawn.

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We have recorded environmental liabilities of $9.7 million at December 31, 2013, and $9.6 million at December 31, 2012, for costs associated with the remediation of certain of our properties that have been contaminated. The balance at December 31, 2013 was primarily comprised of liabilities related to a non-operating facility in Brazil, and for environmental obligations that we retained related to a site in the United States from the sale of our North American and Asian metal powders product lines during the fourth quarter of 2013. The costs include legal and consulting fees, site studies, the design and implementation of remediation plans, post-remediation monitoring and related activities. The ultimate liability could be affected by numerous uncertainties, including the extent of contamination found, the required period of monitoring and the ultimate cost of required remediation.

In the fourth quarter of 2013, the Supreme Court in Argentina ruled unfavorably related to certain export taxes associated with a divested operation. As a result of this ruling, we recorded a $6.8 million liability. The liability that has been recorded at December 31, 2013 represents our estimate of the amount that is probable and estimable.

There are various lawsuits and claims pending against the Company and its consolidated subsidiaries. We do not currently expect the ultimate liabilities, if any, and expenses related to such lawsuits and claims to materially affect the consolidated financial position, results of operations, or cash flows of the Company.

10. Retirement Benefits
Defined Benefit Pension Plans

	U.S. Plans			Non-U.S. Plans		
	2013	2012	2011	2013	2012	2011
	(Dollars in thousands)					
Net periodic benefit cost:						
Service cost	$ 19	$ 16	$ 16	$ 2,095	$ 1,995	$ 2,095
Interest cost	18,123	19,469	20,468	4,927	5,344	5,525
Expected return on plan assets	(24,730)	(20,631)	(20,601)	(2,994)	(3,022)	(3,137)
Amortization of prior service cost (credit)	13	48	73	29	2	(142)
Mark-to-market actuarial net (gains) losses	(63,405)	20,125	49,866	(2,506)	9,529	4,578
Curtailment and settlement effects				(632)	(2,524)	23
Special termination benefits				96	2	3
Total net periodic benefit (income) cost	$ (69,980)	$ 19,027	$ 49,822	$ 1,015	$ 11,326	$ 8,945
Weighted-average assumptions:						
Discount rate	4.30%	5.10%	5.85%	4.00%	5.01%	5.51%
Rate of compensation increase	N/A	N/A	N/A	2.89%	3.03%	3.44%
Expected return on plan assets	8.20%	8.20%	8.50%	4.45%	4.86%	5.60%

In 2013, the mark-to-market actuarial net gain for U.S. plans consisted of actuarial gains of $38.0 million primarily due to an increase in the discount rate, in addition to $25.6 million of gains from actual returns on plan assets exceeding expected returns. The mark-to-market actuarial net gains for non-U.S. plans consisted of actuarial gains of $0.6 million, primarily due to an increase in the discount rate, in addition to $1.9 million of gains from actual returns on plan assets exceeding expectations. Also in 2013, we recorded curtailment gains related to the cessation of retirement benefit accumulations in Japan.

In 2012, the mark-to-market actuarial net loss for U.S. plans consisted of actuarial losses of $39.0 million primarily due to a decrease in the discount rate, partially offset by $18.9 million of gains from actual returns on plan

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assets exceeding expectations. The mark-to-market actuarial net loss for non-U.S. plans consisted of actuarial losses of $15.7 million primarily due to a decrease in the discount rate, partially offset by $6.2 million of gains from actual returns on plan assets exceeding expectations. Also in 2012, we recorded curtailment gains related to the cessation of retirement benefit accumulations in the Netherlands. The affected employees in the Netherlands now receive benefits through a defined contribution plan.

For U.S. plans in 2011, the improvement through December 2010 in the valuation of pension investments increased the amount of our expected return on plan assets. The mark-to-market actuarial net loss consisted of actuarial losses of $32.6 million primarily due to a decrease in the discount rate and $17.3 million of losses from expected returns exceeding actual returns on plan assets. For non-U.S. plans in 2011, curtailments and settlements in 2010 decreased benefit obligations, which reduced interest cost. These curtailments and settlements also decreased plan assets, which reduced expected returns. The mark-to-market actuarial net loss consisted of actuarial losses of $5.7 million primarily due to a decrease in the discount rate, partially offset by $0.9 million of gains from actual returns on plan assets exceeding expectations.

	U.S. Plans		Non-U.S. Plans	
	2013	2012	2013	2012
	(Dollars in thousands)			
Change in benefit obligation:				
Benefit obligation at beginning of year	$ 428,584	$ 392,820	$ 126,967	$ 110,674
Service cost	19	16	2,095	1,995
Interest cost	18,123	19,469	4,927	5,344
Curtailments			(369)	(1,617)
Settlements			(2,175)	(2,984)
Special termination benefits			97	2
Plan participants contributions			27	133
Benefits paid	(22,179)	(22,693)	(4,063)	(5,176)
Actuarial (gain) loss	(37,829)	38,972	(619)	15,691
Exchange rate effect			2,839	2,905
Benefit obligation at end of year	$ 386,718	$ 428,584	$ 129,726	$ 126,967
Accumulated benefit obligation at end of year	$ 386,718	$ 428,584	$ 129,726	$ 119,777
Change in plan assets:				
Fair value of plan assets at beginning of year	$ 302,575	$ 261,715	$ 70,004	$ 62,554
Actual return on plan assets	50,306	39,479	4,924	9,309
Employer contributions	23,968	24,074	3,749	3,903
Plan participants contributions			27	133
Benefits paid	(22,179)	(22,693)	(4,063)	(5,176)
Effect of settlements			(2,175)	(2,984)
Exchange rate effect			1,144	2,265
Fair value of plan assets at end of year	$ 354,670	$ 302,575	$ 73,610	$ 70,004
Amounts recognized in the balance sheet:				
Other non-current assets	$	$	$ 6,909	$ 5,024
Accrued expenses and other current liabilities	(542)	(365)	(1,946)	(1,906)
Postretirement and pension liabilities	(31,506)	(125,644)	(61,081)	(60,082)
Funded status	$ (32,048)	$ (126,009)	$ (56,118)	$ (56,964)

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	U.S. Plans		Non-U.S. Plans	
	2013	2012	2013	2012
	(Dollars in thousands)			
Weighted-average assumptions as of December 31:				
Discount rate	5.25%	4.30%	4.12%	4.00%
Rate of compensation increase	N/A	N/A	2.88%	2.83%
Pension plans with benefit obligations in excess of plan assets:				
Benefit obligations	$ 386,718	$ 428,584	$ 91,116	$ 89,017
Plan assets	354,670	302,575	28,089	27,029
Pension plans with accumulated benefit obligations in excess of plan assets:				
Projected benefit obligations	$ 386,718	$ 428,584	$ 90,882	$ 88,783
Accumulated benefit obligations	386,718	428,584	85,565	82,462
Plan assets	354,670	302,575	27,868	26,824

Activity and balances in accumulated other comprehensive income (loss) related to defined benefit pension plans are summarized below:

	U.S. Plans		Non-U.S. Plans	
	2013	2012	2013	2012
	(Dollars in thousands)			
Prior service (cost) credit:				
Balance at beginning of year	$ (55)	$ (103)	$ (103)	$ 954
Amounts recognized as net periodic benefit costs	13	48	(328)	(780)
Exchange rate effects			(229)	(277)
Balance at end of year	$ (42)	$ (55)	$ (660)	$ (103)
Estimated amounts to be amortized in 2014	$ (12)		$ (63)	

The overall investment objective for defined benefit pension plan assets is to achieve the highest level of investment return that is compatible with prudent investment practices, asset class risk and current and future benefit obligations of the plans. Based on the potential risks and expected returns of various asset classes, the Company establishes asset allocation ranges for major asset classes. For U.S. plans, the target allocations are 35% fixed income, 60% equity, and 5% other investments. For non-U.S. plans, the target allocations are 75% fixed income, 24% equity, and 1% other investments. The Company invests in funds and with asset managers that track broad investment indices. The equity funds generally capture the returns of the equity markets in the U.S., Europe, Japan, and Asia-Pacific and also reflect various investment styles, such as growth, value, and large or small capitalization. The fixed income funds generally capture the returns of government and investment-grade corporate fixed income securities in the U.S. and Europe and also reflect various durations of these securities.

We base the expected return on plan assets at the beginning of the year on the weighted-average expected return for the target asset allocations of the major asset classes held by each plan. In determining the expected return, the Company considers both historical performance and an estimate of future long-term rates of return. The Company consults with and considers the opinion of its actuaries in developing appropriate return assumptions.

