# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*
**Governor**

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**Commissioner**

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Indianapolis, Indiana 46204
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**www.idem.IN.gov**


## NOTICE OF 30-DAY PERIOD FOR PUBLIC COMMENT

Preliminary Findings Regarding a PSD/Significant Source and Permit Modification to a Part 70 Operating Permit

For ThyssenKrupp Waupaca, Inc Plant 5 in Perry County

**PSD/Significant Source and Permit Modification No. 123-29490-00019 and No. 123-29497-00019**

The Indiana Department of Environmental Management (IDEM), has received an application from ThyssenKrupp Waupaca, Inc Plant 5 located at 9856 State Highway 66, Tell City, Indiana for a PSD/Significant Modification of their Part 70 Operating Permit issued on July 23, 2009. If approved by IDEM's Office of Air Quality (OAQ), this proposed modification would allow ThyssenKrupp Waupaca, Inc Plant 5 to make certain changes at their existing source. ThyssenKrupp Waupaca, Inc Plant 5 has applied to make changes to their phase I and II cupolas, casting lines 1 to 8, ductile iron treatment station #1 and #2 and the construction of the desulfurization ladle.

The applicant intends to construct and operate new equipment that will emit air pollutants; however, some conditions from previously issued permits/approvals have been corrected, changed or removed. This notice fulfills the public notice procedures to which those conditions are subject. IDEM has reviewed this application, and has developed preliminary findings, consisting of a draft permit and several supporting documents, that would allow the applicant to make this change.

A copy of the permit application and IDEM's preliminary findings are available at:

Tell City -Perry County Public Library
2328 Tell Street
Tell City, IN 47586

and

IDEM Southwest Regional Office
1120 N Vincennes Avenue
P.O. Box 128
Petersburg, IN 47567-0128

A copy of the preliminary findings is available on the Internet at: http://www.in.gov/ai/appfiles/idem-caats/.

**How can you participate in this process?**

The date that this notice is published in a newspaper marks the beginning of a 30-day public comment period. If the 30th day of the comment period falls on a day when IDEM offices are closed for business, all comments must be postmarked or delivered in person on the next business day that IDEM is open.

You may request that IDEM hold a public hearing about this draft permit. If adverse comments concerning the **air pollution impact** of this draft permit are received, with a request for a public hearing, IDEM will decide whether or not to hold a public hearing. IDEM could also decide to hold a public meeting instead of, or in addition to, a public hearing. If a public hearing or meeting is held, IDEM will make a separate announcement of the date, time, and location of that hearing or meeting. At a hearing, you would have an opportunity to submit written comments and make verbal comments. At a meeting, you would have an

opportunity to submit written comments, ask questions, and discuss any air pollution concerns with IDEM staff.

Comments and supporting documentation, or a request for a public hearing should be sent in writing to IDEM at the address below. If you comment via e-mail, please include your full U.S. mailing address so that you can be added IDEM's mailing list to receive notice of future action related to this permit. If you do not want to comment at this time, but would like to receive notice of future action related to this permit application, please contact IDEM at the address below. Please refer to permit number 123-29490-00019 and 123-29497-00019 in all correspondence.

**Comments should be sent to:**

Josiah Balogun
IDEM, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
(800) 451-6027, ask for extension (4-5257)
Or dial directly: (317) 234-5257
E-mail: jbalogun@idem.in.gov

All comments will be considered by IDEM when we make a decision to issue or deny the permit. Comments that are most likely to affect final permit decisions are those based on the rules and laws governing this permitting process (326 IAC 2), air quality issues, and technical issues. IDEM does not have legal authority to regulate zoning, odor or noise. For such issues, please contact your local officials.

For additional information about air permits and how you can participate, please see IDEM's **Guide for Citizen Participation** and **Permit Guide** on the Internet at: www.idem.in.gov.

**What will happen after IDEM makes a decision?**

Following the end of the public comment period, IDEM will issue a Notice of Decision stating whether the permit has been issued or denied. If the permit is issued, it may be different than the draft permit because of comments that were received during the public comment period. If comments are received during the public notice period, the final decision will include a document that summarizes the comments and IDEM's response to those comments. If you have submitted comments or have asked to be added to the mailing list, you will receive a Notice of the Decision. The notice will provide details on how you may appeal IDEM's decision, if you disagree with that decision. The final decision will also be available on the Internet at the address indicated above, at the local library indicated above, and the IDEM public file room on the 12th floor of the Indiana Government Center North, 100 N. Senate Avenue, Indianapolis, Indiana 46204-2251and IDEM Southwest Regional Office 1120 N Vincennes Avenue P.O. Box 128 Petersburg, IN 47567-0128

If you have any questions please contact Josiah of my staff at the above address.

Matthew Stuckey, Chief
Permits Branch
Office of Air Quality

JB

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**DRAFT**

Mr. Bryant Esch
ThyssenKrupp Waupaca, Inc Plant 5
P.O. Box 249
Waupaca, WI 54998

Re: 123-29497-00019
Significant Permit Modification to
Part 70 Renewal No.: T 123-27047-00019

Dear Mr. Esch:

ThyssenKrupp Waupaca, Inc Plant 5 was issued a Part 70 Operating Permit Renewal on July 23, 2009 for a gray and ductile iron foundry. A letter requesting changes to this permit was received on July 26, 2010. Pursuant to the provisions of 326 IAC 2-7-12 a significant permit modification to this permit is hereby approved as described in the attached Technical Support Document. ThyssenKrupp Waupaca, Inc Plant 5 is carrying out the following changes to plant 5;

(1) P30 and P33 – Phase I and II Cupolas - Add oxygen and dehumidification to increase the combined cupola melt capacity from 150 to 200 tons per hour of iron requiring increases to gaseous emission limitations but no changes to existing PM, Pb and Be limitations.

(2) P35 - Ductile Iron Treatment Stations #1 and #2 - Change in type of iron inoculation equipment from George Fischer to Tundish ladle method. The capacity of this process will increase from 80 to 100 tons per hour of iron. It will require no changes to existing emission limitations for PM, Pb and Be.

(3) P34 - Desulfurization Ladle – Add a new operation to share the existing baghouse C44 requiring no change to current PM limitations from this baghouse. The capacity of this new process will be 100 tons per hour of iron. It will require no changes to existing emission limitations for PM, Pb and Be for baghouse C44.

(4) P01 to P08 - Casting Lines 1 to 8 and Ancillary Operations - Increase the throughput capacity of each casting line and ancillary metal and sand handling operations to utilize the new cupola melting capacity. This will require increases to existing gaseous emission limitations with no changes to existing PM, Pb and Be limitations.

(5) Updates Compliance Monitoring Requirements for Existing Operations – When the permit for Plant 5 is modified to address the proposed cupola project, TKW proposes that the following updates also be made to the compliance monitoring requirements for existing operations:

All other conditions of the permit shall remain unchanged and in effect. For your convenience, the entire Part 70 Operating Permit as modified will be provided at issuance.

This decision is subject to the Indiana Administrative Orders and Procedures Act – IC 4-21.5-3-5. If you have any questions on this matter, please contact Josiah Balogun, OAQ, 100 North Senate Avenue, MC 61-53, Room 1003, Indianapolis, Indiana, 46204-2251, or call at (800) 451-6027, and ask for Josiah Balogun or extension (4-5257), or dial (317) 234-5257.

Sincerely,

Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Attachments:
Updated Permit
BACT and Technical Support Document
PTE Calculations and Air Analysis

JB

cc: File – Perry County
Perry County Health Department
U.S. EPA, Region V
IDEM Southwest Regional Office
Air Compliance and Enforcement Branch

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DRAFT

# Part 70 Operating Permit Renewal
# OFFICE OF AIR QUALITY

## ThyssenKrupp Waupaca, Inc Plant 5
## 9856 State Highway 66
## Tell City, Indiana 47586

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

**The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.**

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

| Operation Permit No.: T123-27047-00019 | |
|---|---|
| Issued by:<br><br>Matt Stuckey., Branch Chief<br>Permits Branch<br>Office of Air Quality | Issuance Date: July 23, 2009<br><br>Expiration Date: July 23, 2014 |

First Significant Permit Modification No. 123-28470-00019, issued on November 20, 2009.

| Second Significant Permit Modification No.:<br>123-29497-00019 | |
|---|---|
| Issued by:<br><br>Matt Stuckey, Branch Chief<br>Permits Branch<br>Office of Air Quality | Issuance Date:<br><br>Expiration Date: July 23, 2014 |

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D.8.2 Volatile Organic Compounds (VOC) [326 IAC 8-3-5]

**E.1. EMISSIONS UNIT OPERATION CONDITIONS**

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**
E.1.1 General Provisions Relating to NESHAP (National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries [326 IAC 20-1] [40 CFR Part 63, Subpart A]

E.1.2 NESHAP Subpart EEEEE Requirements [40 CFR Part 63, Subpart EEEEE]

Certification
Emergency Occurrence Report
Part 70 Usage Report
Quarterly Deviation and Compliance Monitoring Report
Fugitive Dust Control Plan

## SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-7-4(c)][326 IAC 2-7-5(15)][326 IAC 2-7-1(22)]

The Permittee owns and operates a stationary gray and ductile iron foundry.

| | |
|---|---|
| Source Address: | 9856 State Highway 66, Tell City, Indiana 47586 |
| General Source Phone Number: | 715-258-6611 |
| SIC Code: | 3321 |
| County Location: | Perry |
| Source Location Status: | Attainment for all criteria pollutants |
| Source Status: | Part 70 Operating Permit Program<br>Major Source, under PSD Rules<br>Major Source, Section 112 of the Clean Air Act<br>1 of 28 Source Categories |

### A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

Phase I

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of 100 tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, modified in 2010**,** consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(B) One (1) shakeout operation, identified as P02, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of 28 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2
- (A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P07, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P08, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P09, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;
- (E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3
- (A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P12, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P13, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P14, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;
- (E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4
- (A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P17, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P18, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P19, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(c) Sand handling operations and ancillary operations, each constructed in 1996, consisting of the following:

(1) One (1) return sand handling & screen operation, identified as P21, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02,

C03) for particulate control, exhausting to stack S01;

(2) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(3) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(4) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of 54 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(5) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(6) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of 33 tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(7) One (1) core sand handling operation, identified as P40, with a maximum throughput of 16 tons per hour, using one (1) baghouse (C08) for particulate control, exhausting to stack S08;

(8) One (1) core manufacturing operation, identified as P41, with a maximum throughput of 16 tons per hour, exhausting to stack S11;

(9) One (1) core machine & oven operation, identified as P51, with a maximum heat input capacity of 16.8 MMBtu per hour, combusting natural gas, exhausting to stack S11;

(10) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;

(11) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(12) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 100 tons per hour; and

(13) One (1) ladle cleaning with burn bars, identified as P86.

(14) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.

(d) Two (2) paint booths, one identified as P26A constructed in 2007 and modified in 2008, and one identified as P26B, approved for construction in 2008, used to coat metal castings for rust protection, using spray guns with a combined maximum capacity of 16 (sixteen) gallons per hour, using overspray filters for PM control, exhausting to stacks S26A and S26B, respectively.

Phase II

(a) One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of 100 tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(b) Four (4) production lines, each constructed in 1998, modified in 2010**,** consisting of the following:

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1)cast cooling operation, identified as P72, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(c) Sand handling operations and ancillary operations, each constructed in 1998, modified in 2010, consisting of the following:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of 55 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of 44 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of 114.0 tons per hour;

(7) One (1) ladle filling and iron transport operation with a maximum capacity of 188 tons of iron per hour, and a ladle cleaning operation with an average usage of 13.2 pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(8) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of 50 tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

(9) One (1) phenolic-urethane core sand handling system, identified as P42, constructed in 1998 and modified in 2008, with a maximum production capacity of 32 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C08, that exhausts to Stack S08;

(10) One (1) phenolic-urethane core making process, identified as P43, with a maximum production capacity of 20 tons of cores per hour. Volatile organic compound emissions are controlled by one (1) packed bed scrubber (or equivalent), identified as C14. The gases are then exhausted to Stack S14;

(11) One (1) phenolic-urethane core making process, identified as P44, consisting of 2 mixers and 2 core machines, each with a maximum capacity of 3 tons per hour. DMIPA emissions are controlled by one (1) packed bed scrubber, identified as C14. The gases are then exhausted to Stack S14;

(12) Raw material handling including iron handling at a maximum rate of 150 tons per hour, alloys handling at a maximum rate of 1.5 tons per hour, coke handling at a maximum rate of 15 tons per hour, and limestone handling at a maximum rate of 4.5 tons per hour;

(13) Natural gas fired air make-up units equipped with low-NOx burners, identified as P54, with a maximum heat input rate of 80 MMBtu per hour exhausting to Stack S15.

(14) One (1) pattern shop, identified as P50, controlled by a baghouse, exhausting to stack S08.

(d) One (1) autogrinder operation, to be constructed in 2008, identified as P87, with a maximum capacity of 22.5 tons of castings per hour, with emissions controlled by existing Baghouse C16 and exhausting to stack S16 [326 IAC 6-3-2].

Core Room Expansion I

(a) One (1) phenolic-urethane core sand handling system, identified as P46, constructed in 2005 and modified in 2008, with a maximum production capacity of 51 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse, identified as C18, and exhausting inside the building;

(b) One (1) phenolic-urethane core making process, identified as P47, to begin construction in 2005, consisting of 3 mixers and 3 core machines, each with a maximum capacity of 15 tons per hour. DMIPA catalyst emissions are controlled by one (1) packed bed scrubber, identified as C17. The gases are then exhausted to Stack S17;

(c) Three (3) natural gas-fired core drying ovens and natural gas-fired air make-up units, identified as P48, to begin construction in 2005, with the core drying ovens having a combined maximum heat input capacity of 9.0 MMBtu per hour and the air make-up units having a combined maximum heat input capacity of 3.2 MMBtu per hour, exhausting inside the building.

Core Room Expansion II

(a) one (1) phenolic-urethane core machine, identified as P45A, to be constructed in 2008, with a maximum capacity of 6 tons per hour, with emissions controlled by existing scrubber C14 and exhausting through stack S14;

(b) one (1) phenolic-urethane core machine, identified as P45B, to be constructed in 2008, with a maximum capacity of 6 tons per hour, with emissions controlled by existing scrubber C17 and exhausting through stack S17; and

(c) two (2) natural gas-fired core dry oven, to be constructed in 2008, identified as P48A and P48B, with a maximum capacity of 2.5 MMBtu/hr each, with emissions exhausting in to the building.

A.3 Specifically Regulated Insignificant Activities
[326 IAC 2-7-1(21)][326 IAC 2-7-4(c)][326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(a) Degreasing operations that do not exceed 145 gallons per 12 months, except if subject to 326 IAC 20-6; [326 IAC 8-3-2] [326 IAC 8-3-5]

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22);

(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

## SECTION B GENERAL CONDITIONS

### B.1 Definitions [326 IAC 2-7-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

### B.2 Permit Term [326 IAC 2-7-5(2)][326 IAC 2-1.1-9.5][326 IAC 2-7-4(a)(1)(D)][IC 13-15-3-6(a)]

(a) The Part 70 Operating Permit, T123-27047-00019, is issued for a fixed term of five (5) years as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit or of permits issued pursuant to Title IV of the Clean Air Act and 326 IAC 21 (Acid Deposition Control).

(b) If IDEM, OAQ, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, including any permit shield provided in 326 IAC 2-7-15, until the renewal permit has been issued or denied.

### B.3 Term of Conditions [326 IAC 2-1.1-9.5]

Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

(a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or

(b) the emission unit to which the condition pertains permanently ceases operation.

### B.4 Enforceability [326 IAC 2-7-7] [IC 13-17-12]

Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.

### B.5 Severability [326 IAC 2-7-5(5)]

The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

### B.6 Property Rights or Exclusive Privilege [326 IAC 2-7-5(6)(D)]

This permit does not convey any property rights of any sort or any exclusive privilege.

### B.7 Duty to Provide Information [326 IAC 2-7-5(6)(E)]

(a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit.

(b) For information furnished by the Permittee to IDEM, OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U. S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.8 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

(a) A certification required by this permit meets the requirements of 326 IAC 2-7-6(1) if:

(i) it contains a certification by a "responsible official", as defined by 326 IAC 2-7-1 (34), and

(ii) the certification is based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) The Permittee may use the attached Certification Form, or its equivalent, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.

(c) A "responsible official" is defined at 326 IAC 2-7-1(34).

B.9 Annual Compliance Certification [326 IAC 2-7-6(5)]

(a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. All certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted no later than July 1 of each year to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Air Enforcement Branch - Indiana (AE-17J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

(b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

(c) The annual compliance certification report shall include the following:

(1) The appropriate identification of each term or condition of this permit that is the basis of the certification;

(2) The compliance status;

(3) Whether compliance was continuous or intermittent;

(4) The methods used for determining the compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-7-5(3); and

(5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ may require to determine the compliance status of the source.

The submittal by the Permittee does require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

B.10 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)][326 IAC 2-7-6(1) and (6)][326 IAC 1-6-3]

(a) If required by specific condition(s) in Section D of this permit where no PMP was previously required, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) no later than ninety (90) days after issuance of this permit or ninety (90) days after initial start-up, whichever is later, including the following information on each facility:

(1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the time frame specified in Section D, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The PMP extension notification does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

(b) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

(c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.11 Emergency Provisions [326 IAC 2-7-16]

(a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation.

(b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:

(1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;

(2) The permitted facility was at the time being properly operated;

(3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ and Southwest Regional Office, no later than four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-0178 (ask for Compliance Section)
Facsimile Number: 317-233-6865
Southwest Regional Office phone: (812) 380-2305; fax: (812) 380-2304**.**

(5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

no later than two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

(A) A description of the emergency;

(B) Any steps taken to mitigate the emissions; and

(C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a"responsible official" as defined by 326 IAC 2-7-1(34).

(6) The Permittee immediately took all reasonable steps to correct the emergency.

(c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.

(d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.

(e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4(c)(9) be revised in response to an emergency.

(f) Failure to notify IDEM, OAQ by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.

(g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

B.12 Permit Shield [326 IAC 2-7-15][326 IAC 2-7-20][326 IAC 2-7-12]

(a) Pursuant to 326 IAC 2-7-15, the Permittee has been granted a permit shield. The permit shield provides that compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that either the applicable requirements are included and specifically identified in this permit or the permit contains an explicit determination or concise summary of a determination that other specifically identified requirements are not applicable. The Indiana statutes from IC 13 and rules from 326 IAC, referenced in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a Part 70 permit under 326 IAC 2-7 or for applicable requirements for which a permit shield has been granted.

This permit shield does not extend to applicable requirements which are promulgated after the date of issuance of this permit unless this permit has been modified to reflect such new requirements.

(b) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement that applied to the source on the date of permit issuance, IDEM, OAQ, shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued. The permit shield shall continue in effect so long as the Permittee is in compliance with the compliance order.

(c) No permit shield shall apply to any permit term or condition that is determined after issuance of this permit to have been based on erroneous information supplied in the permit application. Erroneous information means information that the Permittee knew to be false, or in the exercise of reasonable care should have been known to be false, at the time the information was submitted.

(d) Nothing in 326 IAC 2-7-15 or in this permit shall alter or affect the following:

(1) The provisions of Section 303 of the Clean Air Act (emergency orders), including the authority of the U.S. EPA under Section 303 of the Clean Air Act;

(2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of this permit's issuance;

(3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; and

(4) The ability of U.S. EPA to obtain information from the Permittee under Section 114 of the Clean Air Act.

