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Facility Name: **Ferro Corporation**

Application Number: **13-3509**

Date: **June 16, 1999**

GENERAL PERMIT CONDITIONS

TERMINATION OF PERMIT TO INSTALL

Substantial construction for installation must take place within 18 months of the effective date of this permit. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

NOTICE OF INSPECTION

The Director of the Ohio Environmental Protection Agency, or his authorized representatives, may enter upon the premises of the above-named applicant during construction and operation at any reasonable time for the purpose of making inspections, conducting tests, or to examine records or reports pertaining to the construction, modification or installation of the source(s) of environmental pollutants identified within this permit.

CONSTRUCTION OF NEW SOURCES

The proposed source(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources are inadequate or cannot meet applicable standards.

If the construction of the proposed source(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of Ohio Administrative Code

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(OAC) Rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet applicable standards.

PERMIT TO INSTALL FEE

In accordance with Ohio Revised Code 3745.11, the specified Permit to Install fee must be remitted within 30 days of the effective date of this permit to install.

PUBLIC DISCLOSURE

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC Rule 3745-49-03.

APPLICABILITY

This Permit to Install is applicable only to the contaminant sources identified. Separate application must be made to the Director for the installation or modification of any other contaminant sources.

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BEST AVAILABLE TECHNOLOGY

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

PERMIT TO OPERATE APPLICATION

A Permit to Operate application must be submitted to the appropriate field office for each air contaminant source in this Permit to Install. In accordance with OAC Rule 3745-35-02, the application shall be filed no later than thirty days after commencement of operation.

SOURCE OPERATION AFTER COMPLETION OF CONSTRUCTION

This facility is permitted to operate each source described by this permit to install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws and regulations.

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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
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AIR EMISSION SUMMARY

The air contaminant emissions units listed below comprise the Permit to Install for **Ferro Corporation** located in **Cuyahoga** County. The emissions units listed below shall not exceed the emission limits/control requirements contained in the table. This condition in no way limits the applicability of any other state or federal regulations. Additionally, this condition does not limit the applicability of additional special terms and conditions of this permit.

<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
P061				P066
			P065	
		P064		
	P063			
			P065 cont'd	
P062				

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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
P067		150 lb/hr Electric Glass Melter		
	P069		220 lb product/ cycle Electric Glass Melter (Large Melter J)	220 lb product/cycle Electric Glass Melter (Large Melter G)
P067 cont'd				
	P069 cont'd	150 lb/hr Electric Glass Melter		
P068			220 lb product/ cycle Electric Glass Melter (Large Melter K)	220 lb product/cycle Electric Glass Melter (Large Melter I) product may contain up to 60% lead
		150 lb/hr Electric Glass Melter		

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product/cycle
 Electric Glass
 Melter (Small
 Melter D)

33 lb
 product
 /cycle
 Electric
 Glass
 Melter
 (Small
 Melter
 C)

33 lb

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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
		this permit.		and conditions of this permit.
	Use of a baghouse and compliance with the terms and conditions of this permit.			
		Use of a baghouse and compliance with the terms and conditions of this permit.	Use of a baghouse and compliance with the terms and conditions of this permit.	
	Use of a baghouse and compliance with the terms and conditions of this permit.			Use of a baghouse and compliance with the terms and conditions of this permit.
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	Use of a bag-house and compliance with the terms and conditions of			

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Use of
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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
	3745-31-05			3745-17-07
	3745-17-07	3745-17-11	3745-17-11	
		3745-31-05	3745-31-05	
				3745-17-11
				3745-31-05
	3745-17-11			
	3745-31-05	3745-17-07	3745-17-07	
	3745-17-07			3745-17-07
		3745-17-11	3745-17-11	
		3745-31-05	3745-31-05	
	3745-17-11			3745-17-11
	3745-31-05			3745-31-05
	3745-17-07			
		3745-17-07		

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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
		tons per year.	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).	the rule.
	PM: 0.05 lb per hour, 0.22 tons per year.	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	* PM: 0.01 lb per hour, 0.05 tons per year.
3745-17-07	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	* PM: 0.01 lb per hour, 0.05 tons per year.	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).
3745-17-11	* PM: 0.05 lb per hour, 0.22 tons per year.	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).	* PM: 0.01 lb per hour, 0.05 tons per year.	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.
	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).	* PM: 0.01 lb per hour, 0.05 tons per year.
	* PM: 0.05 lb per hour, 0.22 tons per year.	* PM: 0.01 lb per hour, 0.05 tons per year.	Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.	Lead: Combined limitation of 0.30 tons per year (see (A) (2) below).
				Visible particulate emissions from any stack shall not

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<u>Ohio EPA Source Number</u>	<u>Source Identification Number</u>	<u>BAT Determination</u>	<u>Applicable Federal & OAC Rules</u>	<u>Permit Allowable Mass Emissions and/or Control/Usage Requirements</u>
<p>exceed 20% opacity , as a six minute run average , except as provide d by the rule.</p>	<p>Visible particulate emissions from any stack shall not exceed 20% opacity, as a six minute run average, except as provided by the rule.</p>			
<p>*</p> <p>PM: 0.01 lb per hour, 0.05 tons per year.</p>	<p>*</p>			
<p>Lead: Combine d limitat ion of 0.30 tons per year (see (A) (2) below).</p>				

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- * Permit allowable limit established under BAT (OAC 3745-31-05) is more stringent than rule limit.