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Years ended December 31, 2013, 2012 and 2011 (Continued)

The fair values of our pension plan assets at December 31, 2013, by asset category are as follows:

	Level 1	Level 2	Level 3	Total
		(Dollars in thousands)		
U.S. plans:				
Fixed income:				
Cash and cash equivalents	$ 7,574	$	$	$ 7,574
Guaranteed deposits		2,054		2,054
U.S. government agencies	15,048			15,048
Mutual funds	84,650			84,650
Commingled funds		1,328	468	1,796
Equities:				
U.S. common stocks	3,632			3,632
Mutual funds	222,363			222,363
Commingled funds		1,875		1,875
Real estate			15,678	15,678
Total	$ 333,267	$ 5,257	$ 16,146	$ 354,670
Non-U.S. plans:				
Fixed income:				
Cash and cash equivalents	$ 686	$	$	$ 686
Guaranteed deposits		2,614	22,985	25,599
Mutual funds	497			497
Commingled funds		22,896		22,896
Other	4,181			4,181
Equities:				
Mutual funds	465			465
Commingled funds		18,369		18,369
Real estate			484	484
Other assets	232		201	433
Total	$ 6,061	$ 43,879	$ 23,670	$ 73,610

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The fair values of our pension plan assets at December 31, 2012, by asset category are as follows:

	Level 1	Level 2	Level 3	Total
		(Dollars in thousands)		
U.S. plans:				
Fixed income:				
Cash and cash equivalents	$ 7	$	$	$ 7
Guaranteed deposits		2,208		2,208
U.S. government agencies	18,256			18,256
Mutual funds	84,041			84,041
Commingled funds		1,400	675	2,075
Equities:				
U.S. common stocks	1,775			1,775
Mutual funds	184,528			184,528
Commingled funds		1,710		1,710
Real estate			7,975	7,975
Total	$ 288,607	$ 5,318	$ 8,650	$ 302,575
Non-U.S. plans:				
Fixed income:				
Cash and cash equivalents	$ 1,071	$	$	$ 1,071
Guaranteed deposits		3,561	20,589	24,150
Mutual funds	373			373
Commingled funds		22,218		22,218
Other	3,636			3,636
Equities:				
Mutual funds	403			403
Commingled funds		17,152		17,152
Real estate			605	605
Other assets	177		219	396
Total	$ 5,660	$ 42,931	$ 21,413	$ 70,004

The Company s U.S. pension plans held 0.3 million shares of the Company s common stock with a market value of $3.6 million at December 31, 2013, and 0.4 million shares with a market value of $1.8 million at December 31, 2012.

Level 3 assets consist primarily of guaranteed deposits and real estate investments. The guaranteed deposits in Level 3 are in the form of contracts with insurance companies that secure the payment of benefits and are valued based on discounted cash flow models using the same discount rate used to value the related plan liabilities. The real estate investments in Level 3 are in the form of commingled funds invested in non-public real estate development and investment companies and are valued based on estimated capitalization factors applied to the earnings streams from portfolio properties and fee income, discounted cash flows of development projects, and estimated market values of undeveloped land, all of which are reduced by reported liabilities and appropriate taxes.

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A rollforward of Level 3 assets is presented below. Transfers into Level 3 during 2012 represent the correction of the classification within the fair value hierarchy of certain guaranteed deposits that were previously classified within Level 2. Unrealized gains included in earnings were $3.6 million in 2013 and $5.1 million in 2012.

	Guaranteed deposits	Real estate	Commingled funds	Other assets	Total
			(Dollars in thousands)		
Balance at December 31, 2011	$	$ 831	$ 647	$ 363	$ 1,841
Transfers into Level 3	16,520				16,520
Purchases	598	8,072		48	8,718
Sales	(1,977)	(349)		(170)	(2,496)
Gains (losses) included in earnings	5,057	11	28	(28)	5,068
Exchange rate effect	391	15		6	412
Balance at December 31, 2012	$ 20,589	$ 8,580	$ 675	$ 219	$ 30,063
Purchases		6,540		7	6,547
Sales		(75)	(216)	(15)	(306)
Gains (losses) included in earnings	2,396	1,176	9	21	3,602
Exchange rate effect		(58)		(32)	(90)
Balance at December 31, 2013	$ 22,985	$ 16,163	$ 468	$ 200	$ 39,816

We expect to contribute approximately $22.5 million to our U.S. pension plans and $2.7 million to our non-U.S. pension plans in 2014.

We estimate that future pension benefit payments, which reflect expected future service, will be as follows:

	U.S. Plans	Non-U.S. Plans
	(Dollars in thousands)	
2014	$ 22,582	$ 5,463
2015	23,051	5,041
2016	23,511	5,107
2017	24,309	6,144
2018	24,718	6,187
2019-2023	130,643	30,424

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Postretirement Health Care and Life Insurance Benefit Plans

	2013	2012	2011
		(Dollars in thousands)	
Net periodic benefit cost:			
Interest cost	$ 1,139	$ 1,585	$ 1,929
Amortization of prior service credit	(115)	(130)	(401)
Mark-to-market actuarial net losses	(3,904)	(2,743)	(2,684)
Total net periodic benefit cost	$ (2,880)	$ (1,288)	$ (1,156)
Weighted-average assumptions:			
Discount rate	3.85%	4.85%	5.45%
Current trend rate for health care costs	7.50%	7.70%	7.90%
Ultimate trend rate for health care costs	4.50%	4.50%	4.50%
Year that ultimate trend rate is reached	2028	2028	2028

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

	1-Percentage-Point Increase	1-Percentage-Point Decrease
	(Dollars in thousands)	
Effect on total of service and interest cost components	$ 78	$ (68)
Effect on postretirement benefit obligation	1,523	(1,342)

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	2013	2012
	(Dollars in thousands)	
Change in benefit obligation:		
Benefit obligation at beginning of year	$ 30,943	$ 34,286
Interest cost	1,139	1,585
Benefits paid	(2,367)	(2,185)
Actuarial gain	(3,904)	(2,743)
Benefit obligation at end of year	$ 25,811	$ 30,943
Change in plan assets:		
Fair value of plan assets at beginning of year	$	$
Employer contributions	2,367	2,185
Benefits paid	(2,367)	(2,185)
Fair value of plan assets at end of year	$	$
Amounts recognized in the balance sheet:		
Accrued expenses and other current liabilities	$ (2,531)	$ (2,735)
Postretirement and pension liabilities	(23,280)	(28,208)
Funded status	$ (25,811)	$ (30,943)
Weighted-average assumptions as of December 31:		
Discount rate	4.90%	3.85%
Current trend rate for health care costs	7.30%	7.50%
Ultimate trend rate for health care costs	4.50%	4.50%
Year that ultimate trend rate is reached	2028	2028

Activity and balances in accumulated other comprehensive income related to our postretirement health care and life insurance benefit plans are summarized below:

	2013	2012
	(Dollars in thousands)	
Prior service credit:		
Balance at beginning of year	$ 1,130	$ 1,260
Amounts recognized as net periodic benefit costs	(115)	(130)
Balance at end of year	$ 1,015	$ 1,130
Estimated amounts to be amortized in 2014	$ 105	

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Years ended December 31, 2013, 2012 and 2011 (Continued)

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 provides subsidies for certain drug costs to companies that provide coverage that is actuarially equivalent to the drug coverage under Medicare Part D. We estimate that future postretirement health care and life insurance benefit payments will be as follows:

	Before Medicare Subsidy	After Medicare Subsidy
	(Dollars in thousands)	
2014	$ 2,531	$ 2,239
2015	2,459	2,171
2016	2,376	2,097
2017	2,296	2,029
2018	2,207	1,953
2019-2023	9,512	8,455

Other Retirement Plans

We also have defined contribution retirement plans covering certain employees. Our contributions are determined by the terms of the plans and are limited to amounts that are deductible for income taxes. Generally, benefits under these plans vest gradually over a period of five years from date of employment. The largest plan covers salaried and most hourly employees in the U.S. In this plan, the Company contributes a percentage of eligible employee basic compensation and also a percentage of employee contributions. The expense applicable to these plans was $5.8 million, $7.6 million, and $8.1 million in 2013, 2012, and 2011, respectively.

11. Serial Convertible Preferred Stock

We are authorized to issue up to 2,000,000 shares of serial convertible preferred stock without par value. In 1989, Ferro issued 1,520,215 shares of 7% Series A ESOP Convertible Preferred Stock (Series A Preferred Stock) to the Trustee of the Ferro Employee Stock Ownership Plan (ESOP) at a price of $46.375 per share for a total consideration of $70.5 million. Subsequently, all shares of the Series A Preferred Stock were allocated to participating individual employee accounts, and most of the shares were redeemed or converted by the Trustee to provide for distributions to, loans to, or withdrawals by participants or to satisfy an investment election provided to participants. In the first quarter of 2011, we redeemed in cash all outstanding Series A Preferred Stock for $9.4 million plus earned but unpaid dividends. The number of shares redeemed was 203,282 in 2011.

12. Stock-based Compensation

On May 22, 2013, our shareholders approved the 2013 Omnibus Incentive Plan (the Plan), which was adopted by the Board of Directors on February 22, 2013, subject to shareholder approval. The Plan s purpose is to promote the Company s long-term financial interests and growth by attracting, retaining and motivating high quality key employees and directors, motivating such employees and directors to achieve the Company s short- and long-range performance goals and objectives, aligning their interests with those of its shareholders. The Plan reserves 4,400,000 shares of common stock to be issued for grants of several different types of long-term incentives including stock options, stock appreciation rights, restricted shares, performance shares, other common stock based awards, and dividend equivalent rights.

The 2010 Long Term Incentive Plan (the Previous Plan) was replaced by the Plan, and no future grants may be made under the Previous Plan. However, any outstanding awards or grants made under the Previous Plan will continue until the end of their specified terms.

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Stock options, performance share units, deferred stock units, and restricted share awards were the only grant types outstanding at December 31, 2013. Stock options and performance share units are discussed below. Activities in other grant types were not significant.