(e) This permit shield is not applicable to any change made under 326 IAC 2-7-20(b)(2) (Sections 502(b)(10) of the Clean Air Act changes) and 326 IAC 2-7-20(c)(2) (trading based on State Implementation Plan (SIP) provisions).

(f) This permit shield is not applicable to modifications eligible for group processing until after IDEM, OAQ, has issued the modifications. [326 IAC 2-7-12(c)(7)]

(g) This permit shield is not applicable to minor Part 70 permit modifications until after IDEM, OAQ, has issued the modification. [326 IAC 2-7-12(b)(8)]

B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5][326 IAC 2-7-10.5]

(a) All terms and conditions of permits established prior to T123-27047-00019 and issued pursuant to permitting programs approved into the state implementation plan have been either:

(1) incorporated as originally stated,

(2) revised under 326 IAC 2-7-10.5, or

(3) deleted under 326 IAC 2-7-10.5.

(b) Provided that all terms and conditions are accurately reflected in this combined permit, all previous registrations and permits are superseded by this combined new source review and part 70 operating permit, except for permits issued pursuant to Title IV of the Clean Air Act and 326 IAC 21 (Acid Deposition Control)

B.14 Termination of Right to Operate [326 IAC 2-7-10][326 IAC 2-7-4(a)]

The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-7-3 and 326 IAC 2-7-4(a).

B.15 Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-7-5(6)(C)][326 IAC 2-7-8(a)][326 IAC 2-7-9]

(a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 Operating Permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-7-5(6)(C)] The notification by the Permittee does require a certification that meets the requirement of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

(b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ determines any of the following:

(1) That this permit contains a material mistake.

(2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.

(3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-7-9(a)(3)]

(c) Proceedings by IDEM, OAQ to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-7-9(b)]

(d) The reopening and revision of this permit, under 326 IAC 2-7-9(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ may provide a shorter time period in the case of an emergency. [326 IAC 2-7-9(c)]

B.16 Permit Renewal [326 IAC 2-7-3][326 IAC 2-7-4][326 IAC 2-7-8(e)]

(a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management
Permit Administration and Support Section (PASS), Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

(b) A timely renewal application is one that is:

(1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and

(2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

(c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified pursuant to 326 IAC 2-7-4(a)(2)(D), in writing by IDEM, OAQ any additional information identified as being needed to process the application.

B.17 Permit Amendment or Modification [326 IAC 2-7-11][326 IAC 2-7-12] [40 CFR 72]

(a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.

(b) Pursuant to 326 IAC 2-7-11(b) and 326 IAC 2-7-12(a), administrative Part 70 operating permit amendments and permit modifications for purposes of the acid rain portion of a Part 70 permit shall be governed by regulations promulgated under Title IV of the Clean Air Act. [40 CFR 72]

(c) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permit Administration and Support Section (PASS), Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

(d) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

B.18 Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)] [326 IAC 2-7-12(b)(2)]

(a) No Part 70 permit revision or notice shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.

(b) Notwithstanding 326 IAC 2-7-12(b)(1) and 326 IAC 2-7-12(c)(1), minor Part 70 permit modification procedures may be used for Part 70 modifications involving the use of economic incentives, marketable Part 70 permits, emissions trading, and other similar approaches to the extent that such minor Part 70 permit modification procedures are explicitly provided for in the applicable State Implementation Plan (SIP) or in applicable requirements promulgated or approved by the U.S. EPA.

B.19 Operational Flexibility [326 IAC 2-7-20][326 IAC 2-7-10.5]

(a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-7-20(b),(c), or (e) without a prior permit revision, if each of the following conditions is met:

(1) The changes are not modifications under any provision of Title I of the Clean Air Act;

(2) Any preconstruction approval required by 326 IAC 2-7-10.5 has been obtained;

(3) The changes do not result in emissions which exceed the limitations provided in this permit (whether expressed herein as a rate of emissions or in terms of total emissions);

(4) The Permittee notifies the:

Indiana Department of Environmental Management
Permit Administration and Support Section (PASS), Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

(5) The Permittee maintains records on-site, on a rolling five (5) year basis, which document all such changes and emission trades that are subject to 326 IAC 2-7-20(b),(c), or (e). The Permittee shall make such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ in the notices specified in 326 IAC 2-7-20(b)(1), (c)(1), and (e)(2).

(b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a). For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:

(1) A brief description of the change within the source;

(2) The date on which the change will occur;

(3) Any change in emissions; and

(4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted is not considered an application form, report or compliance certification. Therefore, the notification by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a “responsible official” as defined by 326 IAC 2-7-1(34).

(c) Emission Trades [326 IAC 2-7-20(c)]
The Permittee may trade emissions increases and decreases at the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-7-20(c).

(d) Alternative Operating Scenarios [326 IAC 2-7-20(d)]
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-7-5(9). No prior notification of IDEM, OAQ, or U.S. EPA is required.

(e) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.

(f) This condition does not apply to emission trades of $SO_2$ or $NO_X$ under 326 IAC 21 or 326 IAC 10-4.

B.20 Source Modification Requirement [326 IAC 2-7-10.5]

A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2.

B.21 Inspection and Entry [326 IAC 2-7-6][IC 13-14-2-2][IC 13-30-3-1][IC 13-17-3-2]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee’s right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as

such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

(a) Enter upon the Permittee's premises where a Part 70 source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

(b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy any records that must be kept under the conditions of this permit;

(c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;

(d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and

(e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.22 Transfer of Ownership or Operational Control [326 IAC 2-7-11]

(a) The Permittee must comply with the requirements of 326 IAC 2-7-11 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.

(b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management
Permit Administration and Support Section (PASS), Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

The application which shall be submitted by the Permittee does require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

B.23 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-7-5(7)][326 IAC 2-1.1-7]

(a) The Permittee shall pay annual fees to IDEM, OAQ within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ the applicable fee is due April 1 of each year.

(b) Except as provided in 326 IAC 2-7-19(e), failure to pay may result in administrative enforcement action or revocation of this permit.

(c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

B.24 Credible Evidence [326 IAC 2-7-5(3)][326 IAC 2-7-6][62 FR 8314] [326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

## SECTION C SOURCE OPERATION CONDITIONS

Entire Source

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

C.1 Particulate Emission Limitations For Processes with Process Weight Rates Less Than One Hundred (100) Pounds per Hour [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2(e)(2), particulate emissions from any process not exempt under 326 IAC 6-3-1(b) or (c) which has a maximum process weight rate less than 100 pounds per hour and the methods in 326 IAC 6-3-2(b) through (d) do not apply shall not exceed 0.551 pounds per hour.

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-1 (Applicability) 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.3 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1.

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator except as provided in 326 IAC 4-2 or in this permit. The Permittee shall not operate a refuse incinerator or refuse burning equipment except as provided in 326 IAC 9-1-2 or in this permit.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.6 Fugitive Particulate Matter Emission Limitations [326 IAC 6-5]

Pursuant to 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations), fugitive particulate matter emissions shall be controlled according to the plan dated September 24, 2008 or the most current plan which has been submitted to IDEM. The plan is included as Attachment A.

C.7 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted. The provisions of

326 IAC 1-7-1(3), 326 IAC 1-7-2, 326 IAC 1-7-3(c) and (d), 326 IAC 1-7-4, and 326 IAC 1-7-5(a), (b), and (d) are not federally enforceable.

C.8 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18] [40 CFR 61, Subpart M]

(a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.

(b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:

(1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or

(2) If there is a change in the following:

(A) Asbestos removal or demolition start date;

(B) Removal or demolition contractor; or

(C) Waste disposal site.

(c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).

(d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management
Asbestos Section, Office of Air Quality
100 North Senate Avenue
MC 61-52 IGCN 1003
Indianapolis, Indiana 46204-2251

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

(e) Procedures for Asbestos Emission Control
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.

(f) Demolition and Renovation
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).

(g) Indiana Licensed Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Licensed Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Licensed Asbestos inspector is not federally enforceable.

**Testing Requirements [326 IAC 2-7-6(1)]**

C.9 Performance Testing [326 IAC 3-6]

(a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval.

For performance testing required by this permit, a test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a"responsible official" as defined by 326 IAC 2-7-1(34).

(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ if the Permittee submits to IDEM, OAQ a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period. The extension request submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

**Compliance Requirements [326 IAC 2-1.1-11]**

C.10 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

**Compliance Monitoring Requirements [326 IAC 2-7-5(1)][326 IAC 2-7-6(1)]**

C.11 Compliance Monitoring [326 IAC 2-7-5(3)][326 IAC 2-7-6(1)]

Unless otherwise specified in this permit, for all monitoring requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or of initial start-up, whichever is later, to begin such monitoring. If due to circumstances beyond the Permittee's control, any monitoring equipment required by this permit cannot be installed and operated no later than ninety (90) days after permit issuance or the date of initial startup, whichever is later, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a source modification shall be implemented when operation begins.

C.12 Maintenance of Continuous Opacity Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

(a) The Permittee shall install, calibrate, maintain, and operate all necessary continuous opacity monitoring systems (COMS) and related equipment.

(b) All COMS shall meet the performance specifications of 40 CFR 60, Appendix B, Performance Specification No. 1, and are subject to monitor system certification requirements pursuant to 326 IAC 3-5.

(c) In the event that a breakdown of a COMS occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

(d) Whenever a COMS is malfunctioning or is down for maintenance or repairs for a period of twenty-four (24) hours or more and a backup COMS is not online within twenty-four (24) hours of shutdown or malfunction of the primary COMS, the Permittee shall provide a certified opacity reader, who may be an employee of the Permittee or an independent contractor, to self-monitor the emissions from the emission unit stack.

(1) Visible emission readings shall be performed in accordance with 40 CFR 60, Appendix A, Method 9, for a minimum of five (5) consecutive six (6) minute averaging periods beginning not more than twenty-four (24) hours after the start of the malfunction or down time.

(2) Method 9 opacity readings shall be repeated for a minimum of five (5) consecutive six (6) minute averaging periods at least twice per day during daylight operations, with at least four (4) hours between each set of readings, until a COMS is online.

(3) Method 9 readings may be discontinued once a COMS is online.

(4) Any opacity exceedances determined by Method 9 readings shall be reported with the Quarterly Opacity Exceedances Reports.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous opacity monitoring system pursuant to 326 IAC 3-5, (and 40 CFR 60 and/or 40 CFR 63).

C.13 Maintenance of Continuous Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

(a) The Permittee shall install, calibrate, maintain, and operate all necessary continuous emission monitoring systems (CEMS) and related equipment.

(b) All continuous emission monitoring systems shall meet all applicable performance specifications of 40 CFR 60 or any other performance specification, and are subject to monitor system certification requirements pursuant to 326 IAC 3-5-3.

(c) In the event that a breakdown of a continuous emission monitoring system occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem.

(d) Whenever a continuous emission monitor other than an opacity monitor is malfunctioning or is down for maintenance or repairs, the following shall be used as an alternative to continuous data collection:

(1) The relevant requirements of 40 CFR 75-Missiong Data Substitute Procedure shall be used to provide substitute data except when demonstrating Compliance.

(e) Nothing in this permit shall excuse the Permittee from complying with the requirements to operate a continuous emission monitoring system pursuant to 326 IAC 2-2-3.

C.14 Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

(a) When required by any condition of this permit, an analog instrument used to measure a parameter related to the operation of an air pollution control device shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale.

(b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

**Corrective Actions and Response Steps [326 IAC 2-7-5][326 IAC 2-7-6]**

C.15 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]

Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

(a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on.

(b) Upon direct notification by IDEM, OAQ that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

C.16 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68]

If a regulated substance, as defined in 40 CFR 68, is present at a source in more than a threshold quantity, the Permittee must comply with the applicable requirements of 40 CFR 68.

C.17 Response to Excursions or Exceedances [326 IAC 2-7-5] [326 IAC 2-7-6]

Upon detecting an excursion where a response step is required by the D Section or an exceedance of a limitation in this permit:

(a) The Permittee shall take reasonable response steps to restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing excess emissions.

(b) The response shall include minimizing the period of any startup, shutdown or malfunction The response may include, but is not limited to, the following:

(1) initial inspection and evaluation;

(2) recording that operations returned or are returning to normal without operator action (such as through response by a computerized distribution control system); or

(3) any necessary follow-up actions to return operation to normal or usual manner of operation.

(c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not necessarily limited to, the following:

(1) monitoring results;

(2) review of operation and maintenance procedures and records; and/or

(3) inspection of the control device, associated capture system, and the process.

(d) Failure to take reasonable response steps shall be considered a deviation from the permit.

(e) The Permittee shall record the reasonable response steps taken.

C.18 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5][326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall submit a description of its response actions to IDEM, OAQ, no later than seventy-five (75) days after the date of the test

(b) A retest to demonstrate compliance shall be performed no later than one hundred eighty (180) days after the date of the test. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred eighty (180) days is not practicable, IDEM, OAQ may extend the retesting deadline.

(c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

C.19 Emission Statement [326 IAC 2-7-5(3)(C)(iii)][326 IAC 2-7-5(7)][326 IAC 2-7-19(c)][326 IAC 2-6]

Pursuant to 326 IAC 2-6-3(a)(1), the Permittee shall submit no later than July 1 of each year an emission statement covering the previous calendar year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4(c) and shall meet the following requirements:

(a) Indicate estimated actual emissions of all pollutants listed in 326 IAC 2-6-4(a);

(b) Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1(32) ("Regulated pollutant, which is used only for purposes of Section 19 of this rule") from the source, for purpose of fee assessment.

The statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
MC 61-50 IGCN 1003
Indianapolis, Indiana 46204-2251

The emission statement does require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).

C.20 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6][326 IAC 2-2] [326 IAC 2-3]

(a) Records of all required monitoring data, reports and support information required by this permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(b) Unless otherwise specified in this permit, for all record keeping requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or the date of initial start-up, whichever is later, to begin such record keeping.

(c) If there is a reasonable possibility (as defined in 40 CFR 51.165(a)(6)(vi)(A), 40 CFR 51.165(a)(6)(vi)(B), 40 CFR 51.166(r)(6)(vi)(a), and/or 40 CFR 51.166(r)(6)(vi)(b)) that a "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a "major modification" (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Before beginning actual construction of the "project" (as defined in

326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, document and maintain the following records:

(A) A description of the project.

(B) Identification of any emissions unit whose emissions of a regulated new source review pollutant could be affected by the project.

(C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:

(i) Baseline actual emissions;

(ii) Projected actual emissions;

(iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii) and/or 326 IAC 2-3-1 (mm)(2)(A)(iii); and

(iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.

(d) If there is a reasonable possibility (as defined in 40 CFR 51.165(a)(6)(vi)(A) and/or 40 CFR 51.166(r)(6)(vi)(a)) that a “project” (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, other than projects at a source with a Plantwide Applicability Limitation (PAL), which is not part of a “major modification” (as defined in 326 IAC 2-2-1(ee) and/or 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the “projected actual emissions” (as defined in 326 IAC 2-2-1(rr) and/or 326 IAC 2-3-1(mm)), the Permittee shall comply with following:

(1) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emissions unit identified in (1)(B) above; and

(2) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity of or the potential to emit that regulated NSR pollutant at the emissions unit.

C.21 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11][326 IAC 2-2] [326 IAC 2-3]

(a) Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported except that a deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. This report shall be submitted not later than thirty (30) days after the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34). A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

(b) The address for report submittal is:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

(c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

(d) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

(e) If the Permittee is required to comply with the recordkeeping provisions of (d) in Section C - General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1 (qq) and/or 326 IAC 2-3-1 (ll)) at an existing emissions unit, and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ:

(1) The annual emissions, in tons per year, from the project identified in (c)(1) in Section C- General Record Keeping Requirements exceed the baseline actual emissions, as documented and maintained under Section C- General Record Keeping Requirements (c)(1)(C)(i), by a significant amount, as defined in 326 IAC 2-2-1 (xx) and/or 326 IAC 2-3-1 (qq), for that regulated NSR pollutant, and

(2) The emissions differ from the preconstruction projection as documented and maintained under Section C - General Record Keeping Requirements (c)(1)(C)(ii).

(f) The report for project at an existing emissions unit shall be submitted within sixty (60) days after the end of the year and contain the following:

(1) The name, address, and telephone number of the major stationary source.

(2) The annual emissions calculated in accordance with (d)(1) and (2) in Section C - General Record Keeping Requirements.

(3) The emissions calculated under the actual-to-projected actual test stated in 326 IAC 2-2-2(d)(3) and/or 326 IAC 2-3-2(c)(3).

(4) Any other information that the Permittee wishes to include in this report such as an explanation as to why the emissions differ from the preconstruction project.

Reports required in this part shall be submitted to:

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003

Indianapolis, Indiana 46204-2251

(g) The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C- General Record Keeping Requirements available for review upon a request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ under 326 IAC 17.1.

**Stratospheric Ozone Protection**

C.22 Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

## SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS

**Emissions Unit Description:**

**MELTING OPERATION**
Phase I

One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of 100 tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and volatile organic compound emissions control, and one (1) lime injection system (C12A) using dry injection system for sulfur dioxide control, exhausting to stack S09;

Phase II

One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of 100 tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.1.1 PSD BACT for Particulate [326 IAC 2-2-3(a)(3)]

(a) Pursuant to CP-123-8451-00019, issued on February 4, 1998 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the particulate matter emissions from the cupolas shall be limited to 0.078 pounds per ton of iron and 12.48 pounds per hour.

(b) Pursuant to CP-123-4593-00019, issued on January 19, 1996, visible emissions from the cupola stack S09 shall not exceed 10 % opacity.

(c) Pursuant to CP-123-4593-00019, issued on January 19, 1996, visible emissions from any building opening shall not exceed 3% opacity.

D.1.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

Pursuant to CP-123-8451-00019, issued on February 4, 1998 and 326 IAC 2-2-3(a)(3), the lead (Pb) emissions from both cupolas combined shall be limited to 0.54 pounds per hour.

D.1.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

Pursuant to CP-123-8451-00019, issued on February 4, 1998 and 326 IAC 2-2-3(a)(3), the beryllium (Be) emissions from both cupolas combined shall be limited to 0.0016 pounds per hour.

D.1.4 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

(a) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the sulfur dioxide ($SO_2$) emissions from the cupolas shall be limited to 0.22 pounds per ton of metal melted based on a 30-day rolling average and 44.0 pounds per hour based on a 3-hour rolling average.

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), coke usage shall not exceed 240 tons per day for each cupola.

D.1.5 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to PSD/SSM 123-29490-00019, 326 IAC 2-2-3(a)(3) and 326 IAC 8-1-6 (General Reduction Requirements for New Facilities), the volatile organic compound (VOC) emissions from the cupolas shall be limited to 0.02 pounds per ton of iron and 4.0 pounds per hour.

D.1.6 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)] [326 IAC 9-1-2]

(a) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the cupolas shall be limited to 0.4 pounds per ton of iron and 80.0 pounds per hour.

(b) Pursuant to 326 IAC 9-1-2 (Carbon Monoxide Emission Limits), the carbon monoxide emissions from the cupolas shall be controlled by the recuperative incinerator/heat recovery systems, which shall maintain a minimum temperature of one thousand three hundred (1,300) degrees Fahrenheit for a minimum retention time of three-tenths (0.3) second.

D.1.7 PSD BACT for Nitrogen Oxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the nitrogen oxide ($NO_X$) emissions from the cupolas shall be limited to 0.44 pounds per ton of iron and 88.0 pounds per hour.

D.1.8 Operating Requirements [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019, and 326 IAC 2-2-3(a)(3), each cupola shall be limited to a maximum melt rate of 100 tons per hour, based on a 24 hour average.