Summary
 Total Permit to Install Allowable Emissions

<u>Pollutant</u>	<u>Tons/Year</u>
PM	0.96
Lead	0.30

RECORD(S) RETENTION AND AVAILABILITY

All records required by this Permit to Install shall be retained on file for a period of not less than three years unless otherwise indicated by Ohio Environmental Protection Agency. All records shall be made available to the Director, or any representative of the Director, for review during normal business hours.

REPORTING REQUIREMENTS

Unless otherwise specified, reports required by the Permit to Install need only be submitted to **Cleveland Division of the Environment, 1925 St. Clair Avenue, Cleveland, Ohio 44114.**

MAINTENANCE OF EQUIPMENT

This source and its associated air pollution control system(s) shall be maintained regularly in accordance with good engineering practices and the recommendations of the respective manufacturers in order to minimize air contaminant emissions.

MALFUNCTION/ABATEMENT

In accordance with OAC RULE 3745-15-06, any malfunction of the

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source(s) or associated air pollution control system(s) shall be reported immediately to the **Cleveland Division of the Environment, 1925 St. Clair Avenue, Cleveland, Ohio 44114.**

Except as provided by OAC Rule 3745-15-06(A)(3), scheduled maintenance of air pollution control equipment that requires the shutdown or bypassing of air pollution control system(s) must be accompanied by the shutdown of the associated air pollution sources.

AIR POLLUTION NUISANCES PROHIBITED

The air contaminant source(s) identified in this permit may not cause a public nuisance in violation of OAC Rule 3745-15-07.

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ADDITIONAL SPECIAL TERMS & CONDITIONS

A. Operational Restrictions

1. The pressure drop across each of the five (5) baghouses shall be maintained within the range of 4 to 6 inches of water while any of the emissions unit(s) vented to that baghouse is(are) in operation. The following emissions units shall be vented to each baghouse:

Ferro-Assi gned Baghouse Number	Ferro-Assi gned Melter ID	OEPA Emissions Unit Number	Size of Emissions Unit
DC-1	melter C	P068	33 lb product/cycle
	melter D	P069	33 lb product/cycle
DC-2	melter G	P066	220 lb product/cycle
	melter K	P065	220 lb product/cycle
DC-3	melter I	P067	220 lb product/cycle
	melter J	P064	220 lb product/cycle
DC -4 DC-5	melter P111-1	P061	150 lb/hr
	melter P111-2	P062	150 lb/hr
	melter P111-3	P063	150 lb/hr

2. The total lead emissions, in tons per year, from the emissions units covered by this permit (P064, P065, P066, P067, P068, P069) shall not exceed 0.30.
3. Emissions units P061, P062, and P063 shall not be used for leaded glass melting.

B. Monitoring and/or Recordkeeping Requirements

1. The permittee shall properly install, operate, and maintain equipment to monitor the pressure drop across each baghouse while any of the emissions units vented to that baghouse are in

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operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across each baghouse on a weekly basis.

2. The permittee shall record and maintain records on the quantity and content of all constituents of the glass mix for each batch melted for each emissions unit covered by this permit.

C. Reporting Requirements

1. The permittee shall submit pressure drop deviation (excursion) reports that identify all periods of time during which the pressure drop across any of the baghouses did not comply with the allowable range specified above.

2. The permittee shall submit pressure drop deviation (excursion) reports that identify any instance when lead is (was) melted in any of the following listed emissions units: P061, P062, P063.

3. The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the Cleveland Division of the Environment.

b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Cleveland Division of the Environment. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

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D. Testing Requirements

1. Emissions Units P061, P062, and P063
 Compliance with the emissions limitation(s) listed in the Air Emissions Summary for each of these emissions units shall be determined in accordance with the following method(s):

- a. Emission Limitation -
 0.05 pounds per hour particulates

Applicable Compliance Method -
 Compliance shall be based upon the following equation:

$$PM = CL * SF * DC * E$$

where:

PM - Particulate emissions in lbs/hr
 CL - Cycle load in lb/cycle (125 lb product/hr)
 SF - Factor of safety (1.04)
 DC - Dust collector efficiency (1-0.99)
 E - Emissions from each stage of melting process (lbs/lb product)

where:

$$E = BD + MC + ME + MD = 0.04$$

where:

$$BD - \text{Batch Drum, } CE * EF = (1 - 0.75) * (5 * 10^{-5})$$

$$MC - \text{Melter Charging, } CE * EF = 1 * (0.04)$$

$$ME - \text{Melter Emissions, } CE * EF = (1 - 0.75) * (3.5 * 10^{-5})$$

$$MD - \text{Melter Discharge, } CE * EF = (1 - 0.75) * (3.5 * 10^{-5})$$

CE - Transfer Efficiency (supplied by Ferro)

EF - Emission Factor (supplied by Ferro)

If required, the permittee shall demonstrate compliance

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with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 5.