Stock Options

General Information

Stock options outstanding at December 31, 2013, have a term of 10 years, vest evenly over three or four years on the anniversary of the grant date, and have an exercise price equal to the per share fair market value of our common stock on the grant date. Accelerated vesting is used for options held by employees who meet both the age and years of service requirements to retire prior to the end of the vesting period. In the case of death, retirement or change in control, the stock options become 100% vested and exercisable.

Stock Option Valuation Model and Method Information

We estimate the fair value of each stock option on the date of grant using the Black-Scholes option pricing model. We use judgment in selecting assumptions for the model, which may significantly impact the timing and amount of compensation expense, and we base our judgments primarily on historical data. When appropriate, we adjust the historical data for circumstances that are not likely to occur in the future. We adjust the assumptions each year based upon new information.

The following table details the determination of the assumptions used to estimate the fair value of stock options:

Assumption	Estimation Method
Expected life, in years	Historical stock option exercise experience
Risk-free interest rate	Yield of U.S. Treasury Bonds with remaining maturity equal to expected life of the stock option
Expected volatility	Historical daily price observations of the Company s common stock over a period equal to the expected life of the stock option
Expected dividend yield	Historical dividend rate at the date of grant

The following table details the weighted-average grant-date fair values and the assumptions used for estimating the fair values:

	2013		2012		2011	
Weighted-average grant-date fair value	$4.01		$4.68		$10.55	
Expected life, in years	6.0		6.0		6.9	
Risk-free interest rate	1.13%	1.36%	1.20%	1.67%	2.67%	3.07%
Expected volatility	85.6%	86.4%	81.1%	83.9%	71.9%	73.3%
Expected dividend yield		0%		0%		0%

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Stock Option Activity Information

A summary of stock option activity follows:

	Number of Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (In years)	Aggregate Intrinsic Value (Dollars in thousands)
Outstanding at December 31, 2012	3,760,640	$ 16.62		
Granted	566,400	5.59		
Exercised	(129,630)	5.14		
Forfeited or expired	(1,537,674)	18.33		
Outstanding at December 31, 2013	2,659,736	13.84	5.1	$ 8,383
Exercisable at December 31, 2013	1,736,545	$ 21.19	3.3	$ 2,782
Vested or expected to vest at December 31, 2013	2,558,609	$ 14.06	5.0	$ 7,844

We calculated the aggregate intrinsic value in the table above by taking the total pretax difference between our common stock s closing market value per share on the last trading day of the year and the stock option exercise price for each grant and multiplying that result by the number of shares that would have been received by the option holders had they exercised all their in-the-money stock options.

Information related to stock options exercised follows:

	2013	2012	2011
		(Dollars in thousands)	
Proceeds from the exercise of stock options	$ 666	$ 107	$ 1,053
Intrinsic value of stock options exercised	859	122	2,060
Income tax benefit related to stock options exercised	301	43	721

Stock-Based Compensation Expense Information

A summary of amounts recorded and to be recorded for stock-based compensation related to stock options follows:

	2013	2012	2011
		(Dollars in thousands)	
Compensation expense recorded in selling, general and administrative expenses	$ 1,679	$ 2,446	$ 4,462
Deferred income tax benefits related to compensation expense	588	856	1,562
Total fair value of stock options vested	2,228	3,973	7,736
Unrecognized compensation cost	1,282	1,976	6,117
Expected weighted-average recognition period for unrecognized compensation, in years	0.9	1.6	1.2

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FERRO CORPORATION AND SUBSIDIARIES

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Performance Share Units

General Information

Performance share units, expressed as shares of the Company s common stock, are earned only if the Company meets specific performance targets over a three-year period. The grants have a duration of three years. No performance share units were granted in 2011.

The Plan allows us to pay up to 200% of the vesting-date fair value. We pay half of the earned value in cash and half in unrestricted shares of common stock. The portions of the grants that will be paid in cash are treated as liabilities, and therefore, we remeasure our liability and the related compensation expense at the balance sheet date, based on fair value. We treat the portions of the grants that will be settled with common stock as equity awards, and therefore, the amount of stock-based compensation we record over the performance period is based on the fair value on the grant date. The compensation expense and number of shares expected to vest for all performance share units are adjusted for the achievement of the performance share units performance conditions, based upon our best estimate using available facts and circumstances.

Performance Share Unit Valuation Model and Method Information

The estimated fair value for performance share units granted in 2013 is based on the closing price of company s stock on the date of issuance and recorded based on achievement of target performance metrics. As of December 31, 2013 we have 0.5 million performance shares outstanding associated with our 2013 grant.

We estimated fair value of performance share units granted in 2012 based on assumptions underlying the Black-Scholes methodology to produce a Monte-Carlo simulation model. We use judgment in selecting assumptions for the model, which may significantly impact the timing and amount of compensation expense, and we base our judgments primarily on historical data. When appropriate, we adjust the historical data for circumstances that are not likely to occur in the future. We adjust the assumptions each year based upon new information.

The weighted average grant date fair value of our performance share units was $5.69 for shares granted in 2013 and $10.22 for shares granted in 2012. All performance share units are currently expensed at target and are evaluated each reporting period for likelihood of achieving the performance criteria.

Performance Share Unit Activity Information

A summary of performance share unit activity follows:

	Number of Units	Weighted-Average Remaining Contractual Term (In years)
Outstanding at December 31, 2012	305,200	
Granted	511,230	
Forfeited or expired	(55,100)	
Outstanding at December 31, 2013	761,330	1.7
Expected to vest at December 31, 2013	761,330	1.7

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Stock-Based Compensation Expense Information

A summary of amounts recorded and to be recorded for stock-based compensation related to performance share units follows:

	2013	2012
	(Dollars in thousands)	
Compensation expense recorded in selling, general and administrative expenses	$ 3,277	$ 611
Deferred income tax benefits related to compensation expense	1,147	214
Unrecognized compensation cost	4,681	1,584
Expected weighted-average recognition period for unrecognized compensation, in years	1.7	2.0

Directors Deferred Compensation

Separate from the Plan, the Company has established the Ferro Corporation Deferred Compensation Plan for Non-employee Directors, permitting its non-employee directors to voluntarily defer all or a portion of their compensation. The voluntarily deferred amounts are placed in individual accounts in a benefit trust known as a rabbi trust and invested in the Company s common stock with dividends reinvested in additional shares. All disbursements from the trust are made in the Company s common stock. The stock held in the rabbi trust is classified as treasury stock in shareholders equity and the deferred compensation obligation that is required to be settled in shares of Company s common stock is classified as paid-in capital. The rabbi trust held 0.2 million shares, valued at $2.7 million, at December 31, 2013, and 0.3 million shares, valued at $3.9 million, at December 31, 2012.

13. Restructuring and Cost Reduction Programs

Our restructuring and cost reduction programs have been developed with the objectives of leveraging our global scale, realigning and lowering our cost structure and optimizing capacity utilization. Through 2013, we have made significant progress against these objectives by completing various actions that were initiated in 2012, as well as achieving significant progress on our Global Cost Reduction Program that was initiated in 2013.

In 2013, 2012, and 2011, total charges resulting from these activities were $32.1 million, $25.5 million, and $9.0 million, respectively, of which zero in 2013 and 2012 and $0.3 million in 2011, was recorded in cost of sales related to accelerated depreciation of assets to be disposed. The remainder was reported as restructuring and impairment charges. Descriptions of these restructuring programs follow:

Global Cost Reduction Program

In 2013, we initiated a Global Cost Reduction Program that was designed to address 3 key areas of the company (1) business realignment, (2) operational efficiency and (3) corporate and back office functions. Business realignment was targeted at right-sizing our commercial management organizations globally. The operational efficiency component of the program was designed to improve the efficiency of our plant operations across our global footprint, as well as supply chain. Corporate and back office is principally comprised of work that we are doing with our strategic partners in the areas of finance and accounting and information technology outsourcing, and procurement.

Performance Coatings Restructuring Program

In 2012, we developed and initiated restructuring programs related to our Performance Coatings business in Europe. As a result of these programs, the Company eliminated positions within the Performance Coatings sales,

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technical service, product development, manufacturing, supply chain and general administration organizations throughout Europe. The programs are subject to required consultations with employee representatives at the affected sites and other local legal requirements.

European Manufacturing Restructuring Program

In July 2006, we announced a multi-year, multi-phase program to restructure our European Manufacturing. Activities related to that program continued through 2012; however the majority of the programs activities were completed in prior years. Major activities are listed below:

- Manufacturing facilities in Casiglie, Italy, and Castanheira do Ribatejo, Portugal, were closed. Manufacturing capacity was transferred to Almazora, Spain, and Aveiro, Portugal. Our Casiglie facility was sold in 2013.
- Manufacturing facility in Limoges, France, was closed. The site was sold in 2012.
- Manufacturing facility in Burslem, United Kingdom, was partially closed, and production was transferred to Frankfurt, Germany, and Almazora, Spain.
- Manufacturing facility in Rotterdam, Netherlands, was closed. The site was sold in 2013.
- Manufacturing facility in Nules, Spain, was closed and production was transferred to Almazora, Spain. The site was sold in 2013.

Electronic Materials Restructuring Program

In 2010, we announced the closure of the Uden, Netherlands, facility due to excess capacity for production of dielectric and industrial ceramic products. Major activities are listed below:

- Manufacturing facility in Uden, Netherlands, was closed, and the site was sold in 2012.
- Certain production from Uden, Netherlands, was transferred to Penn Yan, New York, and St. Dizier, France.