D.1.9 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements**

D.1.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour, in order to determine compliance with Conditions D.1.1, D.1.2, and D.1.3, the Permittee shall perform PM, opacity, lead and beryllium testing on both cupolas, identified as P30 and P33 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and half (2.5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

(b) Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour, in order to determine compliance with Conditions D.1.4, D.1.5, D.1.6 and D.1.7, the Permittee shall perform SO2, VOC, NOx, and CO, testing on both cupolas, identified as P30 and P33 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and half (2.5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

D.1.11 Particulate Matter (PM/PM-10) Controls [326 IAC 2-7-6(6)]

(a) Pursuant to CP123-8451-00019 issued February 4, 1998, the PM emissions from the cupola for Phase I shall be controlled by baghouse C09A (Stack S09).

(b) Pursuant to CP123-8451-00019 issued February 4, 1998, the PM emissions from the cupola for Phase II shall be controlled by baghouse C09B (Stack S09).

(c) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.1.12 Sulfur Dioxide Control

Pursuant to CP123-8451-00019 issued February 4, 1998, the $SO_2$ emissions from the Phase I and II cupolas (P30 and P33) shall be controlled by dry scrubbing systems using a dry lime or other equivalent alkaline reagent located prior to the baghouse.

D.1.13 VOC, CO, and NOx Control [326 IAC 2-2-3]

(a) Pursuant to CP123-8451-00019 issued February 4, 1998, the waste gas stream of the Phase I and Phase II cupolas (P30 and P33) shall be equipped with recuperative incinerator/heat recovery systems with low NOx burners prior to the dry scrubber/baghouse system.

(b) Pursuant to CP123-8451-00019 issued February 4, 1998, the recuperative incinerator shall only use natural gas fuel as the auxiliary fuel. Propane may be used as a backup fuel.

D.1.14 Continuous Emissions Monitoring and Continuous Opacity Monitoring [326 IAC 2-7-6(6)]

(a) The baghouses C09A and C09B controlling particulate matter emissions from the phase 1 and 2 cupolas P30 and P33, shall be equipped with a bag leak detection system. These systems shall be operated pursuant to site-specific monitoring plan and corrective action plan required under 40 CFR 63.7710(b)(4) and (5).

(b) Pursuant to CP123-8451 issued February 4, 1998, compliance with the $SO_2$ limits for the Phase I and Phase II cupolas in Condition D.1.4 shall be demonstrated by installing and operating a $SO_2$ continuous emissions monitoring system (CEMS) for the Phase 1 and Phase 2 cupolas exhausting to stack S09. The $SO_2$ CEMS shall be certified according to procedures contained in 326 IAC 3 and 40 CFR 75 as applicable. The continuous monitoring system shall be equipped with a flow monitor to provide data in pounds of $SO_2$ per hour. The $SO_2$ emissions on a per ton of iron basis shall be calculated by using the emissions rate information divided by the cupola production data, and shall be based on a 30 day rolling average.

D.1.15 Recuperative Incinerator Temperature

A continuous monitoring system shall be calibrated, maintained, and operated on each of the cupolas for measuring temperature of the cupola gas stream. For the purposes of this condition, continuous shall mean no less often than once per 15 minute. The Permittee shall maintain the hourly average temperature of the cupola gas stream at 1400 $^0$F or at a temperature determined from the latest stack testing. This minimum temperature requirements applies at all times during operation of either of the cupolas, except for the following:

(a) periods when the cupola blast air is turned off;
(b) periods when the blast air has been turned on for less than 30 consecutive minutes; and

(c) during the last 30 minutes of operation of the cupola.

The Permittee shall monitor the times that the cupola blast air is turned on and off for each cupola.

**Compliance Monitoring Requirements [326 IAC 2-7-5(1)][326 IAC 2-7-6(1)]**

D.1.16 Dry Alkaline Injection Parametric Monitoring

Whenever the $SO_2$ continuous emissions monitoring system (CEMS) is malfunctioning or down for repairs or adjustments, the following shall be used to provide information related to SO2 emissions:

(a) If the CEMS is down for less than twenty-four (24) hours, the Permittee shall substitute an average of the quality-assured data from the hour immediately before and the hour immediately after the missing data period for each hour of missing data.

(b) If the CEMS is down for twenty-four (24) hours or more, the Permittee shall record the alkaline dust injection rate of each dry alkaline injection system at least once per hour until the $SO_2$ CEMS is back online. When for any one reading the alkaline dust injection rate is below the minimum alkaline dust injection rate determined from the most recent compliant stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. An alkaline dust injection rate reading that is below the above mentioned minimum is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

D.1.17 Recuperative Incinerator Failure Detection

(a) Charging of the cupola shall cease immediately until the failed units have been repaired or replaced.

(b) For a recuperative incinerator controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

**Record keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.1.18 Record Keeping Requirement

(a) To document compliance with Conditions D.1.4, the Permittee shall maintain records of the coke input to each cupola for each day. Records shall be taken daily and shall be complete and sufficient to establish compliance with the coke input limit established in Condition D.1.4(b).

(b) To document compliance with Conditions D.1.15 and D.1.16, the Permittee shall maintain records of the following:

(1) records of the injection rate of each alkali injection system once per hour as required by Condition D.1.16; and

(2) records of the temperature readings for each recuperative incinerator (reduced to hourly averages) and all times when the blast air is turned on and off, in order to demonstrate compliance with Condition D.1.15.

(c) In order to document compliance with D.1.8, records shall be kept of the total iron throughput to each cupola each day of operation, and of the total hours of operation of each cupola each day of operation.

(d) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

D.1.19 Reporting Requirements

The Permittee shall submit a quarterly excess emissions report, if applicable, based on the continuous emissions monitor system (CEMS) data for $SO_2$, pursuant to 326 IAC 3-5-7. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C - General Reporting Requirements of this permit.

## SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS

**Emissions Unit Description:**
**Facilities exhausting to stacks S01, S04, or S07**
Phase I
(A) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1
- (a) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;
- (b) One (1) shakeout operation, identified as P02, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (c) One (1) cast cooling operation, identified as P03, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;
- (d) One (1) pick & sort operation, identified as P04, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01; and
- (e) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(2) Line 2
- (a) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (b) One (1) shakeout operation, identified as P07, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (c) One (1) cast cooling operation, identified as P08, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (d) One (1) pick & sort operation, identified as P09, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07; and
- (e) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(3) Line 3
- (a) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (b) One (1) shakeout operation, identified as P12, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (c) One (1) cast cooling operation, identified as P13, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (d) One (1) pick & sort operation, identified as P14, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07; and
- (e) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for

particulate control, exhausting to stack S07.

(4) Line 4

(a) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) shakeout operation, identified as P17, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) cast cooling operation, identified as P18, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) pick & sort operation, identified as P19, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01; and

(e) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(5) Sand handling operations and ancillary operations

(a) One (1) return sand handling & screen operation, identified as P21, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of 54 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(e) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(f) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of 33 tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.2.1 PSD BACT for Particulate Matter [326 IAC 2-2-3(a)(3)]

(a) Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the particulate matter emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | Emission Limitation for Individual Processes (lb/hr) | Particulate Emission Limitation for stack (gr/dscf) | Particulate Emission Limitation for stack (lb/hr) |
|---|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | | 0.005 | 32.01 |
| | Line 1 Shakeout | P02 | | | |
| | Line 1 Cast Cooling | P03 | | | |
| | Line 1 Pick and Sort | P04 | | | |
| | Line 2 Pouring/Mold Cooling | P06 | 1.50 | | |
| | Line 2 Shakeout | P07 | 1.71 | | |
| | Line 2 Cast Cooling | P08 | 1.93 | | |
| | Line 3 Pouring/Mold Cooling | P11 | 1.50 | | |
| | Line 3 Shakeout | P12 | 1.71 | | |
| | Line 3 Cast Cooling | P13 | 0.43 | | |
| | Line 4 Pouring/Mold Cooling | P16 | 2.44 | | |
| | Line 4 Shakeout | P17 | 1.71 | | |
| | Line 4 Cast Cooling | P18 | 0.43 | | |
| | Line 4 Pick and Sort | P19 | 1.71 | | |
| | Return Sand Handling/ Screening | P21 | | | |
| | Sand Cooling/Water Addition | P22 | | | |
| | Sand Mulling/Handling | P23 | | | |
| | Spent Sand Handling/Processing | P24 | 2.74 | | |
| | Air makeup units | P52 | | 0.90 lb/hr and 3.94 tons/yr | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | | 0.005 | 1.72 |
| | Line 1 Cast Cooling | P03 | | | |

| Stack ID | Process | Process ID | Emission Limitation for Individual Processes (lb/hr) | Particulate Emission Limitation for stack (gr/dscf) | Particulate Emission Limitation for stack (lb/hr) |
|---|---|---|---|---|---|
| S07 | Line 1 Cleaning/Grinding | P05 | | 0.005 | 7.8 |
| | Line 2 Pick and Sort | P09 | 1.71 | | |
| | Line 2 Cleaning/Grinding | P10 | 0.69 | | |
| | Line 3 Pick and Sort | P14 | 2.10 | | |
| | Line 3 Cleaning/Grinding | P15 | 0.69 | | |
| | Metallic Returns Handling | P25 | 1.29 | | |
| | Line 4 Cleaning/Grinding | P20 | 0.69 | | |

(b) Pursuant to CP123-4593-00019 issued on January 19, 1996, visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity.

D.2.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules) and revised by PSD/SSM 123-25303-00019, the lead (Pb) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | Lead Emission Limit (lb/hr) |
|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | 0.032 |
| | Line 1 Shakeout | P02 | |
| | Line 1 Cast Cooling | P03 | |
| | Line 1 Pick and Sort | P04 | |
| | Line 2 Pouring/Mold Cooling | P06 | |
| | Line 2 Shakeout | P07 | |
| | Line 2 Cast Cooling | P08 | |
| | Line 3 Pouring/Mold Cooling | P11 | |
| | Line 3 Shakeout | P12 | |
| | Line 3 Cast Cooling | P13 | |
| | Line 4 Pouring/Mold Cooling | P16 | |
| | Line 4 Shakeout | P17 | |
| | Line 4 Cast Cooling | P18 | |
| | Line 4 Pick and Sort | P19 | |
| | Return Sand Handling/ Screening | P21 | |
| | Sand Cooling/Water Addition | P22 | |
| | Sand Mulling/Handling | P23 | |
| | Spent Sand Handling/Processing | P24 | |
| | Air makeup units | P52 | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | 0.002 |
| | Line 1 Cast Cooling | P03 | |
| S07 | Line 1 Cleaning/Grinding | P05 | 0.008 |
| | Line 2 Pick and Sort | P09 | |
| | Line 2 Cleaning/Grinding | P10 | |
| | Line 3 Pick and Sort | P14 | |
| | Line 3 Cleaning/Grinding | P15 | |
| | Metallic Returns Handling | P25 | |
| | Line 4 Cleaning/Grinding | P20 | |

### D.2.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules) and revised by PSD/SSM 123-25303-00019, the beryllium (Be) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | Beryllium Emission Limit (lb/hr) |
|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | 0.0006 |
| | Line 1 Shakeout | P02 | |
| | Line 1 Cast Cooling | P03 | |
| | Line 1 Pick and Sort | P04 | |
| | Line 2 Pouring/Mold Cooling | P06 | |
| | Line 2 Shakeout | P07 | |
| | Line 2 Cast Cooling | P08 | |
| | Line 3 Pouring/Mold Cooling | P11 | |
| | Line 3 Shakeout | P12 | |
| | Line 3 Cast Cooling | P13 | |
| | Line 4 Pouring/Mold Cooling | P16 | |
| | Line 4 Shakeout | P17 | |
| | Line 4 Cast Cooling | P18 | |
| | Line 4 Pick and Sort | P19 | |
| | Return Sand Handling/ Screening | P21 | |
| | Sand Cooling/Water Addition | P22 | |
| | Sand Mulling/Handling | P23 | |
| | Spent Sand Handling/Processing | P24 | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | 0.00003 |
| | Line 1 Cast Cooling | P03 | |
| S07 | Line 1 Cleaning/Grinding | P05 | 0.00016 |
| | Line 2 Pick and Sort | P09 | |
| | Line 2 Cleaning/Grinding | P10 | |
| | Line 3 Pick and Sort | P14 | |
| | Line 3 Cleaning/Grinding | P15 | |
| | Metallic Returns Handling | P25 | |

| Stack ID | Process | Process ID | Beryllium Emission Limit (lb/hr) |
|---|---|---|---|
| | Line 4 Cleaning/Grinding | P20 | |

D.2.4 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for volatile organic compounds (VOC) for the Pouring/Mold Cooling and shakeout Operation for Phase 1 Lines 1 to 4 exhausting through stack S01 and S04.

The combined VOC emissions from the pouring/mold cooling and shakeout operation shall be controlled by mold vent off-gas ignition and shall not exceed 1.4 pounds per ton of iron poured and 138.6 lbs/hour, combined for both stacks, identified as S01 and S04.

D.2.5 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | CO Emission Limits for Individual Processes (lb/ton) | CO Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | 5.0 | 510.0 |
| | Line 1 Shakeout | P02 | 1.0 | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | 5.0 | |
| | Line 2 Shakeout | P07 | 1.0 | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | 5.0 | |
| | Line 3 Shakeout | P12 | 1.0 | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | 5.0 | |
| | Line 4 Shakeout | P17 | 1.0 | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |

| | | | | |
|---|---|---|---|---|
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air makeup units | P52 | 18.2 lbs/hr | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | 5.0 | 84.0 |
| | Line 1 Cast Cooling | P03 | | |

D.2.6 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the sulfur dioxide (SO2) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | $SO_2$ Emission Limits (lb/ton) | $SO_2$ Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | 0.02 | 1.68 |
| | Line 1 Shakeout | P02 | | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | | |
| | Line 2 Shakeout | P07 | | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | | |
| | Line 3 Shakeout | P12 | | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | | |
| | Line 4 Shakeout | P17 | | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air Makeup Units | P52 | | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | 0.02 | 0.3 |
| | Line 1 Cast Cooling | P03 | | |

D.2.7 PSD BACT for Nitrogen Oxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the (NOX) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | NOx Emission Limits (lb/ton) | NOx Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | 0.01 | 0.89 |
| | Line 1 Shakeout | P02 | | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | | |
| | Line 2 Shakeout | P07 | | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | | |
| | Line 3 Shakeout | P12 | | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | | |
| | Line 4 Shakeout | P17 | | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air Makeup Units | P52 | | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | 0.01 | 0.1 |
| | Line 1 Cast Cooling | P03 | | |

D.2.8 Operating Conditions [326 IAC 2-2-3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the following limitations shall apply:

(a) the return sand handling/screening process, identified as P21, shall be limited to a maximum throughput capacity of 522 tons of sand per hour;

(b) the sand cooling/water addition process, identified as P22, shall be limited to a maximum throughput capacity of 522 tons of sand per hour;

(c) the sand mulling/handling process, identified as P23, shall be limited to a maximum throughput capacity of 522 tons of sand per hour; and

D.2.9 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements**

D.2.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform PM, opacity, lead and beryllium testing on the facilities exhausting to stacks S01, S04 and S07 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits listed in Conditions D.2.1, D.2.2, and D.2.3. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition. All facilities exhausting to the same stack shall be in operation during the stack test in order for the test to be considered a valid test.

(b) Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform VOC, CO, SO2 and NOx testing on the emission units exhausting to stacks S01 and S04 simultaneously using Method 25, 25A, or other methods approved by the Commissioner, in order to demonstrate compliance with the total stack limit listed in Conditions D.2.4, D.2.5, D.2.6 and D.2.7. These tests shall be repeated at least once every five (5) years from the date of the last valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition. All facilities exhausting to the same stack shall be in operation during the stack test in order for the test to be considered a valid test. If the VOC emissions normally exhausted to SO4 are directed to S01 during the stack test, then only S01 is required to be tested.

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D.2.11 Particulate Matter (PM/PM-10) Control [326 IAC 2-7-6(6)]

(a) Pursuant to CP123-8451-00019 issued on February 4, 1998, the PM emissions for Lines 1-4 shall be controlled by four (4) baghouses C01, C02, C03 (Stack S01) and C07 (Stack S07) at all times when these processes are in operation.

(b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

(c) Pursuant to the Agreed Order for Case # 2005-14739-A, dated June 28, 2007, Baghouse C07 shall be equipped with duo-density bags having a minimum 18-ounce per square yard density. An alternative bag material may be used if approved by IDEM.

**Compliance Monitoring Requirements [326 IAC 2-7-5(1)][326 IAC 2-7-6(1)]**

D.2.12 Visible Emission Notations

(a) Visible emission notations of each baghouse stack exhaust shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.2.13 Baghouse Parametric Monitoring

Pursuant to the Agreed Order for Case # 2005-14739-A, dated June 28, 2007, instead of the pressure drop monitoring, Baghouse C07 shall be equipped with a bag leak detection system. This system shall be operated pursuant to the site-specific monitoring plan and correction action plan required under 40 CFR 63.7710(b)(4) and (5).

D.2.14 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than

the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.2.15 Record Keeping Requirements

(a) To document compliance with Condition D.2.12 the Permittee shall maintain records of visible emission notations of each baghouse stack exhaust once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(b) To document compliance with Condition D.2.13, the Permittee shall keep a log of the calibration test results for baghouse CO7 leak detector.

(c) To document compliance with the schedule outlined in Condition D.2.4, the Permittee shall submit an annual emission reduction report to IDEM summarizing activities undertaken to evaluate and reduce VOC emissions from these lines.

(d) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

## SECTION D.3 EMISSIONS UNIT OPERATION CONDITIONS

**Emissions Unit Description:**
**Facilities Exhausting to Stacks S15 and S16**
Phase II

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16,that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of 34 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P72, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse

system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

Phase II

Sand Handling Operations and Ancillary Operations:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of 55 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of 44 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) Tumbleblast shotblast machine, identified as P55, with a maximum capacity of 20 tons of metal castings per hour, with emissions controlled by existing baghouse C15, and exhausting to stack S15.

(d) One (1) autogrinder operation, to be constructed in 2008, identified as P87, with a maximum capacity of 22.5 tons of castings per hour, with emissions controlled by existing Baghouse C16 and exhausting to stack S16.

Ductile Iron Treatment Operations

(1) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of 50 tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

Combustion Units

(1) Natural gas fired air make-up units equipped with low-NOx burners, identified as P54, with a maximum heat input rate of 80 MMBtu per hour exhausting to Stack S15.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.3.1 PSD BACT for Particulate Matter [326 IAC 2-2-3(a)(3)]

(a) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the particulate matter emissions from the following operations shall be limited as shown in the table below:

| Stack ID | Process | Process ID | PM Emission Limitation (gr/dscf) | PM Emission Limitation (lbs/hr) |
|---|---|---|---|---|
| S15 | Return Sand Handling/ Screening | P80 | 0.005 | 30.9 |
| | Sand Mulling and Handling | P81 | | |
| | Sand Blending and Cooling | P82 | | |
| | Spent Sand and Dust Handling | P83 | | |
| | Metal Returns Handling System | P84 | | |
| | Line 5 Pouring/Mold Cooling | P60 | | |
| | Line 5 Shakeout | P61 | | |
| | Line 5 Cast Cooling | P62 | | |
| | Line 6 Pouring/Mold Cooling | P65 | | |
| | Line 6 Shakeout | P66 | | |
| | Line 6 Cast Cooling | P67 | | |
| | Line 7 Pouring/Mold Cooling | P70 | | |
| | Line 7 Shakeout | P71 | | |
| | Line 7 Cast Cooling | P72 | | |
| | Line 8 Pouring/Mold Cooling | P75 | | |
| | shotblast machine | P55 | | |

| Stack ID | Process | Process ID | PM Emission Limitation (gr/dscf) | PM Emission Limitation (lbs/hr) |
|---|---|---|---|---|
| | ductile iron treatment stations #1 and #2 | P35 | | |
| S16 | Return Sand Handling/ Screening | P80 | 0.005 | 17.2 |
| | Line 5 Pick and Sort | P63 | | |
| | Line 5 Cleaning/ Grinding | P64 | | |
| | Line 6 Shakeout | P66 | | |
| | Line 6 Cast Cooling | P67 | | |
| | Line 6 Pick and Sort | P68 | | |
| | Line 6 Cleaning/ Grinding | P69 | | |
| | Line 7 Shakeout | P71 | | |
| | Line 7 Cast Cooling | P72 | | |
| | Line 7 Pick and Sort | P73 | | |
| | Line 7 Cleaning/ Grinding | P74 | | |
| | Line 8 Shakeout | P76 | | |
| | Line 8 Cast Cooling | P77 | | |
| | Line 8 Pick and Sort | P78 | | |
| | Line 8 Cleaning/ Grinding | P79 | | |

(b) Pursuant to CP123-4593-00019 issued on January 19, 1996, visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity.