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- b. Emission Limitation -
0.23 TPY particulates

Applicable Compliance Method -
Compliance shall be based on the pound per hour particulate emission rate of 0.01 times 8,760 hours per year divided by 2,000 pounds per ton.

2. Emissions Units P064, P065, P066, and P067
Compliance with the emissions limitation(s) listed in the Air Emissions Summary for each of these emissions units shall be determined in accordance with the following method(s):

- a. Emission Limitation -
0.01 pounds per hour particulates

Applicable Compliance Method -
Compliance shall be based upon the following equation:

$$PM = CL * 1/T * SF * DC * E$$

where:

PM - Particulate emissions in lbs/hr
CL - Cycle load in lb/cycle (220 lb product/cycle)
T - Time per cycle, in hours (8 hours/cycle)
SF - Factor of safety (1.04)
DC - Dust collector efficiency (1-0.99)
E - Emissions from each stage of melting process (lbs/ lb product)

where:

$$E = BD + MC + ME + MD = 0.04$$

where:

BD - Batch Drum, $CE * EF = (1 - 0.75) * (5 * 10^{-5})$

MC - Melter Charging, $CE * EF = 1 * (0.04)$

ME - Melter Emissions, $CE * EF = (1 - 0.75) * (3.5 * 10^{-5})$

MD - Melter Discharge, $CE * EF = (1 - 0.75) * (3.5 * 10^{-5})$

CE - Transfer Efficiency (supplied by Ferro)

EF - Emission Factor (supplied by Ferro)

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If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 5.

- b. Emission Limitation -
0.05 TPY particulates

Applicable Compliance Method -
Compliance shall be based on the pound per hour particulate emission rate of 0.01 times 8,760 hours per year divided by 2,000 pounds per ton.

3. Emissions Units P068 and P069

Compliance with the emissions limitation(s) listed in the Air Emissions Summary for each of these emissions units shall be determined in accordance with the following method(s):

- a. Emission Limitation -
0.01 pounds per hour particulates

Applicable Compliance Method -
Compliance shall be based upon the following equation:

$$PM = CL * 1/T * SF * DC * E$$

where:

PM - Particulate emissions in lb/hr
CL - Cycle load in lb/cycle (33 lb product/cycle)
T - Time per cycle, in hours (8 hours/cycle)
SF - Factor of safety (1.04)
DC - Dust collector efficiency (1-0.99)
E - Emissions from each stage of melting process (lbs/ lb product)

where:

$$E = BD + MC + ME + MD = 0.04$$

where:

$$BD - \text{Batch Drum, } CE * EF = (1 - 0.75) *$$

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$$\begin{aligned}
 & (5 \times 10^{-5}) \\
 \text{MC} - \text{Melter Charging, CE} * \text{EF} &= 1 * \\
 & (0.04) \\
 \text{ME} - \text{Melter Emissions, CE} * \text{EF} &= (1 - \\
 & 0.50) * (3.5 \times 10^{-5}) \\
 \text{MD} - \text{Melter Discharge, CE} * \text{EF} &= \\
 & (1 - 0.75) * (3.5 \times 10^{-5})
 \end{aligned}$$

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 5.

- b. Emission Limitation -
0.05 TPY particulates

Applicable Compliance Method -
Compliance shall be based on the pound per hour particulate emission rate of 0.01 times 8,760 hours per year divided by 2,000 pounds per ton.

4. Combined lead emissions limitation of 0.30 tons per year from emissions units P064, P065, P066, P067, P068, and P069.

Applicable Compliance Method -
Provided the company maintains particulate emissions to permit allowable limits, they shall be in compliance with this lead emissions limitation.

If required, the permittee shall demonstrate compliance with this emission limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Method 12.

5. Visible Emissions Limitations: Visible particulate emissions from the exhaust stack(s) of each baghouse serving these emissions units shall not exceed twenty (20) percent opacity as a six minute average, except for a period of not more than six (6) consecutive minutes in any sixty-minute period. Visible particulate emissions shall not exceed sixty (60) percent opacity, as a six minute average, at any time.

Applicable Compliance Method: Compliance shall be determined through visible emission observations performed in accordance

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with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

E. Miscellaneous Requirements

1. The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State and federal air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.
2. Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions unit or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of this emissions unit(s) that is (are) served by such control system(s).
3. The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.
4. Deviations in the pressure drop across any of the baghouses specified in A.1. is not necessarily indicative of an emission violation, but rather serves as a trigger level for additional testing and/or further investigation to establish compliance with the emission limitations.

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