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We have summarized the charges associated with these restructuring programs by major type of charges below:

	Employee Severance	Other Costs	Asset Impairment	Total
		(Dollars in thousands)		
Expected restructuring charges:				
European manufacturing restructuring	$ 3,494	$ 3,418	$ 16,646	$ 23,558
Performance Coatings restructuring	4,062			4,062
Electronic Materials restructuring		(1)	1,439	1,438
Global Cost Reduction Program	23,626	9,499		33,125
Other restructuring programs	1,252	3,300	637	5,189
Total expected restructuring charges	$ 32,434	$ 16,216	$ 18,722	$ 67,372
Restructuring charges incurred:				
European manufacturing restructuring	$ 3,222	$ 3,317	$ 2,352	$ 8,891
Electronic Materials restructuring		(1)	1,439	1,438
Other restructuring programs		(1,640)	18	(1,622)
Charges incurred in 2011	$ 3,222	$ 1,676	$ 3,809	$ 8,707
European manufacturing restructuring	$ 272	$ 101	$ 14,294	$ 14,667
Performance Coatings restructuring	5,701			5,701
Other restructuring programs	1,252	3,214	619	5,085
Charges incurred in 2012	$ 7,225	$ 3,315	$ 14,913	$ 25,453
Performance Coatings restructuring	$ (1,639)	$	$	$ (1,639)
Global Cost Reduction Program	22,561	9,499		32,060
Other restructuring programs		1,726		1,726
Charges incurred in 2013	$ 20,922	$ 11,225	$	$ 32,147
Cumulative restructuring charges incurred:				
European manufacturing restructuring	$ 3,494	$ 3,418	$ 16,646	$ 23,558
Performance Coatings restructuring	4,062			4,062
Electronic Materials restructuring		(1)	1,439	1,438
Global Cost Reduction Program	22,561	9,499		32,060
Other restructuring programs	1,252	3,300	637	5,189
Cumulative restructuring charges incurred as of December 31, 2013	$ 31,369	$ 16,216	$ 18,722	$ 66,307

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

We have summarized the charges associated with the restructuring programs by segments below:

	Total Expected Charges	2013	2012	2011	Cumulative Charges To Date
	(Dollars in thousands)				
Pigments, Powders and Oxides	$ 7,072	$ 589	$ 4,972	$ 1,511	$ 7,072
Performance Colors and Glass	22,556	16,673		4,998	21,671
Performance Coatings	18,753	1,542	16,481	715	18,738
Polymer Additives	390	382		8	390
Specialty Plastics	1,909	434		1,475	1,909
Segment Total	50,680	19,620	21,453	8,707	49,780
Corporate Restructuring Charges	16,692	12,527	4,000		16,527
Total Restructuring Charges	$ 67,372	$ 32,147	$ 25,453	$ 8,707	$ 66,307

We have summarized the activities and accruals related to our restructuring and cost reduction programs below:

	Employee Severance	Other Costs	Asset Impairment	Total
	(Dollars in thousands)			
Balance at December 31, 2010	$ 2,429	$ 5,863	$	$ 8,292
Restructuring charges	3,222	1,676	3,809	8,707
Cash payments	(5,461)	(3,983)		(9,444)
Non-cash items	28	(137)	(3,809)	(3,918)
Balance at December 31, 2011	218	3,419		3,637
Restructuring charges	7,225	3,315	14,913	25,453
Cash payments	(3,423)	(811)		(4,234)
Non-cash items	73	216	(14,913)	(14,624)
Balance at December 31, 2012	4,093	6,139		10,232
Restructuring charges	20,922	11,225		32,147
Cash payments	(18,226)	(11,607)		(29,833)
Non-cash items	210	(1,178)		(968)
Balance at December 31, 2013	$ 6,999	$ 4,579	$	$ 11,578

In 2013, we did not incur restructuring related impairment charges. Other costs in the 2013 restructuring charges include $1.2 million related to lease termination costs for the corporate plane.

In 2012, we reevaluated in accordance with ASC Topic 360, Property, Plant, and Equipment, certain property, plant, and equipment that was already classified as assets held for sale. As a result, assets held for sale with a carrying value of $19.8 million were written down to their fair value of $4.9 million, and the impairment charge of $14.9 million is included in restructuring and impairment charges in our statements of operations. We estimated the fair value of these assets based on third-party appraisals. During 2012, we sold our Toccoa, Georgia, facility; our Uden, Netherlands, facility; and our Limoges, France, facility. At December 31, 2012, total

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FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

assets held for sale were $3.1 million and are classified as other non-current assets due to the nature of the underlying assets, although we expect to sell these assets within the next twelve months. The assets include land and buildings at our Casiglie, Italy, facility; our Nules, Spain, facility; and our Rotterdam, Netherlands, facility. The impairment charges by segment were $10.9 million in Performance Coatings and $4.0 million in Pigments, Powders & Oxides.

Other costs in the 2012 restructuring charges include $3.2 million related to lease termination costs for the corporate plane.

In 2011, we recorded asset impairments of $3.8 million related to assets held for sale. Our review of certain idled assets in the Netherlands and France indicated that the carrying values were in excess of the respective fair values, less cost to sell, due to ongoing poor local economic conditions. We estimated the fair value of the Netherlands assets based on third-party appraisals and the fair value of the France assets using discounted cash flow models. The impairment charges of $3.8 million were included in the Pigments, Powders & Oxides segment.

Description	Fair Value	Level 1	Fair Value Measurements Using Level 2 (Dollars in thousands)	Level 3	Total Gains (Losses)
Assets held for sale:					
2012	$ 3,000	$	$	$ 3,000	$ (14,913)
2011	6,303			6,303	(3,809)

We expect to make cash payments to settle the remaining liability for employee termination benefits and other costs primarily over the next twelve months, except where legal or contractual restrictions prevent us from doing so.

14. Leases

Rent expense for all operating leases was $17.9 million in 2013, $23.1 million in 2012, and $21.2 million in 2011. Amortization of assets recorded under capital leases is recorded as depreciation expense.

The Company has a number of capital lease arrangements relating primarily to buildings and production equipment. Assets held under capital leases and included in property, plant and equipment at December 31st follow:

	2013	2012
	(Dollars in thousands)	
Gross amounts capitalized:		
Buildings	$ 3,100	$ 3,100
Equipment	5,982	8,987
	9,082	12,087
Accumulated amortization:		
Buildings	(3,100)	(3,100)
Equipment	(2,752)	(5,245)
	(5,852)	(8,345)
Net assets under capital leases	$ 3,230	$ 3,742

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FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

At December 31, 2013, future minimum lease payments under all non-cancelable leases follow:

	Capital Leases	Operating Leases
	(Dollars in thousands)	
2014	$ 1,211	$ 13,739
2015	1,178	8,116
2016	818	5,768
2017	818	4,957
2018	818	4,516
Thereafter	3,224	21,061
Net minimum lease payments	8,067	$ 58,157
Less amount representing imputed interest	2,251	
Present value of net minimum lease payments	5,816	
Less current portion	824	
Long-term obligations at December 31, 2013	$ 4,992	

15. Miscellaneous (Income) Expense, Net

Components of miscellaneous (income) expense, net follow:

	2013	2012	2011
		(Dollars in thousands)	
(Gain) loss on sale of assets	$ (24,075)	$ 432	$ 278
Argentina export tax matter	8,334		
Other, net	472	2,663	2,249
Total miscellaneous (income) expense, net	$ (15,269)	$ 3,095	$ 2,527

In the first quarter of 2013, we sold assets associated with our solar pastes product line. The assets sold included, among other things, certain machinery and equipment, and inventory items related to open orders as well as intellectual property. The sale resulted in a gain of $9.0 million. In the fourth quarter of 2013, we sold assets related to our North American and Asian metal powders product line for a gain of $13.3 million. The transaction included the sale of manufacturing assets at the South Plainfield, New Jersey facility. Consideration received in the sale included a favorable supply agreement for materials to be used in our ongoing operations. As the supply agreement represents significant continuing involvement with the disposed operations, the transaction did not qualify as a discontinued operation.

In the fourth quarter of 2013, the Supreme Court in Argentina ruled unfavorably related to certain export taxes associated with a divested operation. As a result of this ruling, we recorded an $8.3 million charge related to the exposures.

16. Discontinued Operations

During the first quarter of 2013, we completed the sale of the stock of our pharmaceuticals business, Ferro Pfanstiehl Laboratories, Inc. (FPL), which was previously reported within the Pharmaceuticals reportable segment. Consideration was comprised of a $16.9 million cash payment, and the transaction also included an

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

earn-out incentive of up to $8.0 million based on achieving certain earnings targets over a two-year period. In March 2013, prior to the sale, an impairment loss of $8.7 million associated with the long lived assets of FPL was recorded under ASC Topic 360 Property, Plant and Equipment. The write down was determined by estimating the fair value of the assets less cost to sell of $14.8 million using the market approach considering a bona fide purchase offer, a level 3 measurement within the fair value hierarchy. The impairment loss is included as an adjustment to reconcile net income to cash on the face of the statement of cash flows and included within (loss) income from discontinued operations.