D.3.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

(a) Pursuant to CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, SSM123-12331-00019 issued on January 31, 2001, and 326 IAC 2-2-3(a)(3) and revised by PSD/SSM 123-25303-00019, the lead (Pb) emissions from the following operations shall be limited as shown in the table below:

| Stack ID | Process | Process ID | Lead Emission Limitation for stack (lb/hr) |
|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 0.035 |
| | Line 5 Shakeout | P61 | |
| | Line 5 Cast Cooling | P62 | |
| | Line 6 Pouring/Mold Cooling | P65 | |
| | Line 6 Shakeout | P66 | |
| | Line 6 Cast Cooling | P67 | |
| | Line 7 Pouring/Mold Cooling | P70 | |
| | Line 7 Shakeout | P71 | |
| | Line 7 Cast Cooling | P72 | |
| | Line 8 Pouring/Mold Cooling | P75 | |
| | shotblast machine | P55 | |
| | Metal Returns Handling System | P84 | |
| | Return Sand Handling/Screening | P80 | |
| | Sand Mulling and Handling | P81 | |
| | Sand Blending and Cooling | P82 | |
| | Spent Sand and Dust Handling | P83 | |
| S16 | Line 5 Shakeout | P61 | 0.018 |
| | Line 5 Pick and Sort | P63 | |
| | Line 5 Cleaning/ Grinding | P64 | |
| | Line 6 Shakeout | P66 | |
| | Line 6 Cast Cooling | P67 | |
| | Line 6 Pick and Sort | P68 | |
| | Line 6 Cleaning/ Grinding | P69 | |
| | Line 7 Shakeout | P71 | |
| | Line 7 Cast Cooling | P72 | |
| | Line 7 Pick and Sort | P73 | |
| | Line 7 Cleaning/ Grinding | P74 | |

| Stack ID | Process | Process ID | Lead Emission Limitation for stack (lb/hr) |
|---|---|---|---|
| | Line 8 Shakeout | P76 | |
| | Line 8 Cast Cooling | P77 | |
| | Line 8 Pick and Sort | P78 | |
| | Line 8 Cleaning/ Grinding | P79 | |
| | Return Sand Handling/Screening | P80 | |
| | Metal Returns Handling System | P84 | |

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for lead (Pb) for the P35-ductile iron treatment stations #1 and #2, exhausting through stack S15.

The lead emissions from the P35-ductile iron treatment stations #1 and #2 shall be controlled by a fabric filter baghouse and the lead emissions shall not exceed 1,000 ppm and 0.0047 pounds per hour.

D.3.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

(a) Pursuant to CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, SSM123-12331-00019 issued on January 31, 2001, and 326 IAC 2-2-3(a)(3) and revised by PSD/SSM 123-25303-00019, the beryllium (Be) emissions from the processes listed below shall be limited as shown in the table below:

| Stack ID | Process | Process ID | Beryllium Emission Limitation for stack (lb/hr) |
|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 0.00069 |
| | Line 5 Shakeout | P61 | |
| | Line 5 Cast Cooling | P62 | |
| | Line 6 Pouring/Mold Cooling | P65 | |
| | Line 6 Shakeout | P66 | |
| | Line 6 Cast Cooling | P67 | |
| | Line 7 Pouring/Mold Cooling | P70 | |
| | Line 7 Shakeout | P71 | |
| | Line 7 Cast Cooling | P72 | |
| | Line 8 Pouring/Mold Cooling | P75 | |

| Stack ID | Process | Process ID | Beryllium Emission Limitation for stack (lb/hr) |
|---|---|---|---|
| | shotblast machine | P55 | |
| | Metal Returns Handling System | P84 | |
| | Return Sand Handling/Screening | P80 | |
| | Sand Mulling and Handling | P81 | |
| | Sand Blending and Cooling | P82 | |
| | Spent Sand and Dust Handling | P83 | |
| S16 | Line 5 Shakeout | P61 | 0.00036 |
| | Line 5 Pick and Sort | P63 | |
| | Line 5 Cleaning/ Grinding | P64 | |
| | Line 6 Shakeout | P66 | |
| | Line 6 Cast Cooling | P67 | |
| | Line 6 Pick and Sort | P68 | |
| | Line 6 Cleaning/ Grinding | P69 | |
| | Line 7 Shakeout | P71 | |
| | Line 7 Cast Cooling | P72 | |
| | Line 7 Pick and Sort | P73 | |
| | Line 7 Cleaning/ Grinding | P74 | |
| | Line 8 Shakeout | P76 | |
| | Line 8 Cast Cooling | P77 | |
| | Line 8 Pick and Sort | P78 | |
| | Line 8 Cleaning/ Grinding | P79 | |
| | Return Sand Handling/Screening | P80 | |
| | Metal Returns Handling System | P84 | |

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for beryllium (Be) for the P35-ductile iron treatment stations #1 and #2, exhausting through stack S15.

The beryllium emissions from the P35-ductile iron treatment stations #1 and #2 shall be controlled by a fabric filter baghouse and the beryllium emissions shall not exceed 20 ppm and 0.00009 pounds per hour.

D.3.4 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the sulfur dioxide ($SO_2$) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | $SO_2$ Emission Limitation (lb/ton) | $SO_2$ Emission Limitation for stack (lb/hr) |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 0.02 | 2.02 |
| | Line 6 Pouring/Mold Cooling | P65 | | |
| | Line 7 Pouring/Mold Cooling | P70 | | |
| | Line 8 Pouring/Mold Cooling | P75 | | |

D.3.5 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to PSD/SSM 123-29490-00019, 326 IAC 2-2-3(a)(3) and 326 IAC 8-1-6 (General Reduction Requirements for New Facilities), the volatile organic compound (VOC) emissions from the following processes shall be limited as shown in the table below:

The following limit is determined as Best Available Control Technology (BACT) for volatile organic compounds (VOC) for the Pouring/Mold Cooling and Shakeout Operations for Phase 2 Lines 5 to 8 exhausting through Stacks S15 and S16.

The combined VOC emissions from the pouring/mold cooling and shakeout operation shall be controlled by mold vent off-gas ignition and shall not exceed 1.4 pounds per ton of iron poured and 141.4 lbs/hour, combined for both stacks, identified as S15 and S16.

D.3.6 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)]

Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | CO Emission Limitations for individual processes (lb/ton iron) | CO Emission Limitations for Stacks (lbs/hr) |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 5.0 | 546 |
| | Line 5 Shakeout | P61 | 1.0 | |
| | Line 6 Pouring/Mold Cooling | P65 | 5.0 | |
| | Line 6 Shakeout | P66 | 1.0 | |
| | Line 7 Pouring/Mold Cooling | P70 | 5.0 | |
| | Line 7 Shakeout | P71 | 1.0 | |
| | Line 8 Pouring/Mold Cooling | P75 | 5.0 | |
| | P54 Natural Gas Air Make-up | P54 | | |
| | P53B Phase ll Ladle Preheating | P53B | | |
| S16 | Line 5 Shakeout | P61 | 1.0 | 60.0 |
| | Line 6 Shakeout | P66 | 1.0 | |
| | Line 7 Shakeout | P71 | 1.0 | |
| | Line 8 Shakeout | P76 | 1.0 | |

D.3.7 PSD BACT for NOx [326 IAC 2-2-3(a)(3)]

(a) Pursuant to PSD/SSM 123-29490-00019, and 326 IAC 2-2-3(a)(3), the ($NO_X$) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | NOx Emission Limitations for individual processes (lb/ton iron) | NOx Emission Limitations for Stacks (lbs/hr) |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 0.01 | 1.01 |
| | Line 6 Pouring/Mold Cooling | P65 | | |
| | Line 7 Pouring/Mold Cooling | P70 | | |
| | Line 8 Pouring/Mold Cooling | P75 | | |
| | P54 Natural Gas Air Make-up | P54 | | |
| | P53B Phase ll Ladle Preheating | P53B | | |

(b) Pursuant to CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3), the natural gas fired air makeup units, identified as P54, shall be equipped with low-NOx burners and shall be limited to a maximum heat input rate of 80 MMBtu per hour.

D.3.8 Operating Requirements [326 IAC 2-2-3(a)(3)]

(a) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the maximum production rate of both ductile iron treatment stations identified as P35 shall not exceed a combined total of 100 tons of iron per hour, based on a 24 hour average.

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3), the sand handling operations shall comply with the following limitations:

(1) the return sand handling/screening process, identified as P80, shall be limited to a maximum throughput capacity of 660 tons of sand per hour;

(2) the sand mulling/handling process, identified as P81, shall be limited to a maximum throughput capacity of 660 tons of sand per hour.

(3) the sand blending and cooling process, identified as P82, shall be limited to a maximum throughput capacity of 660 tons of sand per hour; and

(4) the spent sand and dust handling system, identified as P83, shall be limited to a maximum throughput capacity of 55 tons of sand per hour.

(c) Pursuant to CP-123-8451-00019, issued on February 4 1998 and 326 IAC 2-2-3(a)(3), the metal returns handling system, identified as P84, shall be limited to a maximum capacity of 44 tons per hour.

D.3.9 PSD Minor Limit [326 IAC 2-2]

The PM and PM10 emissions from the autogrinder process exhausting to stack S16 shall not exceed 1.0 pounds per hour.

Compliance with these limits will limit the potential PM and PM10 emissions from the sand handling operations and the autogrinder to less than 25 and 15 tons per year and render the requirements of 326 IAC 2-2 not applicable to the sand handling operations and the autogrinder constructed in 2008.

D.3.10 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the autogrinder operation identified as P87 shall not exceed 33.0 pounds per hour when operating at a process weight rate of 22.5 tons per hour. This limit was calculated using the following equations:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

D.3.11 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements**

D.3.12 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform, lead, and beryllium testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in conditions D.3.2(a), and D.3.3(a). These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

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(b) Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform, lead, and beryllium testing on the processes exhausting to stack S15 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Conditions D.3.2(b), and D.3.3(b). These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

(c) Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform PM and opacity, testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Condition D.3.1. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

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(d) Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform SO2, VOC, CO and NOx, testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Conditions D.3.4, D.3.5, D.3.6 and D.3.7. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

D.3.13 Particulate Matter (PM/PM-10) [326 IAC 2-7-6(6)]

(a) Pursuant to CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Rules), the PM, lead, and beryllium emissions shall be controlled by baghouses C15 (Stack S15), and C16 (Stack S16) at all times when the associated processes are in operation.

(b) In order to comply with Conditions D.3.9 and D.3.10, the Baghouse C16 for particulate control shall be in operation and control emissions from the autogrinder identified as P87 at all times the autogrinder is in operation.

(c) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**Compliance Monitoring Requirements [326 IAC 2-7-5(1)][326 IAC 2-7-6(1)]**

D.3.14 Visible Emission Notations [40 CFR 64]

(a) Visible emission notations of each baghouse stack exhaust shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.3.15 Baghouse Parametric Monitoring [40 CFR 64]

(a) The Permittee shall record the pressure drop across the baghouse C15 used in conjunction with the processes listed in this section, at least once per day when the associated process is in operation. When for any one reading, the pressure drop across a baghouse is outside the normal range of 1.0 and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable responsesteps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

(b) The baghouse C16 shall be equipped with a bag leak detection system. This system shall be operated pursuant to site-specific monitoring plan and corrective action plan required under 40 CFR 63.7710(b)(4) and (5).

D.3.16 Broken or Failed Bag Detection [40 CFR 64]

(a) For a single compartment baghouse controlling emissions from a process

operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.3.17 Record Keeping Requirement

(a) To document compliance with Conditions D.3.14 the Permittee shall maintain records of visible emission notations of each baghouse stack exhaust once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(b) To document compliance with Conditions D.3.15(a) the Permittee shall maintain records of the pressure drop across the baghouse C15 once per day. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of pressure drop reading (e.g. the process did not operate that day).

(c) Pursuant to CP123-8451-00019 issued on February 4, 1998, and to document compliance with Conditions D.3.7(b) the Permittee shall maintain records of the equipment installed and the type of fuel used in the air makeup units.

(d) In order to document compliance with D.3.8, records shall be kept of the total iron throughput to each ductile iron treatment station each day of operation, and of the total hours of operation of each ductile iron treatment station each day of operation.

(e) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

## SECTION D.4 EMISSIONS UNIT OPERATION CONDITIONS

**Emissions Unit Description:**

**Facilities Exhausting to Stacks S08, S11, and S14**

Phase I

(a) sand handling operations and ancillary operations, each constructed in 1996, consisting of the following:

(1) One (1) core sand handling operation, identified as P40, with a maximum throughput of 16 tons per hour, using one (1) baghouse (C08) for particulate control, exhausting to stack S08;

(2) One (1) core manufacturing operation, identified as P41, with a maximum throughput of 16 tons per hour, exhausting to stack S11;

(3) One (1) core machine & oven operation, identified as P51, with a maximum heat input capacity of 16.8 MMBtu per hour, combusting natural gas, exhausting to stack S11;

(4) One (1) pattern shop, identified as P50, controlled by a baghouse, exhausting inside the building.

Phase II

(b) sand handling operations and ancillary operations, each constructed in 1998, consisting of the following:

(1) One (1) phenolic-urethane core sand handling system, identified as P42, constructed in 1998 and modified in 2008, with a maximum production capacity of 32 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C08, that exhausts to Stack S08;

(2) One (1) phenolic-urethane core making process, identified as P43, consisting of 6 mixers and 6 core machines, with a total maximum production capacity of 20 tons of cores per hour. DMIPA emissions are controlled by one (1) packed bed scrubber, identified as C14. The gases are then exhausted to Stack S14;

(3) One (1) phenolic-urethane core making process, identified as P44, consisting of 2 mixers and 2 core machines, each with a maximum capacity of 3 tons per hour. DMIPA emissions are controlled by one (1) packed bed scrubber, identified as C14. The gases are then exhausted to Stack S14;

Core Room Expansion II

(a) one (1) phenolic-urethane core machine, identified as P45A, to be constructed in 2008, with a maximum capacity of 6 tons per hour, with emissions controlled by existing scrubber C14 and exhausting through stack S14; and

(b) one (1) phenolic-urethane core machine, identified as P45B, to be constructed in 2008, with a maximum capacity of 6 tons per hour, with emissions controlled by existing scrubber C17 and exhausting through stack S17.

(c) two (2) natural gas-fired core dry oven, to be constructed in 2008, identified as P48A and P48B, with a maximum capacity of 2.5 MMBtu/hr each, with emissions exhausting in to the building.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.4.1 Particulate Matter Emissions Limitations [326 IAC 2-2-3(a)(3)]

(a) Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the particulate matter emissions from the following operations shall be limited to the following:

| Stack ID | Process | Process ID | PM Emission Limitations for individual processes (gr/dscf) unless otherwise specified | PM Emission Limitations for Stacks (lb/hr) and (tons/yr) |
|---|---|---|---|---|
| S08 | Core Sand Handling | P40 | 0.005 | 0.6 lb/hr |
| S08 | Phenolic-Urethane Core Sand Handling System | P42 | 0.005 | |
| S11 | Core Machines & Ovens | P51 | 0.23 lb/hr and 1.0 ton/yr | 0.23 lb/hr and 1.0 tons/yr |

(b) Pursuant to CP123-4593-00019 issued on January 19, 1996, visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity.

D.4.2 VOC BACT Limits [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, SSM 123-12948-00019, issued on June 5, 2001, SSM 123-16456, issued on May 13, 2003, and SSM 123-26878-00019, issued in 2008, 326 IAC 8-1-6 (BACT), and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the Permittee shall comply with the following requirements:

(a) The VOC emissions from the core machines and ovens identified as P51 shall not exceed 0.10 pounds per hour and 0.43 tons per year.

(b) The VOC emissions from the core manufacturing process identified as P41 shall not exceed 4.6 pounds per hour and 20.2 tons per year.

(c) The volatile organic compound (VOC) emissions, not including dimethylisopropylamine (DMIPA), from both of the phenolic-urethane core machines, identified as P44, shall not exceed 1.836 pounds per hour (total for both machines combined) and 0.010 pounds per pound of binder used.

(d) The volatile organic compound (VOC) emissions from both of the mixers, identified as P44, shall not exceed 0.324 pounds per hour (total for both mixers combined) and 0.002 pounds per pound of binder used.

(e) The amount of binder used in both mixers, identified as P44, combined shall not exceed 390 tons per 12 consecutive month period with compliance determined at the end of each month.

(f) The amount of cores produced by both core machines, identified as P44, combined shall not exceed 26,000 tons per 12 consecutive month period with compliance determined at the end of each month.

(g) The total VOC emissions (including DMIPA) from the mixers and core machines identified as P43 shall not exceed 0.4 pound per ton of cores.

(h) The scrubber controlling the DMIPA emissions from the core machines identified as P43**,** P44, P45A, and P45B shall maintain a 100% capture of the DMIPA emissions, using a permanent total enclosure that complies with the requirements of 40 CFR Part 51, Appendix M, Method 24. The scrubber shall achieve at least 98% overall control efficiency of the DMIPA.

(i) The DMIPA emissions from the scrubber controlling the core machines identified as P43 and P44 shall not exceed 0.04 pound per ton of cores and 1.04 pounds per hour. Compliance with limit is also necessary to render the requirements of 326 IAC 2-4.1-1 (New Source Toxics Control) not applicable.

(j) The DMIPA emissions from the scrubber controlling the core machines identified as P45A and P45B shall not exceed 0.04 pound per ton of cores and 0.24 pounds per hour.

(k) The Permittee shall only use dimethylisopropylamine (DMIPA) as a catalyst for the core machines identified as P43, P44, P45A, and P45B.

D.4.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the sand handling operation identified as P42 shall not exceed 40.5 pounds per hour when operating at a process weight rate of 32 tons per hour. This limit was calculated using the following equations:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

D.4.4 PSD BACT for $SO_2$ [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the $SO_2$ emissions from the core machines and ovens identified as P51 and exhausting to stack S11 shall not exceed 0.01 pound per hour and 0.044 tons per year.

D.4.5 PSD BACT for NOx [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the NOx emissions from the core machines and ovens identified as P51 and exhausting to stack S11 shall not exceed 2.35 pounds per hour and 10.3 tons per year.

D.4.6 PSD BACT for CO [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the CO emissions from the core machines and ovens

identified as P51 and exhausting to stack S11 shall not exceed 0.59 pound per hour and 2.58 tons per year.

D.4.7 Operating Requirements [326 IAC 2-2-3(a)(3)]

(a) Pursuant to CP123-4593-00019 issued on January 19, 1996 and 326 IAC 2-2-3(a)(3), the core ovens shall use only natural gas as a fuel source.

(b) Pursuant to SSM 123-12948-00019, issued on June 5, 2001, and SSM 123-16456, issued on May 13, 2003, the combined maximum capacity of the core machines identified as P44 shall not exceed 6 tons of cores per hour, based on a 24 hour average.

(c) Pursuant to SSM 123-12948-00019, issued on June 5, 2001, and SSM 123-16456, issued on May 13, 2003, the combined maximum capacity of the core machines identified as P43 shall not exceed 20 tons of cores per hour, based on a 24 hour average.

D.4.8 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements**

D.4.9 Control of Hazardous Air Pollutants (HAPs) [326 IAC 2-2-3(a)(3)] [326 IAC 2-7-6(6)]

(a) Pursuant to SSM 123-12948-00019, issued on June 5, 2001, SSM 123-16456-00019, issued on May 13, 2003, CP123-4593-00019 issued on January 19, 1996 and 326 IAC 2-2-3(a)(3), the DMIPA emissions from the core machines identified as P43 and P44 shall be controlled by a scrubber C14 (Stack S14) at all times that any of the core machines is in operation.

(b) Pursuant to SSM 123-12948-00019, issued on June 5, 2001, SSM 123-16456-00019, issued on May 13, 2003, CP123-4593-00019 issued on January 19, 1996 and 326 IAC 2-2-3(a)(3), the PM emissions from the core sand handling operations identified as P40 and P42 shall be controlled by a baghouse (C08) at all times that the core sand handling operations are in operation.

(c) The PM emissions from the pattern shop identified as P50 shall be controlled by the baghouse at all times that the pattern shop is in operation.

(d) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.4.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) In order to determine compliance with Condition D.4.2(h) and (i), the Permittee shall perform DMIPA testing by December 2014 on the scrubber controlling the core machines identified as P43 and P44 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

(b) Within one hundred and eighty (180) days after the startup of the core machines, identified as P45A and P45B, in order to determine compliance with Condition D.4.2(j), the Permittee shall perform DMIPA testing on the core machines, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance determination. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.4.11 Packed Bed Scrubber Parametric Monitoring

(a) The Permittee shall monitor and record the pH of the scrubber solution and the pressure drop across the scrubber, identified as C14 at least once per day. When for any one reading, the pressure drop across the scrubber is outside the normal range of 0.5 to 5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. When for any one reading, the pH level of the scrubbing liquid exceeds the normal maximum of 4.5 or a maximum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) The Permittee shall monitor the flow rate of the scrubbing liquid daily. When for any one reading, the flow rate is below the normal minimum of 235 gallons per minute or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) The instruments used for determining the pressure, flow rate, and pH level shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.4.12 Packed Bed Scrubber Failure Detection

(a) For a scrubber controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a scrubber controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

D.4.13 Visible Emission Notations

(a) Visible emission notations of each baghouse stack exhaust shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.4.14 Baghouse Parametric Monitoring

The Permittee shall record the pressure drop across each of the baghouses used in conjunction with the processes listed in this section, at least once per day when the associated process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.4.15 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has

been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse=s pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

**Record keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.4.16 Record keeping Requirement

(a) To document compliance with Condition D.4.2(e), the Permittee shall maintain records of the binder usage in the two core mixers associated with the core making process identified as P44 each month.

(b) To document compliance with Condition D.4.2(f), the Permittee shall maintain records of the core production from the two core machines associated with the core making process identified as P44 each month.

(c) To document compliance with Condition D.4.11(a), the Permittee shall maintain records of the pressure drop and pH readings of the scrubber once per day. The Permittee shall include in its daily record when a reading is not taken and the reason for the lack of reading (e.g. the process did not operate that day).

(d) To document compliance with Condition D.4.11(b), the Permittee shall maintain records of the flow rate of the scrubber. The Permittee shall include in its daily record when a reading is not taken and the reason for the lack of reading (e.g. the process did not operate that day).

(e) To document compliance with Conditions D.4.13 the Permittee shall maintain records of visible emission notations of each baghouse stack exhaust once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(f) To document compliance with Conditions D.4.14 the Permittee shall maintain records of the pressure drop across each baghouse once per day. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of pressure drop reading (e.g. the process did not operate that day).

(g) In order to document compliance with D.4.7(b) and (c), records shall be kept of the core production of P43 and P44 each day of operation, and of the total hours of operation of P43 and P44 each day of operation.

(h) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

### D.4.17 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.4.2 (e) and (f) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The reports submitted by the Permittee do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

## SECTION D.5 EMISSIONS UNIT OPERATION CONDITIONS

**Emissions Unit Description:**

Phase I
(1) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;
(2) One (1) charge and make-up operation, identified as P32, with a maximum throughput of 80 tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;
(3) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44; and
(4) One (1) ladle cleaning with burn bars, identified as P86, using one (1) baghouse (C44) for particulate control, exhausting to stack S44.
(5) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.

Phase II
(1) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of 114 tons per hour using one (1) baghouse (C44) for particulate control, exhausting to stack S44;
(2) One (1) ladle filling and iron transport operation with a maximum capacity of 188 tons of iron per hour, and a ladle cleaning operation with an average usage of 13 pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;
(3) Raw material handling including iron handling at a maximum rate of 188 tons per hour, alloys handling at a maximum rate of 1.5 tons per hour, coke handling at a maximum rate of 15 tons per hour, and limestone handling at a maximum rate of 4.5 tons per hour; and
(4) One (1) ladle preheating operation, identified as P53B, with a maximum heat input

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.5.1 PSD BACT for Particulate Matter [326 IAC 2-2-3(a)(3)] [326 IAC 6-3-2]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, PSD/SSM 123-29490-00019 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the following conditions shall apply:

(a) the particulate matter emissions from the baghouse C44 controlling the charge makeup operations, the molten iron handling operations, and the ladle cleaning operations shall not exceed 0.005 gr/dscf and 6.86 pounds per hour;

(b) the particulate matter emissions from the ladle preheating operation identified as P53 shall not exceed 0.16 pound per hour;

(c) visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity;

(d) visible emissions from any building opening shall not exceed three percent (3%) opacity.

(e) the PM emissions from the desulfurization operation identified as P34 shall not

exceed 0.64 pounds per hour.

D.5.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

(a) Pursuant to CP-123-8451-00019 issued on February 4, 1998, and 326 IAC 2-2-3(a)(3), the lead (Pb) emissions from the charge makeup operations, the molten iron handling operations, and the ladle cleaning operations shall not exceed 0.00004 pound per hour.

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for lead (Pb) for the P34-Desulfurization exhausting through stack S44.

The lead emissions from the P34-Desulfurization shall be controlled by a fabric filter baghouse and the lead emissions shall not exceed 1,000 ppm and 0.00064 pounds per hour.

D.5.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

(a) Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the beryllium emissions from the charge makeup operation P32 shall not exceed 0.0000026 pounds per hour.

(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for beryllium (Be) for the P34-Desulfurization, exhausting through stack S44.

The beryllium emissions from the P34-Desulfurization shall be controlled by a fabric filter baghouse and the beryllium emissions shall not exceed 20 ppm and 0.00001 pounds per hour.

D.5.4 PSD BACT for VOC [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, 326 IAC 8-1-6 (BACT), and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the VOC emissions from the ladle preheating station P53 shall not exceed 0.06621 pound per hour.

D.5.5 CO Emissions [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the CO emissions from the ladle preheating station P53 shall not exceed 0.40 pounds per hour.

D.5.6 PSD BACT for NOx [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the NOx emissions from the ladle preheating station P53 shall not exceed 1.61 pounds per hour.

D.5.7 PSD BACT for $SO_2$ [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-4593-00019, issued on January 19, 1996 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the SO2 emissions from the ladle preheating station P53 shall not exceed 0.00685 pounds per hour.

D.5.8 Operating Conditions [326 IAC 2-2-3(a)(3)]

Pursuant to CP-123-8451-00019, issued on February 4, 1998 and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the following limitations shall apply to the Phase II operations:

(a) the ladle filling and iron transport station shall be limited to a maximum capacity of 150 tons of iron per hour;

(b) the ladle cleaning station shall be limited to a maximum usage of 13.2 burn bars per hour;

(c) the raw material handling operations shall be limited to a maximum rate of 150 tons per hour for the iron handling, a maximum rate of 1.5 tons per hour for the alloys handling, a maximum rate of 15 tons per hour for the coke handling, and a maximum rate of 4.5 tons per hour for the limestone handling; and

(d) the enclosed cupola charge make-up and handling unit shall be limited to a maximum charge of 91.2 tons per hour.

D.5.9 Prevention of Significant Deterioration (PSD) Minor Limits [326 IAC 2-2]

Pursuant to PSD/Significant Source Modification No. 123-29490-00019, the Permittee shall comply with the following:

(a) PM10 emissions from the P34 - Desulfurization Ladle shall not exceed 0.64 pounds per hour.

Compliance with these limits will ensure that the PM10 emissions from the proposed modification (P34 - Desulfurization Ladle ) is less than 15 tons per twelve Consecutive month period, and render the requirements of 326 IAC 2-2 (PSD) not applicable to this modification.

D.5.10 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements**

D.5.11 Particulate Matter (PM/PM-10) [326 IAC 2-7-6(6)]

(a) Pursuant to CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2 (Prevention of Significant Deterioration (PSD) Rules), the PM, lead, and beryllium emissions from the charge make-up operation, identified as P32 shall be controlled by baghouse C44 at all times when the process is in operation.

(b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.5.12 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]

In order to demonstrate compliance with Conditions D.5.1(e), D.5.2(b), D.5.3(b) and D.5.9(a), within sixty (60) days of reaching maximum capacity but no later than one

hundred and eighty (180) days after initial startup, the Permittee shall conduct PM, PM10, lead and beryllium stack testing on P34 exhuasting to stack S44 utilizing methods as approved by the commissioner. This test shall be repeated at least once every five years from the date of the most recent valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition**.**

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**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.5.13 Visible Emission Notations

(a) Visible emission notations of the baghouse C44 stack exhaust shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

D.5.14 Baghouse Parametric Monitoring

The Permittee shall record the pressure drop across the baghouse C44 used in conjunction with the charge makeup operation, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.5.15 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B -

Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

**Record keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.5.16 Record keeping Requirement

(a) To document compliance with Conditions D.5.13 the Permittee shall maintain records of visible emission notations of the baghouse stack exhaust once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(b) To document compliance with Conditions D.5.14 the Permittee shall maintain records of the pressure drop across each baghouse once per day. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of pressure drop reading (e.g. the process did not operate that day).

(c) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

## SECTION D.6 EMISSIONS UNIT OPERATION CONDITIONS

**Emission Unit Description:**

Core Room Expansion I

(a) One (1) phenolic-urethane core sand handling system, identified as P46, constructed in 2005 and modified in 2008, with a maximum production capacity of 51 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse, identified as C18, and exhausting inside the building;

(b) One (1) phenolic-urethane core making process, identified as P47, to begin construction in 2005, consisting of 3 mixers and 3 core machines, each with a maximum capacity of 15 tons per hour. DMIPA catalyst emissions are controlled by one (1) packed bed scrubber, identified as C17. The gases are then exhausted to Stack S17;

(c) Three (3) natural gas-fired core drying ovens and natural gas-fired air make-up units, identified as P48, to begin construction in 2005, with the core drying ovens having a combined maximum heat input capacity of 9.0 MMBtu per hour and the air make-up units having a combined maximum heat input capacity of 3.2 MMBtu per hour, exhausting inside the building.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.6.1 PSD Minor Limit [326 IAC 2-2]

The PM and PM10 emissions from the core sand handling process and the core drying ovens shall be limited to less than 5.7 lbs/hr and 3.4 lbs/hr, respectively.

Compliance with these limits will limit the PM and PM10 emissions from the core sand handling and the core drying ovens to less than 25 and 15 tons per year, respectively and render the requirements of 326 IAC 2-2 (PSD) not applicable to these emission units.

D.6.2 VOC Emission Limitations [326 IAC 8-1-6][326 IAC 2-2]

Pursuant to 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) the Best Available Control Technology (BACT) for the phenolic-urethane core making process, identified as P47, is as follows:

(a) A packed bed scrubber system with a minimum DMIPA (a VOC) overall control efficiency of 98% shall be used to control DMIPA (a VOC) emissions from the three (3) core machines.

(b) The non-DMIPA volatile organic compound (VOC) emissions from the three (3) phenolic-urethane core machines, identified as P47, shall not exceed 0.01 pound per pound of binder used.

(c) The non-DMIPA volatile organic compound (VOC) emissions from the three (3) mixers, identified as P47, shall not exceed 0.002 pound per pound of binder used.

(d) The amount of binder used in all three (3) mixers, identified as P47, combined shall not exceed 5,910,000 pounds per 12 consecutive month period, with

compliance determined at the end of each month.

(e) The amount of cores produced by all three (3) core machines, identified as P47, combined shall not exceed 197,000 tons per 12 consecutive month period, with compliance determined at the end of each month.

(f) The total DMIPA (a VOC) emissions from the mixers and core machines identified as P47 shall not exceed 0.04 pound per ton of cores.

(g) The scrubber controlling the DMIPA emissions from the core machines identified as P47 shall have a 100% capture of the DMIPA emissions. The scrubber shall achieve at least 98% overall control efficiency of the DMIPA.

(h) The Permittee shall use only low VOC content resins in the core making process.

Compliance with the above limits will also limit emissions of VOC to less than the PSD significant level of 40 tons per year so that the installation of units P46, P47, and P48 is not subject to 326 IAC 2-2 (PSD).

D.6.3 Particulate Emission Limitations for Manufacturing Processes [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the core sand handling system (P46) shall not exceed 44.8 pounds per hour when operating at a process weight rate of 51 tons per hour. The pounds per hour limitation was calculated using the following equation:

Interpolation and extrapolation of the data for the process weight rate in excess of 60,000 pounds per hour shall be accomplished by use of the equation:

$E = 55.0\ P^{0.11} - 40$ where E = rate of emission in pounds per hour; and
P = process weight rate in tons per hour

D.6.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan (PMP) is required for the core sand handling process and the phenolic-urethane core making process and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.

**Compliance Determination Requirements [326 IAC 2-7-6(1)][326 IAC 2-7-5(1)]**

D.6.5 Particulate Control [326 IAC 2-7-6(6)]

(a) In order to comply with conditions D.6.1 and D.6.3, the baghouse C18 for particulate control shall be in operation and control emissions from the core sand handling system (P46) at all times that the core sand handling system (P46) is in operation.

(b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

D.6.6 VOC Control

In order to comply with condition D.6.2, the packed bed scrubber C17 for DMIPA emissions control shall be in operation at control DMIPA emissions from the core machines identified as P47 at all times that any of the core machines is in operation.

D.6.7 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

In order to determine compliance with Condition D.6.2(g), the Permittee shall perform DMIPA testing by November 2014 on the scrubber controlling the core machines identified as P47 utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.6.8 Packed Bed Scrubber Parametric Monitoring

(a) The Permittee shall monitor and record the pH of the scrubber solution and the pressure drop across the scrubber, identified as C17 at least once per day. When for any one reading, the pressure drop across the scrubber is outside the normal range of 0.5 to 5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. When for any one reading, the pH level of the scrubbing liquid exceeds the normal maximum of 4.5 or a maximum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) The Permittee shall monitor the flow rate of the scrubbing liquid daily. When for any one reading, the flow rate is below the normal minimum of 254 gallons per minute or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) The instruments used for determining the pressure, flow rate, and pH level shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.6.9 Packed Bed Scrubber Failure Detection

(a) For a scrubber controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a scrubber controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the

event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

D.6.10 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouse used in conjunction with the core sand handling system (P46), at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.6.11 Broken or Failed Bag Detection

(a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

(b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

**Record keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.6.12 Record Keeping Requirements

(a) To document compliance with Condition D.6.2(d), the Permittee shall maintain records of the binder usage in the three core mixers associated with the core making process identified as P47 each month.

(b) To document compliance with Condition D.6.2(e), the Permittee shall maintain records of the core production from the three core machines associated with the core making process identified as P47 each month.

(c) To document compliance with Condition D.6.8(a), the Permittee shall maintain records of the pressure drop and pH readings of the scrubber once per day. The Permittee shall include in its daily record when a reading is not taken and the reason for the lack of reading (e.g. the process did not operate that day).

(d) To document compliance with Condition D.6.8(b), the Permittee shall maintain records of the flow rate of the scrubber. The Permittee shall include in its daily record when a reading is not taken and the reason for the lack of reading (e.g. the process did not operate that day).

(e) To document compliance with Condition D.6.10, the Permittee shall maintain records of the pressure drop across the baghouse once per day. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of pressure drop reading (e.g. the process did not operate that day).

(f) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

D.6.13 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.6.2(d) and D.6.2(e) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

## SECTION D.7 EMISSIONS UNIT OPERATION CONDITIONS

**Emission Unit Description**

(a) Two (2) paint booths, one identified as P26A constructed in 2007 and modified in 2008, and one identified as P26B, approved for construction in 2008, used to coat metal castings for rust protection, using spray guns with a combined maximum capacity of sixteen (16) gallons per hour, using overspray filters for PM control, exhausting to stacks S26A and S26B, respectively

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.7.1 PSD Minor Limit (PSD) [326 IAC 2-2] Volatile Organic Compound (VOC) [326 IAC 8-1-6]

(a) The VOC emissions from the paint booths P26A and P26B shall not exceed 1.4 pounds of VOC per gallon of paint used.

(b) The paint input to booths P26A and P26B shall not exceed 25,000 gallons of paint per twelve (12) consecutive month period.

Compliance with the above limits in addition to the limits in Condition D.4.2 (h) and (j) shall limit the VOC emissions for this modification to less than 40 tons per year and render the requirements of 326 IAC 2-2 not applicable. Compliance with this limit will also render the requirements of 326 IAC 8-1-6 not applicable to the paint booths.

D.7.2 Volatile Organic Compound (VOC) [326 IAC 8-2-9]

(a) Pursuant to 326 IAC 8-2-9, the Permittee shall not allow the discharge into the atmosphere VOC in excess of three (3.5) pounds of VOC per gallon of coating, excluding water, as delivered to the applicator.

(b) Pursuant to 326 IAC 8-2-9(f), all solvents sprayed from the application equipment of paint booth P26 during cleanup or color changes shall be directed into containers. Said containers shall be closed as soon as the solvent spraying is complete. In addition, all waste solvent shall be disposed of in such a manner that minimizes evaporation.

D.7.3 Particulate [326 IAC 6-3-2(d)]

Pursuant to 326 IAC 6-3-2(d), particulate from paint booths P26A and P26B shall be controlled by a dry particulate filter, and the Permittee shall operate the control device in accordance with manufacturer's specifications.

**Compliance Determination Requirements**

D.7.4 Volatile Organic Compounds

Compliance with the VOC limitations contained in Condition D.1.7 shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by preparing or obtaining from the manufacturer the copies of the "as supplied" and "as applied" VOC data sheets. IDEM, OAQ, reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.7.5 Particulate Monitoring

(a) Daily inspections shall be performed to verify the placement, integrity and particle loading of the filters. To monitor the performance of the dry filters, weekly observations shall be made of the overspray from the surface coating booth stacks S26A and S26B while the booth is operation. If a condition exists which should result in a response step, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) Monthly inspections shall be performed of the coating emissions from the stack and the presence of overspray on the rooftops and nearby ground. When there is a noticeable change in overspray emissions, or when evidence of overspray emissions is observed, the Permittee shall take reasonable response steps in accordance with Section C - Response to Excursion or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.7.6 Record Keeping Requirements

(a) To document compliance with Conditions 7.1 and 7.2, the Permittee shall maintain records of the VOC content of each coating material and solvent used. Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used.