The operations of FPL have been segregated from continuing operations and are included in discontinued operations in our condensed consolidated statements of operations. Interest expense has been allocated to the discontinued operation based on the ratio of net assets of FPL to consolidated net assets excluding debt. In 2013 we did not record a tax benefit associated with the loss from discontinued operations as a result of the full valuation allowance in the jurisdiction.

	2013	2012	2011
		(Dollars in thousands)	
Net sales	$ 4,791	$ 24,018	$ 24,939
Cost of sales	2,762	15,726	15,512
Gross profit	2,029	8,292	9,427
Selling, general and administrative expenses	1,181	4,903	4,861
Restructuring and impairment charges	8,682	95	
Interest expense	589	1,518	1,219
Miscellaneous income, net	(2)	(15)	(35)
(Loss) income from discontinued operations before income taxes	(8,421)	1,791	3,382
Income tax expense		635	1,206
(Loss) income from discontinued operations, net of income taxes	$ (8,421)	$ 1,156	$ 2,176

The following is a summary of the assets and liabilities of FPL at December 31, 2012, which are presented separately on the condensed consolidated balance sheet:

	2012 (Dollars in thousands)
Inventories	$ 6,267
Other current assets	22
Current assets of discontinued operations	6,289
Property, plant and equipment, net	15,346
Other assets of discontinued operations	15,346
Accounts payable	880
Accrued payroll	47
Accrued expenses and other current liabilities	373
Current liabilities of discontinued operations	$ 1,300

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FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

17. Earnings (Loss) per Share

Details of the calculations of basic and diluted earnings (loss) per share follow:

	2013	2012	2011
	(In thousands, except per share amounts)		
Basic earnings (loss) per share computation:			
Net income (loss) attributable to Ferro Corporation common shareholders	$ 71,942	$ (374,268)	$ 4,239
Adjustment for income (loss) from discontinued operations	8,421	(1,156)	(2,176)
Total	$ 80,363	$ (375,424)	$ 2,063
Weighted-average common shares outstanding	86,484	86,288	86,119
Basic earnings (loss) per share attributable to Ferro Corporation common shareholders	$ 0.93	$ (4.35)	$ 0.02
Diluted earnings (loss) per share computation:			
Net income (loss) attributable to Ferro Corporation common shareholders	$ 71,942	$ (374,268)	$ 4,239
Adjustment for income (loss) from discontinued operations	8,421	(1,156)	(2,176)
Total	$ 80,363	$ (375,424)	$ 2,063
Weighted-average common shares outstanding	86,484	86,288	86,119
Assumed exercise of stock options	309		225
Assumed satisfaction of deferred stock unit conditions	189		44
Assumed satisfaction of restricted share conditions	132		390
Assumed conversion of performance share units	383		
Weighted-average diluted shares outstanding	87,497	86,288	86,778
Diluted earnings (loss) per shares attributable to Ferro Corporation common shareholders	$ 0.92	$ (4.35)	$ 0.02

The number of anti-dilutive or unearned shares, including shares related to contingently convertible debt, was 1.7 million, 6.4 million, and 5.2 million common shares for 2013, 2012, and 2011, respectively.

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

18. Accumulated Other Comprehensive Income (Loss)

Changes in accumulated other comprehensive income (loss) by component, net of income tax, for the twelve months ended December 31, 2013, were as follows:

	Postretirement Benefit Liability Adjustments	Translation Adjustments	Other Adjustments	Total
	(Dollars in thousands)			
Beginning accumulated other comprehensive income (loss)	$ 2,647	$ 14,080	$ (77)	$ 16,650
Other comprehensive (loss) before reclassifications	(274)	(7,459)		(7,733)
Amounts reclassified from accumulated other comprehensive (loss) income	(431)		7	(424)
Net current period other comprehensive (loss) income	(705)	(7,459)	7	(8,157)
Ending accumulated other comprehensive income (loss)	$ 1,942	$ 6,621	$ (70)	$ 8,493

19. Reporting for Segments

During the first quarter of 2013, the Company reorganized its operating segments to reflect the current structure under which performance is evaluated, strategic decisions are made and resources are allocated. The new structure aligns the continuing product lines of our former Electronic Materials segment with our continuing operating segments. Under the new structure, we will continue to report Specialty Plastics, Polymer Additives and Performance Coatings, which aggregates our Tile Coating Systems and Porcelain Enamel operating segments, consistent with the manner in which they have historically been reported. The Glass Systems and Performance Pigments and Colors operating segments that aggregated into the historically reported Color and Glass Performance Materials segment, now include our continuing product lines that were historically reported within the Electronic Materials segment, and as a result of such inclusion, fail to meet the aggregation criteria under ASC Topic 280, Segment Reporting, for continuing to report as one segment. These operating segments will now be reported as the Pigments, Powders and Oxides and the Performance Colors and Glass segments. As discussed in Note 16, our pharmaceuticals business that comprised the Pharmaceuticals segment was sold in the first quarter of 2013, and is reported as a discontinued operation.

Net sales to external customers by segment are presented in the table below. Sales between segments were not material.

	2013	2012	2011
		(Dollars in thousands)	
Pigments, Powders and Oxides	$ 190,326	$ 279,025	$ 601,542
Performance Colors and Glass	390,007	386,538	417,752
Performance Coatings	591,975	587,698	602,566
Polymer Additives	292,568	320,635	336,965
Specialty Plastics	170,530	170,717	172,028
Total net sales	$ 1,635,406	$ 1,744,613	$ 2,130,853

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

In 2013, in conjunction with the changes to operating segments, we changed the profitability metric utilized by management to evaluate segment performance. The metric that was utilized historically was segment income, and segment gross profit is the metric that is now utilized. We measure segment gross profit for internal reporting purposes by excluding certain other cost of sales, which includes costs associated with facilities that have been idled or closed. Assets by segment are not regularly reviewed by the chief operating decision maker. Each segment s gross profit and reconciliations to income (loss) before income taxes are presented in the table below:

	2013	2012	2011
		(Dollars in thousands)	
Pigments, Powders and Oxides	$ 34,225	$ 31,780	$ 119,173
Performance Colors and Glass	112,825	101,847	111,187
Performance Coatings	132,695	111,609	120,752
Polymer Additives	27,139	29,951	33,829
Specialty Plastics	28,366	29,186	25,043
Total segment gross profit	335,250	304,373	409,984
Other cost of sales	(5,526)	(14,803)	(7,179)
Total gross profit	329,724	289,570	402,805
Selling, general and administrative expenses	176,282	297,755	330,450
Restructuring and impairment charges	41,733	225,724	17,030
Other expense, net	15,976	31,431	34,235
Income (loss) before income taxes	$ 95,733	$ (265,340)	$ 21,090

Each segment s capital expenditures for long-lived assets, including acquisitions, are detailed below:

	2013	2012	2011
		(Dollars in Thousands)	
Pigments, Powders and Oxides	$ 2,035	$ 9,466	$ 13,158
Performance Colors and Glass	7,970	16,594	11,823
Performance Coatings	7,949	14,237	22,550
Polymer Additives	10,708	6,310	10,093
Specialty Plastics	1,197	546	1,261
Total segment expenditures for long-lived assets	29,859	47,153	58,885
Unallocated corporate expenditures for long-lived assets	4,361	11,149	12,863
Total expenditures for long-lived assets(1)	$ 34,220	$ 58,302	$ 71,748

(1) Excludes capital expenditures of discontinued operations of $0.4 million and $1.0 million in 2012 and 2011, respectively.

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

We sell our products throughout the world and we attribute sales to countries based on the country where we generate the customer invoice. No single country other than the U.S. and Spain represents greater than 10% of our net sales. We have detailed net sales by geographic region in the table below:

	2013	2012	2011
		(Dollars in thousands)	
United States	$ 644,354	$ 740,578	$ 997,181
Spain	270,449	258,210	340,588
Other international	720,603	745,825	793,084
Total net sales	$ 1,635,406	$ 1,744,613	$ 2,130,853

None of our operations in countries other than the U.S. and Spain owns greater than 10% of consolidated long-lived assets. We have detailed long-lived assets that consist of property, plant and equipment, goodwill, and amortizable intangible assets by geographic region at December 31st in the table below:

	2013	2012
	(Dollars in thousands)	
United States	$ 143,670	$ 154,605
Spain	67,820	70,707
Other international	162,114	161,447
Total long-lived assets	$ 373,604	$ 386,759

20. Unconsolidated Affiliates Accounted For Under the Equity Method

At December 31, 2013, our percentage of ownership interest in these affiliates ranged from 36% to 50%. Because we exert significant influence over these affiliates, but we do not control them, our investments have been accounted for under the equity method. Investment income from these equity method investments, which is reported in miscellaneous (income) expense, net was $0.1 million in 2013, $0.9 million in 2012, and $3.0 million in 2011. The balance of our equity method investments, which is reported in other non-current assets, was $17.4 million at December 31, 2013, and $18.0 million at December 31, 2012. In 2013 we sold our joint venture interest located in Thailand.