(b) To document compliance with Condition 7.1, the Permittee shall maintain a record of the amount of paint used per twelve consecutive month period.

(c) To document compliance with Condition D.7.2 and D.7.5, the Permittee shall maintain a log of weekly overspray observations, daily and monthly.

(d) Section C - General Record Keeping Requirements, contains the Permittee's obligation with regard to the records required by this condition.

D.7.7 Reporting Requirements

A quarterly summary of the information to document compliance with Condition D.7.1(b) shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).

## SECTION D.8 EMISSIONS UNIT OPERATION CONDITIONS

**Emission Unit Description: Insignificant Activities**

Degreasing operations that do not exceed 145 gallons per 12 months, except if subject to 326 IAC 20-6.[326 IAC 8-3-2] [326 IAC 8-3-5].

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.8.1 Volatile Organic Compounds (VOC)

Pursuant to 326 IAC 8-3-2 (Cold Cleaner Operations), for cold cleaning operations constructed after January 1, 1980, the Permittee shall:

(a) Equip the cleaner with a cover;

(b) Equip the cleaner with a facility for draining cleaned parts;

(c) Close the degreaser cover whenever parts are not being handled in the cleaner;

(d) Drain cleaned parts for at least fifteen (15) seconds or until dripping ceases;

(e) Provide a permanent, conspicuous label summarizing the operation requirements;

(f) Store waste solvent only in covered containers and not dispose of waste solvent or transfer it to another party, in such a manner that greater than twenty percent (20%) of the waste solvent (by weight) can evaporate into the atmosphere.

D.8.2 Volatile Organic Compounds (VOC)

(a) Pursuant to 326 IAC 8-3-5(a) (Cold Cleaner Degreaser Operation and Control), for cold cleaner degreaser operations without remote solvent reservoirs constructed after July 1, 1990, the Permittee shall ensure that the following control equipment requirements are met:

(1) Equip the degreaser with a cover. The cover must be designed so that it can be easily operated with one (1) hand if:

(A) The solvent volatility is greater than two (2) kiloPascals (fifteen (15) millimeters of mercury or three-tenths (0.3) pounds per square inch) measured at thirty-eight degrees Celsius (38$^{O}$C) (one hundred degrees Fahrenheit (100$^{O}$F));

(B) The solvent is agitated; or

(C) The solvent is heated.

(2) Equip the degreaser with a facility for draining cleaned articles. If the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38$^{O}$C) (one hundred degrees Fahrenheit (100$^{O}$F)), then the drainage facility must be

internal such that articles are enclosed under the cover while draining. The drainage facility may be external for applications where an internal type cannot fit into the cleaning system.

(3) Provide a permanent, conspicuous label which lists the operating requirements outlined in subsection (b).

(4) The solvent spray, if used, must be a solid, fluid stream and shall be applied at a pressure which does not cause excessive splashing.

(5) Equip the degreaser with one (1) of the following control devices if the solvent volatility is greater than four and three-tenths (4.3) kiloPascals (thirty-two (32) millimeters of mercury or six-tenths (0.6) pounds per square inch) measured at thirty-eight degrees Celsius (38$^{O}$C) (one hundred degrees Fahrenheit (100$^{O}$F)), or if the solvent is heated to a temperature greater than forty-eight and nine-tenths degrees Celsius (48.9$^{O}$C) (one hundred twenty degrees Fahrenheit (120$^{O}$F)):

(A) A freeboard that attains a freeboard ratio of seventy-five hundredths (0.75) or greater.

(B) A water cover when solvent is used is insoluble in, and heavier than, water.

(C) Other systems of demonstrated equivalent control such as a refrigerated chiller of carbon adsorption. Such systems shall be submitted to the U.S. EPA as a SIP revision.

(b) Pursuant to 326 IAC 8-3-5(b) (Cold Cleaner Degreaser Operation and Control), for a cold cleaning facility construction of which commenced after July 1, 1990, the Permittee shall ensure that the following operating requirements are met:

(1) Close the cover whenever articles are not being handled in the degreaser.

(2) Drain cleaned articles for at least fifteen (15) seconds or until dripping ceases.

(3) Store waste solvent only in covered containers and prohibit the disposal or transfer of waste solvent in any manner in which greater than twenty percent (20%) of the waste solvent by weight could evaporate.

## SECTION E.1 EMISSIONS UNIT OPERATION CONDITIONS

**Emission Unit Description:**

Under the Iron and Steel Foundry NESHAP (40 CFR 63, Subpart EEEEE), the following emission units are considered as part of an existing affected source.

Phase 1

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of 100 tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(B) One (1) shakeout operation, identified as P02, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2

(A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P07, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P08, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P09, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3

(A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P12, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P13, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P14, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4

(A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P17, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P18, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P19, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(c) Sand handling operations and ancillary operations, each constructed in 1996, consisting of the following:

(1) One (1) return sand handling & screen operation, identified as P21, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(2) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(3) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of 522 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(4) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of 54 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(5) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(6) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of 33 tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(7) One (1) core sand handling operation, identified as P40, with a maximum throughput of 16 tons per hour, using one (1) baghouse (C08) for particulate control, exhausting to stack S08;
(8) One (1) core manufacturing operation, identified as P41, with a maximum throughput of 16 tons per hour, exhausting to stack S11;
(9) One (1) core machine & oven operation, identified as P51, with a maximum heat input capacity of 16.8 MMBtu per hour, combusting natural gas, exhausting to stack S11;
(10) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;
(11) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 80 tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;
(12) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 100 tons per hour; and
(13) One (1) ladle cleaning with burn bars, identified as P86

Phase II
(a) One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of 100 tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(b) Four (4) production lines, each constructed in 1998, consisting of the following:
(1) Line 5
(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;
(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;
(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.
(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;
(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;
(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1)cast cooling operation, identified as P72, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(c) Sand handling operations and ancillary operations, each constructed in 1998, modified in 2010 consisting of the following:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of 660 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of 55 tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of 50 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of 114 tons per hour;

(7) One (1) ladle filling and iron transport operation with a maximum capacity of 188 tons of iron per hour, and a ladle cleaning operation with an average usage of 13.2 pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(8) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of 50 tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

(9) One (1) phenolic-urethane core sand handling system, identified as P42, constructed in 1998 and modified in 2008, with a maximum production capacity of 32 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C08, that exhausts to Stack S08;

(10) One (1) phenolic-urethane core making process, identified as P43, with a maximum production capacity of 20 tons of cores per hour. Volatile organic compound emissions are controlled by one (1) packed bed scrubber (or equivalent), identified as C14. The gases are then exhausted to Stack S14;

(11) One (1) phenolic-urethane core making process, identified as P44, consisting of 2 mixers and 2 core machines, each with a maximum capacity of 3 tons per hour. DMIPA emissions are controlled by one (1) packed bed scrubber, identified as C14. The gases are then exhausted to Stack S14;

(12) Raw material handling including iron handling at a maximum rate of 150 tons per hour, alloys handling at a maximum rate of 1.5 tons per hour, coke handling at a maximum rate of 15 tons per hour, and limestone handling at a maximum rate of 4.5 tons per hour;

(13) Natural gas fired air make-up units equipped with low-NOx burners, identified as P54, with a maximum heat input rate of 80 MMBtu per hour exhausting to Stack S15.

(14) One (1) pattern shop, identified as P50, controlled by a baghouse, exhausting to stack S08.

Core Room Expansion

(a) One (1) phenolic-urethane core sand handling system, identified as P46, constructed in 2005 and modified in 2008, with a maximum production capacity of 51 tons of cores per hour. Particulate matter emissions are controlled by one (1) baghouse, identified as C18, exhausting inside the building;

(b) One (1) phenolic-urethane core making process, identified as P47, to begin construction in 2005, consisting of 3 mixers and 3 core machines, each with a maximum capacity of 15 tons per hour. DMIPA catalyst emissions are controlled by one (1) packed bed m scrubber, identified as C17. The gases are then exhausted to Stack S17.

**National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements [326 IAC 2-7-5(1)]**

E.1.1 General Provisions Relating to NESHAP Subpart EEEEE (National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries [326 IAC 20-1] [40 CFR Part 63, Subpart A]

(a) Pursuant to 40 CFR 63.3901, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1-1 as specified in Table 2 of 40 CFR Part 63, Subpart EEEEE in accordance with schedule in 40 CFR 63 Subpart EEEEE.

(b) Pursuant to 40 CFR 63.10, the Permittee shall submit all required notifications and reports to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

and

United States Environmental Protection Agency, Region V
Air and Radiation Division, Air Enforcement Branch – Indiana (AE-17J)
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

E.1.2 NESHAP Subpart EEEEE Requirements [40 CFR 63, Subpart EEEEE]

Pursuant to 40 CFR 63, Subpart EEEEE, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart EEEEE, beginning April 23, 2007, as follows:

(1) 40 CFR 63.7680
(2) 40 CFR 63.7681
(3) 40 CFR 63.7682 (a)-(c)
(4) 40 CFR 63.7683 (a) (b) and (f)
(5) 40 CFR 63.7690 (a)(2), (a)(8), (b)(1), (b)(3) (5), (7)
(6) 40 CFR 63.7700 (a)-(c), (d)
(7) 40 CFR 63.7710 (a)-(b) (1), (b)(2)(3)-(6)
(8) 40 CFR 63.7720 (a)-(c)
(9) 40 CFR 63.7730 (a)-(b)
(10) 40 CFR 63.7731 (a)-(b)
(11) 40 CFR 63.7732 (a); (b)(1), (b)(3) (2), (c) (1),(2),(3),(d),(e)
(12) 40 CFR 63.7732 (f) and (h)
(13) 40 CFR 63.7733 (a), (f)

(14) 40 CFR 63.7734 (a),(2),(5), (7), (8), (b)(1)
(15) 40 CFR 63.7735 (a),(b)
(16) 40 CFR 63.7736 (a), (b), (c) and (d)
(17) 40 CFR 63.7740 (a), (b) and (e)
(18) 40 CFR 63.7741 (a), (b), (d) and (f)
(19) 40 CFR 63.7742 (a)-(c)
(20) 40 CFR 63.7743(a)(2),(5), (7), (8), (12), (b), (c) and (e)
(21) 40 CFR 63.7744 (a) and (b)
(22) 40 CFR 63.7745 (a) and (b)
(23) 40 CFR 63.7746 (a) and (b)
(24) 40 CFR 63.7747 (a)-(d)
(25) 40 CFR 63.7750 (a),(b),(d), and (e)
(26) 40 CFR 63.7751 (a)-(d)
(27) 40 CFR 63.7752 (a)-(c)
(28) 40 CFR 63.7753 (a)-(c)
(29) 40 CFR 63.7760
(30) 40 CFR 63.7761
(31) 40 CFR 63.7765
(32) Appendix - Table 1 to Subpart EEEEE of Part 63

# OFFICE OF AIR QUALITY
# PART 70 OPERATING PERMIT
# CERTIFICATION

Source Name: ThyssenKrupp Waupaca, Inc Plant 5
Source Address: 9856 State Highway 66, Tell City, Indiana 47586
Part 70 Permit No.: T123-27047-00019

**This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this permit.**

Please check what document is being certified:

☐ Annual Compliance Certification Letter

☐ Test Result (specify)

☐ Report (specify)

☐ Notification (specify)

☐ Affidavit (specify)

☐ Other (specify)

| |
|---|
| I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. |
| Signature: |
| Printed Name: |
| Title/Position: |
| Phone: |
| Date: |

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY

**COMPLIANCE BRANCH**
**100 North Senate Avenue**
**MC 61-53 IGCN 1003**
**Indianapolis, Indiana 46204-2251**
**Phone: (317) 233-0178**
**Fax: (317) 233-6865**

## PART 70 OPERATING PERMIT
## EMERGENCY OCCURRENCE REPORT

Source Name: ThyssenKrupp Waupaca, Inc Plant 5
Source Address: 9856 State Highway 66, Tell City, Indiana 47586
Part 70 Permit No.: T123-27047-00019

**This form consists of 2 pages** **Page 1 of 2**

☐ This is an emergency as defined in 326 IAC 2-7-1(12)

- The Permittee must notify the Office of Air Quality (OAQ), within four (**4**) business hours (1-800-451-6027 or 317-233-0178, ask for Compliance Section); and
- The Permittee must submit notice in writing or by facsimile within two (**2**) working days (Facsimile Number: 317-233-6865), and follow the other requirements of 326 IAC 2-7-16.

If any of the following are not applicable, mark N/A

| |
|---|
| Facility/Equipment/Operation: |
| Control Equipment: |
| Permit Condition or Operation Limitation in Permit: |
| Description of the Emergency: |
| Describe the cause of the Emergency: |

If any of the following are not applicable, mark N/A **Page 2 of 2**

| |
|---|
| Date/Time Emergency started: |
| Date/Time Emergency was corrected: |
| Was the facility being properly operated at the time of the emergency? Y N |
| Type of Pollutants Emitted: TSP, PM-10, $SO_2$, VOC, $NO_X$, CO, Pb, other: |
| Estimated amount of pollutant(s) emitted during emergency: |
| Describe the steps taken to mitigate the problem: |
| Describe the corrective actions/response steps taken: |
| Describe the measures taken to minimize emissions: |
| If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value: |

Form Completed by:_____

Title / Position: _____

Date:_____

Phone: _____

A certification is not required for this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION

## Part 70 Quarterly Report

Source Name: ThyssenKrupp Waupaca, Inc. Plant 5
Source Address: 9856 State Highway 66, Tell City, IN 47586
Part 70 Permit No.: T123-9234-00019
Facility: core mixers identified as P44
Parameter: binder usage
Limit: 390 tons of binder per 12 consecutive month period

YEAR:

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | Binder Usage This Month (tons) | Binder Usage Previous 11 Months (tons) | Binder Usage 12 Month Total (tons) |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by:
Title / Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION

## Part 70 Quarterly Report

Source Name: ThyssenKrupp Waupaca, Inc. Plant 5
Source Address: 9856 State Highway 66, Tell City, IN 47586
Part 70 Permit No.: T123-9234-00019
Facility: two core machines, identified as P44
Parameter: core production
Limit: 26,000 tons of cores per 12 consecutive month period

YEAR:

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | Cores Produced This Month (tons) | Cores Produced Previous 11 Months (tons) | 12 Month Total Cores Produced (tons) |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by:
Title / Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION

## Part 70 Quarterly Report

Source Name: ThyssenKrupp Waupaca, Inc. Plant 5
Source Address: 9856 State Highway 66, Tell City, IN 47586
Part 70 Permit No.: T123-9234-00019
Facility: Three (3) core sand mixers identified as P47
Parameter: binder usage
Limit: The amount of binder used in all three (3) mixers, identified as P47, combined shall not exceed 5,910,000 pounds per 12 consecutive month period, with compliance determined at the end of each month.

YEAR:

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | Binder Usage This Month (pounds) | Binder Usage Previous 11 Months (pounds) | 12 Month Total Binder Usage (pounds) |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

Submitted by:
Title / Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION

## Part 70 Quarterly Report

Source Name: ThyssenKrupp Waupaca, Inc. Plant 5
Source Address: 9856 State Highway 66, Tell City, IN 47586
Part 70 Permit No.: T123-9234-00019
Facility: Three (3) core machines identified as P47
Parameter: core production
Limit: The amount of cores produced by all three (3) core machines, identified as P47, combined shall not exceed 197,000 tons per 12 consecutive month period, with compliance determined at the end of each month.

YEAR:

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | Cores Produced This Month (tons) | Cores Produced Previous 11 Months (tons) | 12 Month Total Cores Produced (tons) |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

Submitted by:
Title / Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION

## Part 70 Quarterly Report

Source Name: ThyssenKrupp Waupaca, Inc. Plant 5
Source Address: 9856 State Highway 66, Tell City, IN 47586
Part 70 Permit No.: T123-9234-00019
Facility: Paint Booths identified as P26A and P26B
Parameter: VOC emissions
Limit: The total paint input from Paint Booths P26A and P26B shall not exceed 25,000 gallons per consecutive 12 month period with compliance determined at the end of each month.

YEAR:

| Month | Column 1 | Column 2 | Column 1 + Column 2 |
|---|---|---|---|
| | Paint Input This Month (gallons) | Paint Input Previous 11 Months (gallons) | 12 Month Total of Paint Input (gallons) |
| Month 1 | | | |
| Month 2 | | | |
| Month 3 | | | |

☐ No deviation occurred in this quarter.

☐ Deviation/s occurred in this quarter.
Deviation has been reported on:

Submitted by:
Title / Position:
Signature:
Date:
Phone:

Attach a signed certification to complete this report.

# INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
# OFFICE OF AIR QUALITY
# COMPLIANCE DATA SECTION
# PART 70 OPERATING PERMIT
# QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT

Source Name: ThyssenKrupp Waupaca, Inc Plant 5
Source Address: 9856 State Highway 66, Tell City, Indiana 47586
Part 70 Permit No.: T123-27047-00019

**Months: _____ to _ Year: _____**

Page 1 of 2

| | |
|---|---|
| This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period". | |
| ☐ NO DEVIATIONS OCCURRED THIS REPORTING PERIOD. | |
| ☐ THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |

| | |
|---|---|
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |
| **Permit Requirement** (specify permit condition #) | |
| **Date of Deviation:** | **Duration of Deviation:** |
| **Number of Deviations:** | |
| **Probable Cause of Deviation:** | |
| **Response Steps Taken:** | |

Form Completed by:_____

Title / Position: _____

Date:_____

Phone: _____

Attach a signed certification to complete this report.

# Attachment A
# ThyssenKrupp Waupaca
# Plant 5
# Fugitive Dust Control Plan
# January 2008

## Facility map layout

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan
January 2008
Page 1 of 2

**Introduction**
The following serves as the Fugitive Dust Control Plan for ThyssenKrupp Waupaca Plant 5, as required by permit conditions and 326 IAC 6-5-1. The plan identifies areas or activities at Plant 5 that have the potential to create fugitive dust. The plan contents include those specified in 326 IAC 6-5-5.

**Source Location**
ThyssenKrupp Waupaca, Inc., Plant 5
9856 State Road 66
Tell City, IN 47586

**Operator**
ThyssenKrupp Waupaca, Inc., Plant 5
9856 State Road 66
Tell City, IN 47586

**Potential Sources/Areas of Fugitive Dust**
West side paved drive
Charge yard area paved drive
Phase I pelletizer building area
Phase II pelletizer building area
Phase I returns conveyor
Phase II returns conveyor
General paved areas
Brown field areas
Phase I commodities handling
Phase II commodities handling
Commodity piles
Laydown areas

**Control Plan**
Attachment A contains the written plan for each identified area. Attachment B contains the map showing the location of each of the areas or processes identified. The plan contains a description of the source, the number of vehicles or quantity of material handled, equipment used, control measures presently used, control measures proposed and the implementation schedule for any proposed control measures.

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan
January 2008
Page 2 of 2

**Performance Assessment**
The performance of each control measure will be evaluated on a bi-monthly basis. The evaluations will be done as part of the housekeeping audit program. The audit results are discussed semi-annual at the Management Review Meeting with department heads. Modifications or adjustments to the Dust Control Plan will be made as necessary, based upon the findings of the performance assessment.

**Records**
All records or documents generated, as part of the Dust Control Program will be kept for a minimum of 3 years. The Environmental Department will maintain the records.

**Statement of Commitment**
ThyssenKrupp Waupaca Plant 5 is committed to preventing the release of fugitive dust to the environment and agrees to provide the necessary resources, manpower and equipment to ensure the implementation and completeness of the above-mentioned Fugitive Dust Control Plan.

_____ _____
Philip J. Brickey, Date
Plant Manager
ThyssenKrupp Waupaca, Inc., Plant 5

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | | |
|---|---|---|
| Source | West Side Paved Drive | Paved Areas Around Charge Yard |
| Source Description | This is a paved drive on the west side of the facility. The drive hosts waste hauling trucks and some traffic going to and from the shipping docks. | This is the paved surface between the building and the charge yard as well the apron approach to the Phase I and Phase II charge yards. |
| Map Identification | Area 1 | Area 2 |
| Quantity of Material or Volume of Traffic | 25 trucks per day | 50 trucks per day |
| Equipment Used to Maintain | Sweeper | Sweeper |
| Present Control | Sweeping schedule | Sweeping schedule |
| Proposed Control | Continue as noted | N/A |
| Control Frequency | Sweeping of paved areas will be done a weekly and as needed basis. | Sweeping will be done a weekly and as needed basis. |
| Implementation Schedule | The paved area is currently in the sweeping schedule. | The area is currently in the sweeping schedule. |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| Source | Phase I Pelletizer Building | Phase II Pelletizer Building |
|---|---|---|
| Source Description | The pelletizer building houses dust conditioning operations. The dust from the phase I production areas and cupola baghouses is transported to the annex for water conditioning with paddle mixers. During periods of excess system sand purging from the sand system there are weather conditions that cause system sand dust to migrate out the immediate door openings. | The pelletizer building houses dust conditioning operations. The dust from the phase II production area baghouses is transported to the annex for water conditioning with a paddle mixer. During periods of excess system sand purging from the sand system there are weather conditions that cause system sand dust to migrate out the immediate door openings. |
| Map Identification | Area 3 | Area 4 |
| Quantity of Material or Volume of Traffic | 150 tons per day | 100 tons per day |
| Equipment Used to Maintain | Sweeper | Sweeper |
| Present Control | Water spray for dust control on wheels<br>Sweep adjacent to building.<br>Follow procedure for the pelletizer operations | Water spray for dust control on wheels<br>Sweep adjacent to building<br>Follow procedure for the pelletizer operations. |
| Proposed Control | Dust suppression application for system sand. | Dust suppression application for system sand. |
| Control Frequency | Sweeping schedule is once a week and as needed | Sweeping schedule is once a week and as needed |
| Implementation Schedule | Dust suppression system installation to be completed by year-end. | Dust suppression system installation to be completed by year-end. |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | | |
|---|---|---|
| Source | Phase I returns conveyor | Phase II returns conveyor |
| Source Description | Returns include gating and risers from the casting operation. The returns are reused in the melt operation and are transported back to the charge yard from the plant. The returns tend to have residual sand adhering to the iron and have the potential to create dust when the returns fall to the ground.<br>The sand also creates the potential for dust in the charging operation and for traffic in the area. | Returns include gating and risers from the casting operation. The returns are reused in the melt operation and are transported back to the charge yard from the plant. The returns tend to have residual sand adhering to the iron and have the potential to create dust when the returns fall to the ground.<br>The sand also creates the potential for dust in the charging operation and for traffic in the area. |
| Map Identification | Area 5 | Area 6 |
| Quantity of Material or Volume of Traffic | 300 - 400 tons per day | 300 - 400 tons per day |
| Equipment Used to Maintain | Baghouse, Sweeper | Baghouse, Sweeper |
| Present Control | Baghouse, Sweeper | Baghouse, Sweeper |
| Proposed Control | Continuous cleaning drum to mechanically remove excess sand before the gating leaves the plant**.**<br>Baghouse connection to Stack 10, Sweeping and cleaning of spillage between melt and building | Continuous cleaning drum to mechanically remove excess sand before the gating leaves the plant**.**<br>Baghouse connection to Stack 10, Sweeping and cleaning of spillage between melt and building |
| Control frequency | Dust collection is on-line continuous<br>Sweeping schedule is once a week and as needed | Dust collection is on-line continuous<br>Sweeping schedule is once a week and as needed |
| Implementation Schedule | Complete | Complete |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | | |
|---|---|---|
| Source | General Paved Areas | Brown Space |
| Source Description | Existing paved roads around the facility. | There are certain areas around the property that are bare soil. These areas do not maintain any traffic or other activities. There is a potential for dust during dry and windy periods. |
| Map Identification | Area 7 | Area 8A – Area by truck scales<br>Area 8B – Area by natural gas incoming |
| Quantity of Material or Volume of Traffic | 100 trucks per day | Not Applicable |
| Equipment Used to Maintain | Sweeper | Not Applicable |
| Present Control | Sweeper service | Vegetated |
| Proposed Control | This appears to be effective. | Maintain a lawn or other vegetation |
| Control Frequency | Sweep weekly or as needed. | Permanent. |
| Implementation Schedule | Complete and on-going | Complete |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | | |
|---|---|---|
| Source | Phase I Commodities | Phase II Commodities |
| Source Description | Bulk commodities used in the cupola melting operation include coke, limestone, silicon carbide, and other alloys. The commodities are delivered to a pit area via rail or truck where they are unloaded to a bin feed system which conveys the material to its respective holding bin adjacent to the charge yard. From the holding bins it is fed into the charge bucket situated in a tunnel below through a series of vibratory conveyors. | Bulk commodities used in the cupola melting operation include coke, limestone, silicon carbide, and other alloys. The commodities are delivered to a pit area via rail or truck where they are unloaded to a bin feed system which conveys the material to its respective holding bin adjacent to the charge yard. From the holding bins it is fed into the charge bucket situated in a tunnel below through a series of vibratory conveyors. |
| Map Identification | Area 9 | Area 10 |
| Quantity of Material or Volume of Traffic | 200 -300 tons per day | 200 -300 tons per day |
| Equipment Used to Maintain | None | None |
| Present Control | None | None |
| Proposed Control | Further evaluation and testing for need, control options will be reviewed. Performance of the system sand dust suppression application will be measured for feasibility for this project also. | Further evaluation and testing for need, control options will be reviewed. Performance of the system sand dust suppression application will be measured for feasibility for this project also. |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | | |
|---|---|---|
| Source | Excess Commodity Piles | |
| Source Description | The excess commodity piles are located to the east of the charge yard. The piles consist of coke, limestone, coke fines and other alloys that are used as back up or for start-up of either the Phase I or II cupola. | |
| Map Identification | Area 11 | |
| Quantity of Material or Volume of Traffic | 60 tons per pile | |
| Equipment Used to Maintain | Front end loader | |
| Present Control | Sweeping and housekeeping activities | |
| Control Frequency | Sweep weekly or as needed. | Permanent. |
| Implementation Schedule | Complete and on-going | Complete |

ThyssenKrupp Waupaca Plant 5
Fugitive Dust Control Plan

| | |
|---|---|
| Source | Laydown yards |
| Source Description | The laydown yards are areas located on the facility that are paved. They receive minimal traffic from forktrucks and some heavy trucks staging trailers. |
| Map Identification | Area 12A – located on west side<br>Area 12B – located on north end |
| Quantity of Material or Volume of Traffic | 20 trucks per day |
| Equipment Used to Maintain | Sweeper |
| Present Control | Sweep as necessary |
| Proposed Control | N/A |
| Control Frequency | Sweep as necessary |
| Implementation Schedule | N/A |

# Attachment A
# to a Part 70 Operating Permit Renewal

## 40 CFR 63, Subpart EEEEE—National Emission Standards for Hazardous Air Pollutants for Iron and Steel Foundries

| | |
|---|---|
| **Source Name:** | ThyssenKrupp Waupaca, Inc. Plant 5 |
| **Source Location:** | 9856 State Highway 66, Tell City, Indiana 47586 |
| **County:** | Perry |
| **SIC Code:** | 3321 |
| **Significant Permit Modification:** | 123-29497-00019 |
| **Permit Reviewer:** | Josiah Balogun |

**Source:** 69 FR 21923, Apr. 22, 2004, unless otherwise noted.

**What this Subpart Covers**

**§ 63.7680 What is the purpose of this subpart?**

This subpart establishes national emission standards for hazardous air pollutants (NESHAP) for iron and steel foundries. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emissions limitations, work practice standards, and operation and maintenance requirements in this subpart.

**§ 63.7681 Am I subject to this subpart?**

You are subject to this subpart if you own or operate an iron and steel foundry that is (or is part of) a major source of hazardous air pollutant (HAP) emissions. Your iron and steel foundry is a major source of HAP for purposes of this subpart if it emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year or if it is located at a facility that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year as defined in §63.2.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7218, February 7, 2008]

**§ 63.7682 What parts of my foundry does this subpart cover?**

(a) The affected source is each new or existing iron and steel foundry.

(b) This subpart covers emissions from metal melting furnaces, scrap preheaters, pouring areas, pouring stations, automated conveyor and pallet cooling lines, automated shakeout lines, and mold and core making lines. This subpart also covers fugitive emissions from foundry operations.

(c) An affected source is existing if you commenced construction or reconstruction of the affected source before December 23, 2002.

(d) An affected source is new if you commenced construction or reconstruction of the affected source on or after December 23, 2002. An affected source is reconstructed if it meets the definition of “reconstruction” in §63.2.

**§ 63.7683 When do I have to comply with this subpart?**

(a) Except as specified in paragraph (b) of this section, if you have an existing affected source, you must comply with each emissions limitation, work practice standard, and operation and maintenance requirement in this subpart that applies to you no later than April 23, 2007. Major source status for existing affected sources must be determined no later than April 23, 2007.

(b) If you have an existing affected source, you must comply with the work practice standards in §63.7700(b) or (c), as applicable, no later than April 22, 2005.

(c) If you have a new affected source for which the initial startup date is on or before April 22, 2004, you must comply with each emissions limitation, work practice standard, and operation and maintenance requirement in this subpart that applies to you by April 22, 2004.

(d) If you have a new affected source for which the initial startup date is after April 22, 2004, you must comply with each emissions limitation, work practice standard, and operation and maintenance requirement in this subpart that applies to you upon initial startup.

(e) If your iron and steel foundry is an area source that becomes a major source of HAP, you must meet the requirements of §63.6(c)(5).

(f) You must meet the notification and schedule requirements in §63.7750. Note that several of these notifications must be submitted before the compliance date for your affected source.

**Emissions Limitations**

**§ 63.7690 What emissions limitations must I meet?**

(a) You must meet the emissions limits or standards in paragraphs (a)(1) through (11) of this section that apply to you. When alternative emissions limitations are provided for a given emissions source, you are not restricted in the selection of which applicable alternative emissions limitation is used to demonstrate compliance.

(1) For each electric arc metal melting furnace, electric induction metal melting furnace, or scrap preheater at an existing iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for particulate matter (PM) in paragraph (a)(1)(i) of this section or, alternatively the limit for total metal HAP in paragraph (a)(1)(ii) of this section:

(i) 0.005 grains of PM per dry standard cubic foot (gr/dscf), or

(ii) 0.0004 gr/dscf of total metal HAP.

(2) For each cupola metal melting furnace at an existing iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for PM in paragraph (a)(2)(i) or (ii) of this section or, alternatively the limit for total metal HAP in paragraph (a)(2)(iii) or (iv) of this section:

(i) 0.006 gr/dscf of PM; or

(ii) 0.10 pound of PM per ton (lb/ton) of metal charged, or

(iii) 0.0005 gr/dscf of total metal HAP; or

(iv) 0.008 pound of total metal HAP per ton (lb/ton) of metal charged.

(3) For each cupola metal melting furnace or electric arc metal melting furnace at a new iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for PM in paragraph (a)(3)(i) of this section or, alternatively the limit for total metal HAP in paragraph (a)(3)(ii) of this section:

(i) 0.002 gr/dscf of PM, or

(ii) 0.0002 gr/dscf of total metal HAP.

(4) For each electric induction metal melting furnace or scrap preheater at a new iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for PM in paragraph (a)(4)(i) of this section or, alternatively the limit for total metal HAP in paragraph (a)(4)(ii) of this section:

(i) 0.001 gr/dscf of PM, or

(ii) 0.00008 gr/dscf of total metal HAP.

(5) For each pouring station at an existing iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for PM in paragraph (a)(5)(i) of this section or, alternatively the limit for total metal HAP in paragraph (a)(5)(ii) of this section:

(i) 0.010 gr/dscf of PM, or

(ii) 0.0008 gr/dscf of total metal HAP.

(6) For each pouring area or pouring station at a new iron and steel foundry, you must not discharge emissions through a conveyance to the atmosphere that exceed either the limit for PM in paragraph (a)(6)(i) of this section or, alternatively the limit for total metal HAP in paragraph (a)(6)(ii) of this section:

(i) 0.002 gr/dscf of PM, or

(ii) 0.0002 gr/dscf of total metal HAP.

(7) For each building or structure housing any iron and steel foundry emissions source at the iron and steel foundry, you must not discharge any fugitive emissions to the atmosphere from foundry operations that exhibit opacity greater than 20 percent (6-minute average), except for one 6-minute average per hour that does not exceed 27 percent opacity.

(8) For each cupola metal melting furnace at a new or existing iron and steel foundry, you must not discharge emissions of volatile organic hazardous air pollutants (VOHAP) through a conveyance to the atmosphere that exceed 20 parts per million by volume (ppmv) corrected to 10 percent oxygen.

(9) As an alternative to the work practice standard in §63.7700(e) for a scrap preheater at an existing iron and steel foundry or in §63.7700(f) for a scrap preheater at a new iron and steel foundry, you must not discharge emissions of VOHAP through a conveyance to the atmosphere that exceed 20 ppmv.

(10) For one or more automated conveyor and pallet cooling lines that use a sand mold system or automated shakeout lines that use a sand mold system at a new iron and steel foundry, you must not discharge emissions of VOHAP through a conveyance to the atmosphere that exceed a flow-weighted average of 20 ppmv.

(11) For each triethylamine (TEA) cold box mold or core making line at a new or existing iron and steel foundry, you must meet either the emissions limit in paragraph (a)(11)(i) of this section or, alternatively the emissions standard in paragraph (a)(11)(ii) of this section:

(i) You must not discharge emissions of TEA through a conveyance to the atmosphere that exceed 1 ppmv, as determined according to theperformance test procedures in § 63.7732(g); or

(ii) You must reduce emissions of TEA from each TEA cold box mold or core making line by at least 99 percent, as determined according to the performance test procedures in § 63.7732(g).

(b) You must meet each operating limit in paragraphs (b)(1) through (5) of this section that applies to you.

(1) You must install, operate, and maintain a capture and collection system for all emissions sources subject to an emissions limit for VOHAP or TEA in paragraphs (a)(8) through (11) of this section.

(i) Each capture and collection system must meet accepted engineering standards, such as those published by the American Conference of Governmental Industrial Hygienists.

(ii) You must operate each capture system at or above the lowest value or settings established as operating limits in your operation and maintenance plan.

(2) You must operate each wet scrubber applied to emissions from a metal melting furnace, scrap preheater, pouring area, or pouring station subject to an emissions limit for PM or total metal HAP in paragraphs (a)(1) through (6) of this section such that the 3-hour average pressure drop and scrubber water flow rate does not fall below the minimum levels established during the initial or subsequent performance test.

(3) You must operate each combustion device applied to emissions from a cupola metal melting furnace subject to the emissions limit for VOHAP in paragraph (a)(8) of this section, such that the 15-minute average combustion zone temperature does not fall below 1,300 degrees Fahrenheit ( °F). Periods when the cupola is off blast and for 15 minutes after going on blast from an off blast condition are not included in the 15-minute average.

(4) You must operate each combustion device applied to emissions from a scrap preheater subject to the emissions limit for VOHAP in paragraph (a)(9) of this section or from a TEA cold box mold or core making line subject to the emissions limit for TEA in paragraph (a)(11) of this section, such that the 3-hour average combustion zone temperature does not fall below the minimum level established during the initial or subsequent performance test.

(5) You must operate each wet acid scrubber applied to emissions from a TEA cold box mold or core making line subject to the emissions limit for TEA in paragraph (a)(11) of this section such that:

(i) The 3-hour average scrubbing liquid flow rate does not fall below the minimum level established during the initial or subsequent performance test; and

(ii) The 3-hour average pH of the scrubber blowdown, as measured by a continuous parameter monitoring system (CPMS), does not exceed 4.5 or the pH of the scrubber blowdown, as measured once every 8 hours during process operations, does not exceed 4.5.

(c) If you use a control device other than a baghouse, wet scrubber, wet acid scrubber, or combustion device, you must prepare and submit a monitoring plan containing the information listed in paragraphs (c)(1) through (5) of this section. The monitoring plan is subject to approval by the Administrator.

(1) A description of the device;

(2) Test results collected in accordance with §63.7732 verifying the performance of the device for reducing emissions of PM, total metal HAP, VOHAP, or TEA to the levels required by this subpart;

(3) A copy of the operation and maintenance plan required by §63.7710(b);

(4) A list of appropriate operating parameters that will be monitored to maintain continuous compliance with the applicable emissions limitation(s); and

(5) Operating parameter limits based on monitoring data collected during the performance test.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7218, February 7, 2008]

**Work Practice Standards**

**§ 63.7700 What work practice standards must I meet?**

(a) For each segregated scrap storage area, bin or pile, you must either comply with the certification requirements in paragraph (b) of this section, or prepare and implement a plan for the selection and inspection of scrap according to the requirements in paragraph (c) of this section. You may have certain scrap subject to paragraph (b) of this section and other scrap subject to paragraph (c) of this section at your facility provided the scrap remains segregated until charge make-up.

(b) You must prepare and operate at all times according to a written certification that the foundry purchases and uses only metal ingots, pig iron, slitter, or other materials that do not include post-consumer automotive body scrap, post-consumer engine blocks, post-consumer oil filters, oily turnings, lead components, mercury switches, plastics, or free organic liquids. For the purpose of this paragraph (b), “free organic liquids” is defined as material that fails the paint filter test by EPA Method 9095A, “Paint Filter Liquids Test” (Revision 1, December 1996), as published in EPA Publication SW–846 “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (incorporated by reference—see §63.14). Any post-consumer engine blocks, post-consumer oil filters, or oily turnings that are processed and/or cleaned to the extent practicable such that the materials do not include lead components, mercury switches, chlorinated plastics, or free organic liquids can be included in this certification.

(c) You must prepare and operate at all times according to a written plan for the selection and inspection of iron and steel scrap to minimize, to the extent practicable, the amount of organics and HAP metals in the charge materials used by the iron and steel foundry. This scrap selection and inspection plan is subject to approval by the Administrator. You must keep a copy of the plan onsite and readily available to all plant personnel with materials acquisition or inspection duties. You must provide a copy of the material specifications to each of your scrap vendors. Each plan must include the information specified in paragraphs (c)(1) through (3) of this section.

(1) A materials acquisition program to limit organic contaminants according to the requirements in paragraph (c)(1)(i) or (ii) of this section, as applicable.

(i) For scrap charged to a scrap preheater, electric arc metal melting furnace, or electric induction metal melting furnace, specifications for scrap materials to be depleted (to the extent practicable) of the presence of used oil filters, chlorinated plastic parts, organic liquids, and a program to ensure the scrap materials are drained of free liquids; or

(ii) For scrap charged to a cupola metal melting furnace, specifications for scrap materials to be depleted (to the extent practicable) of the presence of chlorinated plastic, and a program to ensure the scrap materials are drained of free liquids.

(2) A materials acquisition program specifying that the scrap supplier remove accessible mercury switches from the trunks and hoods of any automotive bodies contained in the scrap and remove accessible lead components such as batteries and wheel weights. You must either obtain and maintain onsite a copy of the procedures used by the scrap supplier for either removing accessible mercury switches or for purchasing automobile bodies that have had mercury switches removed, as applicable, or document your attempts to obtain a copy of these procedures from the scrap suppliers servicing your area.