The income that we record for these investments is equal to our proportionate share of the affiliates income and our investments are equal to our proportionate share of the affiliates shareholders equity based on our ownership percentage. We have summarized below condensed income statement and balance sheet information for the combined equity method investees:

	2013	2012	2011
		(Dollars in thousands)	
Net sales	$ 62,419	$ 91,545	$ 104,377
Gross profit	4,572	21,328	26,206
Income from continuing operations	1,859	3,510	7,735
Net income	1,266	2,388	5,644

FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

	2013	2012
	(Dollars in thousands)	
Current assets	$ 45,685	$ 57,962
Non-current assets	23,862	26,483
Current liabilities	(20,701)	(19,027)
Non-current liabilities	(8,874)	(554)

We had the following transactions with our equity-method investees:

	2013	2012	2011
	(Dollars in thousands)		
Sales	$ 5,347	$ 4,630	$ 8,893
Purchases	9,342	8,093	9,655
Dividends and interest received	426	1,324	1,162
Commissions and royalties received	400	436	402
Commissions and royalties paid	37	77	77

21. Quarterly Data (Unaudited)

	Net Sales	Gross Profit	Net Income (Loss)	Net Income (Loss) Attributable to Ferro Corporation	Earnings (Loss) Attributable to Ferro Corporation Common Shareholders Per Common Share Basic	Diluted
	(Dollars in thousands, except per share data)					
2012						
Quarter 1	$ 460,425	$ 85,721	$ 3,970	$ 3,846	$ 0.04	$ 0.04
Quarter 2	475,546	85,818	2,206	1,876	0.02	0.02
Quarter 3	408,865	60,710	(315,738)	(316,114)	(3.66)	(3.66)
Quarter 4 as adjusted	399,777	57,321	(63,472)	(63,876)	(0.74)	(0.74)
Total	$ 1,744,613	$ 289,570	$ (373,034)	$ (374,268)	$ (4.34)	$ (4.34)
2013						
Quarter 1	$ 417,524	$ 79,237	$ 520	$ 883	$ 0.01	$ 0.01
Quarter 2	435,455	87,654	(1,982)	(2,130)	(0.02)	(0.02)
Quarter 3	408,104	84,247	13,044	12,652	0.15	0.15
Quarter 4	374,323	78,586	60,863	60,537	0.70	0.69
Total	$ 1,635,406	$ 329,724	$ 72,445	$ 71,942	$ 0.83	$ 0.82

Quarterly earnings per share amounts do not always add to the full-year amounts due to the averaging of shares.

The fourth quarter of 2012 has been adjusted for discontinued operations associated with the sale FPL discussed in Note 16. Net sales has been reduced by $6.1 million and gross profit as been reduced by $2.0 million from amounts previously reported.

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FERRO CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2013, 2012 and 2011 (Continued)

Pre-tax restructuring and impairment charges in 2013 were $9.5 million in the first quarter, $13.4 million in the second quarter, $3.8 million in the third quarter, and $15.0 million in the fourth quarter. Pre-tax restructuring and impairment charges in 2012 were $0.3 million in the first quarter, $4.7 million in the second quarter, $198.8 million in the third quarter, and $22.0 million in the fourth quarter. Mark-to-market actuarial net gains were $69.8 million in 2013 and mark-to-market net losses were $26.9 million in 2012.

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

None.

Item 9A ***Controls and Procedures***

Evaluation of Disclosure Controls and Procedures

Ferro is committed to maintaining disclosure controls and procedures that are designed to ensure that information required to be disclosed in its Exchange Act reports is recorded, processed, summarized, and reported within the time periods specified in the U.S. Securities and Exchange Commission s rules and forms, and that such information is accumulated and communicated to its management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

The Company s management, under the supervision and with the participation of the Chief Executive Officer and the Chief Financial Officer, evaluated the effectiveness of the design and operation of the Company s disclosure controls and procedures, as defined in Exchange Act Rule 13a-15(e), as of December 31, 2013. Based on that evaluation, management concluded that the disclosure controls and procedures were effective as of December 31, 2013.

Changes in Internal Control over Financial Reporting and Other Remediation

During the fourth quarter of 2013, there were no changes in our internal controls or in other factors that materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

Management s Annual Report on Internal Control over Financial Reporting

The Company s management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Exchange Act Rule 13a-15(f). The Company s internal control system is a process designed by, or under the supervision of, the Company s principal executive and principal financial officers, or persons performing similar functions, and effected by the Company s board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles (U.S. GAAP).

The Company s internal control over financial reporting includes policies and procedures that pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets; provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP, and that receipts and expenditures are being made only in accordance with the authorization of its management and directors; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company s assets that could have a material effect on its consolidated financial statements.

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

Management assessed the effectiveness of the Company s internal control over financial reporting as of December 31, 2013. In making this assessment, the Company used the control criteria framework of the Committee of Sponsoring Organizations of the Treadway Commission published in its report entitled *Internal Control Integrated Framework (1992)*. Management concluded that the Company s internal control over financial reporting was effective as of December 31, 2013.

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Deloitte & Touche LLP, the independent registered public accounting firm that audited the Company s consolidated financial statements, has issued an attestation report on the Company s internal control over financial reporting as of December 31, 2013, which is included below.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Ferro Corporation

Cleveland, Ohio

We have audited the internal control over financial reporting of Ferro Corporation and subsidiaries (the Company) as of December 31, 2013, based on criteria established in *Internal Control Integrated Framework* (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company s management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management s Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company s internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company s internal control over financial reporting is a process designed by, or under the supervision of, the company s principal executive and principal financial officers, or persons performing similar functions, and effected by the company s board of directors, management, and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company s assets that could have a material effect on the financial statements.

Because of the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2013, based on the criteria established in *Internal Control Integrated Framework* (1992) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements and financial statement schedule as of and for the year ended December 31, 2013 of the Company and our report dated February 24, 2014 expressed an unqualified opinion on those financial statements and financial statement schedule and included an explanatory paragraph regarding the presentation of the Pharmaceuticals business as discontinued operations.

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/s/ Deloitte & Touche LLP

Cleveland, Ohio

February 24, 2014

Item 9B ***Other Information***

None.

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PART III

Item 10 *Directors, Executive Officers and Corporate Governance*

The information on Ferro s directors is contained under the heading Election of Directors of the Proxy Statement for Ferro Corporation s 2013 Annual Meeting of Shareholders and is incorporated here by reference. The information about the Audit Committee and the Audit Committee financial expert is contained under the heading Corporate Governance Board Committees Audit Committee of the Proxy Statement for Ferro Corporation s 2013 Annual Meeting of Shareholders and is incorporated here by reference. Information on Ferro s executive officers is contained under the heading Executive Officers of the Registrant in Part 1 of this Annual Report on Form 10-K. Section 16(a) filing information is contained under the heading Shareholdings Section 16(a) Beneficial Ownership Reporting Compliance of the Proxy Statement for Ferro Corporation s 2013 Annual Meeting of Shareholders and is incorporated here by reference.

Ferro has adopted a series of policies dealing with business and ethics. These policies apply to all Ferro Directors, officers and employees. A summary of these policies may be found on Ferro s Web site and the full text of the policies is available in print, free of charge, by writing to: General Counsel, Ferro Corporation, 6060 Parkland Blvd., Mayfield Heights, Ohio, 44124, USA. Exceptions, waivers and amendments of those policies may be made, if at all, only by the Audit Committee of the Board of Directors, and, in the event any such exceptions, waivers or amendments are granted, a description of the change or event will be posted on Ferro s Web site (www.ferro.com) within four business days. Ferro maintains a worldwide hotline that allows employees throughout the world to report confidentially any detected violations of these legal and ethical conduct policies consistent with local legal requirements and subject to local legal limitations.

Item 11 *Executive Compensation*

The information on executive compensation is contained under the headings Executive Compensation Discussion & Analysis and 2013 Executive Compensation of the Proxy Statement for Ferro Corporation s 2014 Annual Meeting of Shareholders and is incorporated here by reference.

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

The information on security ownership of certain beneficial owners and management is contained under the headings Shareholdings Stock Ownership by Other Major Shareholders and Shareholdings Stock Ownership by Director, Executive Officers and Employees of the Proxy Statement for Ferro Corporation s 2014 Annual Meeting of Shareholders and is incorporated here by reference.

The numbers of shares issued and available for issuance under Ferro s equity compensation plans as of December 31, 2013, were as follows:

Equity Compensation Plan	Number of Shares to Be Issued on Exercise of Outstanding Options, and Other Awards	Weighted-Average Exercise Price of Outstanding Options, and Other Awards	Number of Shares Remaining Available for Future Issuance Under Equity Compensation Plans(1)
Approved by Ferro Shareholders	4,174,268 shares(2)	$ 8.82	4,245,842 shares(3)
Not Approved by Ferro Shareholders	97,987 shares		0 shares
Total	4,272,255 shares	$ 8.82(4)	4,245,842 shares

(1) Excludes shares listed in the second column.
(2) Includes options and other awards issued under the Company s 2013 Omnibus Incentive Compensation Plan and prior equity compensation plans.

(3) Shares are only available under the 2013 Omnibus Incentive Plan and may be issued as stock options, stock appreciation rights, restricted shares, performance shares, and other common stock-based awards.
(4) Weighted-average exercise price of outstanding options and other awards; excludes phantom units.

A description follows of the material features of each plan that was not approved by Ferro shareholders:

Executive Employee Deferred Compensation Plan. The Executive Employee Deferred Compensation Plan allows participants to defer up to 75% of annual base salary and up to 100% of incentive cash bonus awards and cash performance share payouts. Participants may elect to have all or a portion of their deferred compensation accounts deemed to be invested in shares of Ferro Common Stock and credited with hypothetical appreciation, depreciation, and dividends. When distributions are made from this Plan in respect of such shares, the distributions are made in actual shares of Ferro Common Stock.

Supplemental Executive Defined Contribution Plan. The Supplemental Executive Defined Contribution Plan allows participants to be credited annually with matching and basic pension contributions that they would have received under the Company s 401(k) plan except for the applicable IRS limitations on compensation and contributions. Contributions vest at 20% for each year of service, are deemed invested in Ferro Common Stock and earn dividends. Distributions are made in Ferro Common Stock or in cash.

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

There are no relationships or transactions that are required to be reported. The information about director independence is contained under the heading Corporate Governance Director Independence of the Proxy Statement for Ferro Corporation s 2014 Annual Meeting of Shareholders and is incorporated here by reference.

Item 14 ***Principal Accountant Fees and Services***

The information contained under the heading Other Independent Registered Public Accounting Firm Information Fees of the Proxy Statement for Ferro Corporation s 2014 Annual Meeting of Shareholders is incorporated here by reference.

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PART IV

Item 15 ***Exhibits and Financial Statement Schedules***

The following documents are filed as part of this Annual Report on Form 10-K:

(a) The consolidated financial statements of Ferro Corporation and subsidiaries contained in Part II, Item 8 of this Annual Report on Form 10-K:

Consolidated Statements of Operations for the years ended December 31, 2013, 2012 and 2011;

Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2013, 2012 and 2011;

Consolidated Balance Sheets at December 31, 2013 and 2012;

Consolidated Statements of Equity for the years ended December 31, 2013, 2012 and 2011;

Consolidated Statements of Cash Flows for the years ended December 31, 2013, 2012 and 2011; and

Notes to Consolidated Financial Statements

(b) Schedule II Valuation and Qualifying Accounts and Reserves for the years ended December 31, 2013, 2012 and 2011, contained on page 104 of this Annual Report on Form 10-K. All other schedules have been omitted because the material is not applicable or is not required as permitted by the rules and regulations of the U.S. Securities and Exchange Commission, or the required information is included in the consolidated financial statements.

(c) The exhibits listed in the Exhibit Index beginning on page 105 of this Annual Report on Form 10-K.

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SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

FERRO CORPORATION

By /s/ Peter T. Thomas
Peter T. Thomas
President and Chief Executive Officer

Date: February 24, 2014

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in their indicated capacities as of the 24th day of February, 2014.

/s/ Peter T. Thomas Peter T. Thomas	President and Chief Executive Officer (Principal Executive Officer)
/s/ Jeffrey L. Rutherford Jeffrey L. Rutherford	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)
/s/ Richard J. Hipple Richard J. Hipple	Director
/s/ Jennie S. Hwang Jennie S. Hwang	Director
/s/ Gregory E. Hyland Gregory E. Hyland	Director
/s/ Peter T. Kong Peter T. Kong	Director
/s/ William B. Lawrence William B. Lawrence	Director
/s/ David A. Lorber David A. Lorber	Director
/s/ Timothy K. Pistell Timothy K. Pistell	Director
/s/ Jeffry N. Quinn Jeffry N. Quinn	Director
/s/ Ronald P. Vargo	Director

Ronald P. Vargo

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FERRO CORPORATION AND SUBSIDIARIES

SCHEDULE II VALUATION AND QUALIFYING ACCOUNTS AND RESERVES

Years Ended December 31, 2013, 2011 and 2010

	Balance at Beginning of Period	Additions Charged (Reductions Credited) to Costs and Expenses	Additions Charged (Reductions Credited) to Other Accounts	Deductions	Adjustment for Differences in Exchange Rates	Balance at End of Period
	(Dollars in thousands)					
Allowance for Possible Losses on Collection of Accounts Receivable:						
Year ended December 31, 2013	$ 14,353	4,074		(6,370)	371	$ 12,428
Year ended December 31, 2012	$ 10,443	5,202		(1,487)	195	$ 14,353
Year ended December 31, 2011	$ 11,156	2,349		(2,782)	(280)	$ 10,443
Valuation Allowance on Net Deferred Tax Assets:						
Year ended December 31, 2013	$ 216,882			(25,568)	2,670	$ 193,984
Year ended December 31, 2012	$ 37,060	178,350			1,472	$ 216,882
Year ended December 31, 2011	$ 26,815	11,335			(1,090)	$ 37,060

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EXHIBIT INDEX

The following exhibits are filed with this report or are incorporated here by reference to a prior filing in accordance with Rule 12b-32 under the Securities and Exchange Act of 1934.

Exhibit:

3	Articles of Incorporation and by-laws
3.1	Eleventh Amended Articles of Incorporation of Ferro Corporation (incorporated by reference to Exhibit 4.1 to Ferro Corporation s Registration Statement on Form S-3, filed March 5, 2008).
3.2	Certificate of Amendment to the Eleventh Amended Articles of Incorporation of Ferro Corporation filed December 29, 1994 (incorporated by reference to Exhibit 4.2 to Ferro Corporation s Registration Statement on Form S-3, filed March 5, 2008).
3.3	Certificate of Amendment to the Eleventh Amended Articles of Incorporation of Ferro Corporation filed June 23, 1998 (incorporated by reference to Exhibit 4.3 to Ferro Corporation s Registration Statement on Form S-3, filed March 5, 2008).
3.4	Certificate of Amendment to the Eleventh Amended Articles of Incorporation of Ferro Corporation filed October 14, 2011 (incorporated by reference to Exhibit 3.1 to Ferro Corporation s Current Report on Form 8-K, filed October 17, 2011).
3.5	Ferro Corporation Amended and Restated Code of Regulations (incorporated by reference to Exhibit 3.1 to Ferro Corporation s Current Report on Form 8-K, filed December 14, 2011).
4	Instruments defining rights of security holders, including indentures
4.1	Senior Indenture, dated as of March 5, 2008, by and between Ferro Corporation and U.S. Bank National Association (incorporated by reference to Exhibit 4.5 to Ferro Corporation s Registration Statement on Form S-3, filed March 5, 2008).
4.2	First Supplemental Indenture, dated August 19, 2008, by and between Ferro Corporation and U.S. Bank National Association (with Form of 6.50% Convertible Senior Notes due 2013) (incorporated by reference to Exhibit 4.2 to Ferro Corporation s Current Report on Form 8-K, filed August 19, 2008).
4.3	Form of Indenture, by and between Ferro Corporation and Wilmington Trust FSB (incorporated by reference to Exhibit 4.1 to Ferro Corporation s Registration Statement on Form S-3ASR, filed July 27, 2010).
4.4	First Supplemental Indenture, dated August 24, 2010, by and between Ferro Corporation and Wilmington Trust FSB (with Form of 7.875% Senior Notes due 2018) (incorporated by reference to Exhibit 4.1 to Ferro Corporation s Current Report on Form 8-K, filed August 24, 2010).
	The Company agrees, upon request, to furnish to the U.S. Securities and Exchange Commission a copy of any instrument authorizing long-term debt that does not authorize debt in excess of 10% of the total assets of the Company and its subsidiaries on a consolidated basis.
10	Material contracts
10.1	Settlement Agreement, dated May 8, 2013, by and among Ferro Corporation, Front Four Master Fund, Ltd. and certain of its affiliates and Quinpario Partners, LLC and certain of its affiliates (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed May 9, 2013).
10.2	Third Amendment to Third Amended and Restated Credit Agreement, dated March 28, 2013, by and among Ferro Corporation, certain of Ferro Corporation s subsidiaries, PNC Bank, National Association, as the Administrative Agent and the Collateral Agent, and various financial institutions as Lenders (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed March 28, 2013).

10.3	Second Amendment to Third Amended and Restated Credit Agreement, dated June 15, 2012, by and among Ferro Corporation, certain of Ferro Corporation s subsidiaries, PNC Bank, National Association, as the Administrative Agent and the collateral Agent, and various financial institutions as Lenders (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed June 19, 2012).
10.4	First Amendment to Third Amended and Restated Credit Agreement, Amended and Restated Pledge and Security Agreement and Amended and Restated Subsidiary Guaranty (Domestic) (incorporated by reference to Exhibit 3.1 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended June 30, 2011).
10.5	Third Amended and Restated Credit Agreement, dated August 24, 2010, by and among Ferro Corporation, PNC Bank, National Association, as the Administrative Agent, the Collateral Agent and the Issuer, and JPMorgan Chase Bank, N.A. and Bank of America, N.A., as the Syndication Agents (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed August 24, 2010).
10.6	First Amendment to Second Amended and Restated Credit Agreement, dated July 26, 2010, by and among Ferro Corporation, the several banks and other financial institutions or entities listed on the signature pages hereto as Lenders, Credit Suisse AG, Cayman Islands Branch, as Original Term Loan Administrative Agent, and PNC Bank, National Association, as New Term Loan Administrative Agent and as Revolving Loan Administrative Agent (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed July 27, 2010).
10.7	Second Amended and Restated Credit Agreement, dated October 26, 2009, among Ferro Corporation and certain of its subsidiaries; various financial institutions; Credit Suisse, Cayman Islands Branch; PNC Bank, National Association; National City Bank; KeyBank National Association; and Citigroup Global Markets, Inc. (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed October 27, 2009).
10.8	Amendment and Restatement and Resignation and Appointment Agreement, dated October 26, 2009, among Ferro Corporation; the several banks and other financial institutions or entities listed on the signature pages thereto; Credit Suisse, Cayman Islands Branch,; National City Bank; and PNC Bank, National Association (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Current Report on Form 8-K, filed October 27, 2009).
10.9	Termination Agreement by and between Ferro Corporation and Ferro Pfanstiehl Laboratories Inc. (incorporated by reference to Exhibit 10.3 to Ferro Corporation s Current Report on Form 8-K, filed March 29, 2013).
10.10	First Amendment to Purchase Agreement, dated as of May 31, 2011, between Ferro Corporation and Ferro Pfanstiehl Laboratories, Inc. (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed June 3, 2011).
10.11	Purchase Agreement, dated June 2, 2009, among Ferro Corporation, Ferro Color & Glass Corporation, and Ferro Pfanstiehl Laboratories, Inc. (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed June 3, 2009).
10.12	Second Amendment to Purchase and Contribution Agreement by and between Ferro Corporation and Ferro Finance Corporation (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Current Report on Form 8-K, filed March 29, 2013).
10.13	First Amendment to Purchase and Contribution Agreement, dated as of May 31, 2011, between Ferro Corporation and Ferro Finance Corporation (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Current Report on Form 8-K, filed June 3, 2011).
10.14	Purchase and Contribution Agreement, dated June 2, 2009, between Ferro Corporation and Ferro Finance Corporation (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Current Report on Form 8-K, filed June 3, 2009).

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10.15	Fourth Amendment to Amended and Restated Receivables Purchase Agreement, dated as of September 20, 2013, by and among PNC Bank, National Association, Ferro Finance Corporation and Market Street Funding LLC. (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Quarter Report on Form 10-Q for the quarter ended September 30, 2013.
10.16	Third Amendment to Amended and Restated Receivables Purchase Agreement, dated as of May 28, 2013, among Ferro Finance Corporation, Ferro Corporation, Market Street Funding LLC and PNC Bank, National Association (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed May 30, 2013).
10.17	Second Amendment to Amended and Restated Receivables Purchase Agreement among Ferro Finance Corporation, Ferro Corporation, Market Street Funding LLC and PNC Bank, National Association, as Agent and LC Bank (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed March 29, 2013).
10.18	First Amendment to Amended and Restated Receivables Purchase Agreement, dated as of May 29, 2012, among Ferro Finance Corporation, Ferro Corporation, Market Street Funding, LLC, and PNC Bank, National Association (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed May 31, 2012).
10.19	Amended and Restated Receivables Purchase Agreement, dated as of May 31, 2011, among Ferro Finance Corporation, Ferro Corporation, Market Street Funding, LLC, and PNC Bank, National Association (incorporated by reference to Exhibit 10.3 to Ferro Corporation s Current Report on Form 8-K, filed June 3, 2011).
10.20	Ferro Corporation Employee Stock Option Plan (incorporated by reference to Exhibit 10.13 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2011).*
10.21	Ferro Corporation 2003 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.16 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.22	Form of Terms of Incentive Stock Option Award Grants under the Ferro Corporation 2003 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.17 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.23	Form of Terms of Performance Share Awards under the Ferro Corporation 2003 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.18 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.24	Ferro Corporation 2006 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.17 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2011).*
10.25	Form of Terms of Performance Share Awards under the Ferro Corporation 2003 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.18 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.26	Form of Terms of Nonstatutory Stock Option Grants under the Ferro Corporation 2006 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.21 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.27	Form of Terms of Performance Share Awards under the Ferro Corporation 2006 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.22 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.28	Form of Terms of Restricted Share Awards under the Ferro Corporation 2006 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.23 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*

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10.29	Form of Terms of Deferred Stock Unit Awards under the Ferro Corporation 2006 Long-Term Incentive Compensation Plan (incorporated by reference to Exhibit 10.24 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2008).*
10.30	Ferro Corporation 2010 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed May 6, 2010).*
10.31	Form of Terms of Nonstatutory Stock Option Grants under the Ferro Corporation 2010 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).*
10.32	Form of Terms of Performance Share Unit Awards under the Ferro Corporation 2010 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).*
10.33	Form of Terms of Restricted Share Unit Awards under the Ferro Corporation 2010 Long-Term Incentive Plan (incorporated by reference to Exhibit 10.3 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).*
10.34	Ferro Corporation 2013 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed May 23, 2013).*
10.35	Form of Terms of Nonstatutory Stock Options Grants under the Ferro Corporation 2013 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.5 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended June 30, 2013.*
10.36	Form of Terms of Performance Share Unit Awards under the Ferro Corporation 2013 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended June 30, 2013.*
10.37	Form of Terms of Restricted Share Unit Awards under the Ferro Corporation 2013 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.7 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended June 30, 2013.*
10.38	Amendment to the Ferro Corporation Deferred Compensation Plan for Executive Employees (incorporated by reference to Exhibit 10.18 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2009).*
10.39	Ferro Corporation Deferred Compensation Plan for Executive Employees (incorporated by reference to Exhibit 10.28 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2012).*
10.40	Ferro Corporation Deferred Compensation Plan for Non-Employee Directors (incorporated by reference to Exhibit 10.29 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2012).*
10.41	Ferro Corporation Deferred Compensation Plan for Non-Employee Directors Trust Agreement (incorporated by reference to Exhibit 10.26 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2011).*
10.42	Ferro Corporation Supplemental Defined Benefit Plan for Executive Employees (incorporated by reference to Exhibit 10.31 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2012.*
10.43	Amendment to the Ferro Corporation Supplemental Defined Contribution Plan for Executive Employees (incorporated by reference to Exhibit 10.23 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2009).*
10.44	Ferro Corporation Supplemental Defined Contribution Plan for Executive Employees (incorporated by reference to Exhibit 10.31 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2012).*

10.45	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed June 26, 2013).*
10.46	Change in Control Agreement, dated March 22, 2013, between Peter T. Thomas and Ferro Corporation (incorporated by reference to Exhibit 10.5 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended March 31,2013).*
10.47	Form of Change in Control Agreement, dated January 1, 2009 (Mark H. Duesenberg, Ann E. Killian, Jeffrey L. Rutherford, and Peter T. Thomas have entered into this form of change in control agreement.) (incorporated by reference to Exhibit 10.2 to Ferro Corporation s Current Report on Form 8-K, filed January 7, 2009).*
10.48	Terms of Forfeited Bonus Reimbursement for Mr. Jeffrey L. Rutherford (incorporated by reference to Exhibit 10.5 to Ferro Corporation s Quarterly Report on Form 10-Q for the quarter ended March 31, 2012).*
10.49	Ferro Corporation Executive Separation Policy (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed June 28, 2010).*
10.50	Separation and Release Agreement, dated as of October 16, 2012, between Michael J. Murry and Ferro Corporation (incorporated by reference to Exhibit 10.1 to Ferro Corporation s Current Report on Form 8-K, filed October 19, 2012).*
10.51	Separation and Release Agreement, dated as of November 19, 2012, between James F. Kirsch and Ferro Corporation (incorporated by reference to Exhibit 10.40 to Ferro Corporation s Form 10-K for the year ended December 31, 2012).*
10.52	Letter Agreement, dated November 12, 2012, between Peter T. Thomas and Ferro Corporation (incorporated by reference to Exhibit 10.41 to Ferro Corporation s Form 10-K for the year ended December 31, 2012).*
10.53	Letter Agreement, dated November 12, 2012, between Jeffry L. Rutherford and Ferro Corporation (incorporated by reference to Exhibit 10.28 to Ferro Corporation s Form 10-K for the year ended December 31, 2012).*
10.54	Annual Incentive Plan (AIP) Summary Document (incorporated by reference to Exhibit 10.38 to Ferro Corporation s Annual Report on Form 10-K for the year ended December 31, 2010).*
12	Ratio of Earnings to Fixed Charges and Ratio of Earnings to Combined Fixed Charges and Preferred Stock Dividends.
21	List of Subsidiaries.
23.1	Consent of Independent Registered Public Accounting Firm.
31.1	Certification of Principal Executive Officer Pursuant to Rule 13a-14(a)/15d-14(a).
31.2	Certification of Principal Financial Officer Pursuant to Rule 13a-14(a)/15d-14(a).
32.1	Certification of Principal Executive Officer Pursuant to 18 U.S.C. 1350.
32.2	Certification of Principal Financial Officer Pursuant to 18 U.S.C. 1350.
101	XBRL Documents
101.INS	XBRL Instance Document.**
101.SCH	XBRL Schema Document.**
101.CAL	XBRL Calculation Linkbase Document.**
101.LAB	XBRL Labels Linkbase Document.**
101.PRE	XBRL Presentation Linkbase Document.**
101.DEF	XBRL Definition Linkbase Document.**

* Indicates management contract or compensatory plan, contract or arrangement in which one or more Directors and/or executives of Ferro Corporation may be participants.

** In accordance with Rule 406T of Regulation S-T, the XBRL related information in Exhibit 101 to this Annual Report on Form 10-K shall not be deemed to be filed for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section, and shall not be part of any registration statement or other document filed under the Securities Act of 1933 or the Securities Exchange Act of 1934, except as shall be expressly set forth by specific reference in such filing.