(3) Procedures for visual inspection of a representative portion, but not less than 10 percent, of all incoming scrap shipments to ensure the materials meet the specifications.

(i) The inspection procedures must identify the location(s) where inspections are to be performed for each type of shipment. Inspections may be performed at the scrap supplier's facility. The selected location(s) must provide a reasonable vantage point, considering worker safety, for visual inspection.

(ii) The inspection procedures must include recordkeeping requirements that document each visual inspection and the results.

(iii) The inspection procedures must include provisions for rejecting or returning entire or partial scrap shipments that do not meet specifications and limiting purchases from vendors whose shipments fail to meet specifications for more than three inspections in one calendar year.

(iv) If the inspections are performed at the scrap supplier's facility, the inspection procedures must include an explanation of how the periodic inspections ensure that not less than 10 percent of scrap purchased from each supplier is subject to inspection.

(d) For each furan warm box mold or core making line in a new or existing iron and steel foundry, you must use a binder chemical formulation that does not contain methanol as a specific ingredient of the catalyst formulation as determined by the Material Safety Data Sheet. This requirement does not apply to the resin portion of the binder system.

(e) For each scrap preheater at an existing iron and steel foundry, you must meet either the requirement in paragraph (e)(1) or (2) of this section. As an alternative to the requirement in paragraph (e)(1) or (2) of this section, you must meet the VOHAP emissions limit in §63.7690(a)(9).

(1) You must operate and maintain a gas-fired preheater where the flame directly contacts the scrap charged; or

(2) You must charge only material that is subject to and in compliance with the scrap certification requirement in paragraph (b) of this section.

(f) For each scrap preheater at a new iron and steel foundry, you must charge only material that is subject to and in compliance with the scrap certification requirement in paragraph (b) of this section. As an alternative to this requirement, you must meet the VOHAP emissions limit in §63.7690(a)(9).

[69 FR 21923, Apr. 22, 2004, as amended at 70 FR 29404, May 20, 2005; 73 FR 7218, February 7, 2008]

**Operation and Maintenance Requirements**

**§ 63.7710 What are my operation and maintenance requirements?**

(a) As required by §63.6(e)(1)(i), you must always operate and maintain your iron and steel foundry, including air pollution control and monitoring equipment, in a manner consistent with good air pollution control practices for minimizing emissions at least to the levels required by this subpart.

(b) You must prepare and operate at all times according to a written operation and maintenance plan for each capture and collection system and control device for an emissions source subject to a PM, metal HAP, TEA, or VOHAP emissions limit in §63.7690(a). Your operation and maintenance plan also must include procedures for igniting gases from mold vents in pouring areas and pouring stations that use a sand mold system. This operation and maintenance plan is subject to approval by the Administrator. Each plan must contain the elements described in paragraphs (b)(1) through (6) of this section.

(1) Monthly inspections of the equipment that is important to the performance of the total capture system ( i.e., pressure sensors, dampers, and damper switches). This inspection must include observations of the physical appearance of the equipment ( e.g., presence of holes in the ductwork or hoods, flow constrictions caused by dents or accumulated dust in the ductwork, and fan erosion). The operation and maintenance plan must also include requirements to repair the defect or deficiency as soon as practicable.

(2) Operating limits for each capture system for an emissions source subject to an emissions limit or standard for VOHAP or TEA in §63.7690(a)(8) through (11). You must establish the operating according to the requirements in paragraphs (b)(2)(i) through (iii) of this section.

(i) Select operating limit parameters appropriate for the capture system design that are representative and reliable indicators of the performance of the capture system. At a minimum, you must use appropriate operating limit parameters that indicate the level of the ventilation draft and damper position settings for the capture system when operating to collect emissions, including revised settings for seasonal variations. Appropriate operating limit parameters for ventilation draft include, but are not limited to: volumetric flow rate through each separately ducted hood, total volumetric flow rate at the inlet to the control device to which the capture system is vented, fan motor amperage, or static pressure. Any parameter for damper position setting may be used that indicates the duct damper position related to the fully open setting.

(ii) For each operating limit parameter selected in paragraph (b)(2)(i) of this section, designate the value or setting for the parameter at which the capture system operates during the process operation. If your operation allows for more than one process to be operating simultaneously, designate the value or setting for the parameter at which the capture system operates during each possible configuration that you may operate ( i.e., the operating limits with one furnace melting, two melting, as applicable to your plant).

(iii) Include documentation in your plan to support your selection of the operating limits established for your capture system. This documentation must include a description of the capture system design, a description of the capture system operating during production, a description of each selected operating limit parameter, a rationale for why you chose the parameter, a description of the method used to monitor the parameter according to the requirements of §63.7740(a), and the data used to set the value or setting for the parameter for each of your process configurations.

(3) Preventative maintenance plan for each control device, including a preventative maintenance schedule that is consistent with the manufacturer's instructions for routine and long-term maintenance.

(4) A site-specific monitoring plan for each bag leak detection system. For each bag leak detection system that operates on the triboelectric effect, the monitoring plan must be consistent with the recommendations contained in the U.S. Environmental Protection Agency guidance document “Fabric Filter Bag Leak Detection Guidance” (EPA–454/R–98–015). This baghouse monitoring plan is subject to approval by the Administrator. The owner or operator shall operate and maintain the bag leak detection system according to the site-specific monitoring plan at all times. The plan must address all of the items identified in paragraphs (b)(4)(i) through (v) of this section.

(i) Installation of the bag leak detection system.

(ii) Initial and periodic adjustment of the bag leak detection system including how the alarm set-point will be established.

(iii) Operation of the bag leak detection system including quality assurance procedures.

(iv) How the bag leak detection system will be maintained including a routine maintenance schedule and spare parts inventory list.

(v) How the bag leak detection system output will be recorded and stored.

(5) Corrective action plan for each baghouse. The plan must include the requirement that, in the event a bag leak detection system alarm is triggered, you must initiate corrective action to determine the cause of the alarm within 1 hour of the alarm, initiate corrective action to correct the cause of the problem within 24 hours of the alarm, and complete the corrective action as soon as practicable. Corrective actions taken may include, but are not limited to:

(i) Inspecting the baghouse for air leaks, torn or broken bags or filter media, or any other condition that may cause an increase in emissions.

(ii) Sealing off defective bags or filter media.

(iii) Replacing defective bags or filter media or otherwise repairing the control device.

(iv) Sealing off a defective baghouse compartment.

(v) Cleaning the bag leak detection system probe or otherwise repairing the bag leak detection system.

(vi) Making process changes.

(vii) Shutting down the process producing the PM emissions.

(6) Procedures for providing an ignition source to mold vents of sand mold systems in each pouring area and pouring station unless you determine the mold vent gases either are not ignitable, ignite automatically, or cannot be ignited due to accessibility or safety issues. You must document and maintain records of this determination. The determination of ignitability, accessibility, and safety may encompass multiple casting patterns provided the castings utilize similar sand-to-metal ratios, binder formulations, and coating materials. The determination of ignitability must be based on observations of the mold vents within 5 minutes of pouring, and the flame must be present for at least 15 seconds for the mold vent to be considered ignited. For the purpose of this determination:

(i) Mold vents that ignite more than 75 percent of the time without the presence of an auxiliary ignition source are considered to ignite automatically; and

(ii) Mold vents that do not ignite automatically and cannot be ignited in the presence of an auxiliary ignition source more than 25 percent of the time are considered to be not ignitable.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7218, February 7, 2008]

**General Compliance Requirements**

**§ 63.7720 What are my general requirements for complying with this subpart?**

(a) You must be in compliance with the emissions limitations, work practice standards, and operation and maintenance requirements in this subpart at all times, except during periods of startup, shutdown, or malfunction.

(b) During the period between the compliance date specified for your iron and steel foundry in §63.7683 and the date when applicable operating limits have been established during the initial performance test, you must maintain a log detailing the operation and maintenance of the process and emissions control equipment.

(c) You must develop a written startup, shutdown, and malfunction plan according to the provisions in §63.6(e)(3). The startup, shutdown, and malfunction plan also must specify what constitutes a shutdown of a cupola and how to determine that operating conditions are normal following startup of a cupola.

[69 FR 21923, Apr. 22, 2004, as amended at 71 FR 20468, Apr. 20, 2006]

**Initial Compliance Requirements**

**§ 63.7730 By what date must I conduct performance tests or other initial compliance demonstrations?**

(a) As required by §63.7(a)(2), you must conduct a performance test no later than 180 calendar days after the compliance date that is specified in §63.7683 for your iron and steel foundry to demonstrate initial compliance with each emissions limitation in §63.7690 that applies to you.

(b) For each work practice standard in §63.7700 and each operation and maintenance requirement in §63.7710 that applies to you where initial compliance is not demonstrated using a performance test, you must demonstrate initial compliance no later than 30 calendar days after the compliance date that is specified for your iron and steel foundry in §63.7683.

(c) If you commenced construction or reconstruction between December 23, 2002 and April 22, 2004, you must demonstrate initial compliance with either the proposed emissions limit or the promulgated emissions limit no later than October 19, 2004 or no later than 180 calendar days after startup of the source, whichever is later, according to §63.7(a)(2)(ix).

(d) If you commenced construction or reconstruction between December 23, 2002 and April 22, 2004, and you chose to comply with the proposed emissions limit when demonstrating initial compliance, you must conduct a second performance test to demonstrate compliance with the promulgated emissions limit by October 19, 2007 or after startup of the source, whichever is later, according to §63.7(a)(2)(ix).

**§ 63.7731 When must I conduct subsequent performance tests?**

(a) You must conduct subsequent performance tests to demonstrate compliance with all applicable PM or total metal HAP, VOHAP, and TEA emissions limitations in §63.7690 for your iron and steel foundry no

less frequently than every 5 years and each time you elect to change an operating limit or to comply with a different alternative emissions limit, if applicable. The requirement to conduct performance tests every 5 years does not apply to an emissions source for which a continuous emissions monitoring system (CEMS) is used to demonstrate continuous compliance.

(b) You must conduct subsequent performance tests to demonstrate compliance with the opacity limit in §63.7690(a)(7) for your iron and steel foundry no less frequently than once every 6 months.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7219, February 7, 2008]

**§ 63.7732 What test methods and other procedures must I use to demonstrate initial compliance with the emissions limitations?**

(a) You must conduct each performance test that applies to your iron and steel foundry based on your selected compliance alternative, if applicable, according to the requirements in §63.7(e)(1) and the conditions specified in paragraphs (b) through (i) of this section.

(b) To determine compliance with the applicable emissions limit for PM in §63.7690(a)(1) through (6) for a metal melting furnace, scrap preheater, pouring station, or pouring area, follow the test methods and procedures in paragraphs (b)(1) through (6) of this section.

(1) Determine the concentration of PM according to the test methods in 40 CFR part 60, appendix A that are specified in paragraphs (b)(1)(i) through (v) of this section.

(i) Method 1 or 1A to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F, or 2G to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.

(iv) Method 4 to determine the moisture content of the stack gas.

(v) Method 5, 5B, 5D, 5F, or 5I, as applicable, to determine the PM concentration. The PM concentration is determined using only the front-half (probe rinse and filter) of the PM catch.

(2) Collect a minimum sample volume of 60 dscf of gas during each PM sampling run. A minimum of three valid test runs are needed to comprise a performance test.

(3) For cupola metal melting furnaces, sample only during times when the cupola is on blast.

(4) For electric arc and electric induction metal melting furnaces, sample only during normal production conditions, which may include, but are not limited to the following cycles: Charging, melting, alloying, refining, slagging, and tapping.

(5) For scrap preheaters, sample only during normal production conditions, which may include, but are not limited to the following cycles: Charging, heating, and discharging.

(6) Determine the total mass of metal charged to the furnace or scrap preheater. For a cupola metal melting furnace at an existing iron and steel foundry that is subject to the PM emissions limit in §63.7690(a)(ii), calculate the PM emissions rate in pounds of PM per ton (lb/ton) of metal charged using Equation 1 of this section:

$$EF_{PM} = C_{PM} x \left( \frac{Q}{M_{charge}} \right) x \left( \frac{t_{test}}{7{,}000} \right) \qquad \text{(Eq. 1)}$$

Where:

$EF_{PM}$ = Mass emissions rate of PM, pounds of PM per ton (lb/ton) of metal charged;

$C_{PM}$ = Concentration of PM measured during performance test run, gr/dscf;

Q = Volumetric flow rate of exhaust gas, dry standard cubic feet per minute (dscfm);

$M_{charge}$ = Mass of metal charged during performance test run, tons;

$t_{test}$ = Duration of performance test run, minutes; and
7,000 = Unit conversion factor, grains per pound (gr/lb).

(c) To determine compliance with the applicable emissions limit for total metal HAP in § 63.7690(a)(1) through (6) for a metal melting furnace, scrap preheater, pouring station, or pouring area, follow the test methods and procedures in paragraphs (c)(1) through (6) of this section.

(1) Determine the concentration of total metal HAP according to the test methods in 40 CFR part 60, appendix A that are specified in paragraphs (c)(1)(i) through (v) of this section.

(i) Method 1 or 1A to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F, or 2G to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.

(iv) Method 4 to determine the moisture content of the stack gas.

(v) Method 29 to determine the total metal HAP concentration.

(2) A minimum of three valid test runs are needed to comprise a performance test.

(3) For cupola metal melting furnaces, sample only during times when the cupola is on blast.

(4) For electric arc and electric induction metal melting furnaces, sample only during normal production conditions, which may include, but are not limited to the following cycles: Charging, melting, alloying, refining, slagging, and tapping.

(5) For scrap preheaters, sample only during normal production conditions, which may include, but are not limited to the following cycles: Charging, heating, and discharging.

(6) Determine the total mass of metal charged to the furnace or scrap preheater during each performance test run and calculate the total metal HAP emissions rate (pounds of total metal HAP per ton (lb/ton) of metal charged) using Equation 2 of this section:

$$EF_{TMHAP} = C_{TMHAP} x \left( \frac{Q}{M_{charge}} \right) x \left( \frac{t_{test}}{7,000} \right) \qquad \text{(Eq. 2)}$$

Where:

$EF_{TMHAP}$ = Emissions rate of total metal HAP, pounds of total metal HAP per ton (lb/ton) of metal charged;

$C_{TMHAP}$ = Concentration of total metal HAP measured during performance test run, gr/dscf;

Q = Volumetric flow rate of exhaust gas, dscfm;

$M_{charge}$ = Mass of metal charged during performance test run, tons;

$t_{test}$ = Duration of performance test run, minutes; and

7,000 = Unit conversion factor, gr/lb.

(d) To determine compliance with the opacity limit in §63.7690(a)(7) for fugitive emissions from buildings or structures housing any iron and steel foundry emissions source at the iron and steel foundry, follow the procedures in paragraphs (d)(1) and (2) of this section.

(1) Using a certified observer, conduct each opacity test according to the requirements in EPA Method 9 (40 CFR part 60, appendix A) and §63.6(h)(5). The certified observer may identify a limited number of openings or vents that appear to have the highest opacities and perform opacity observations on the identified openings or vents in lieu of performing observations for each opening or vent from the building or structure. Alternatively, a single opacity observation for the entire building or structure may be performed, if the fugitive release points afford such an observation.

(2) During testing intervals when PM performance tests, if applicable, are being conducted, conduct the opacity test such the opacity observations are recorded during the PM performance tests.

(e) To determine compliance with the applicable VOHAP emissions limit in §63.7690(a)(8) for a cupola metal melting furnace or in §63.7690(a)(9) for a scrap preheater, follow the test methods and procedures in paragraphs (e)(1) through (4) of this section.

(1) Determine the VOHAP concentration for each test run according to the test methods in 40 CFR part 60, appendix A that are specified in paragraphs (b)(1)(i) through (v) of this section.

(i) Method 1 or 1A to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F, or 2G to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.

(iv) Method 4 to determine the moisture content of the stack gas.

(v) Method 18 to determine the VOHAP concentration. Alternatively, you may use Method 25 to determine the concentration of total gaseous nonmethane organics (TGNMO) or Method 25A to determine the concentration of total organic compounds (TOC), using hexane as the calibration gas.

(2) Determine the average VOHAP, TGNMO, or TOC concentration using a minimum of three valid test runs. Each test run must include a minimum of 60 continuous operating minutes.

(3) For a cupola metal melting furnace, correct the measured concentration of VOHAP, TGNMO, or TOC for oxygen content in the gas stream using Equation 3 of this section:

$$C_{VOHAP,10\%O_2} = C_{VOHAP}\left(\frac{10.9\%}{20.9\% - \%O_2}\right) \qquad \text{(Eq. 3)}$$

Where:

$C_{VOHAP}$ = Concentration of VOHAP in ppmv as measured by Method 18 in 40 CFR part 60, appendix A or the concentration of TGNMO or TOC in ppmv as hexane as measured by Method 25 or 25A in 40 CFR part 60, appendix A; and

$\%O_2$ = Oxygen concentration in gas stream, percent by volume (dry basis).

(4) For a cupola metal melting furnace, measure the combustion zone temperature of the combustion device with the CPMS required in §63.7740(d) during each sampling run in 15-minute intervals. Determine and record the 15-minute average of the three runs.

(f) Follow the applicable procedures in paragraphs (f)(1) through (3) of this section to determine compliance with the VOHAP emissions limit in §63.7690(a)(10) for automated pallet cooling lines or automated shakeout lines.

(1) Follow these procedures to demonstrate compliance by direct measurement of total hydrocarbons (a surrogate for VOHAP) using a volatile organic compound (VOC) CEMS.

(i) Using the VOC CEMS required in §63.7740(g), measure and record the concentration of total hydrocarbons (as hexane) for 180 continuous operating minutes. You must measure emissions at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(ii) Reduce the monitoring data to hourly averages as specified in §63.8(g)(2).

(iii) Compute and record the 3-hour average of the monitoring data.

(2) As an alternative to the procedures in paragraph (f)(1) of this section, you may demonstrate compliance with the VOHAP emissions limit in §63.7690(a)(10) by establishing a site-specific TOC emissions limit that is correlated to the VOHAP emissions limit according to the procedures in paragraph (f)(2)(i) through (ix) of this section.

(i) Determine the VOHAP concentration for each test run according to the test methods in 40 CFR part 60, appendix A that are specified in paragraph (f)(2)(ii) through (vi) of this section.

(ii) Method 1 or 1A to select sampling port locations and the number of traverse points in each stack or duct. Sampling sites must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(iii) Method 2, 2A, 2C, 2D, 2F, or 2G to determine the volumetric flow rate of the stack gas.

(iv) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.

(v) Method 4 to determine the moisture content of the stack gas.

(vi) Method 18 to determine the VOHAP concentration. Alternatively, you may use Method 25 to determine the concentration of TGNMO using hexane as the calibration gas.

(vii) Using the CEMS required in §63.7740(g), measure and record the concentration of total hydrocarbons (as hexane) during each of the Method 18 (or Method 25) sampling runs. You must measure emissions at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(viii) Calculate the average VOHAP (or TGNMO) concentration for the source test as the arithmetic average of the concentrations measured for the individual test runs, and determine the average concentration of total hydrocarbon (as hexane) as measured by the CEMS during all test runs.

(ix) Calculate the site-specific VOC emissions limit using Equation 4 of this section:

$$VOC_{limit} = 20x\frac{C_{VOHAP,avg}}{C_{CEM}} \qquad \text{(Eq. 4)}$$

Where:

$C_{VOHAP,avg}$ = Average concentration of VOHAP for the source test in ppmv as measured by Method 18 in 40 CFR part 60, appendix A or the average concentration of TGNMO for the source test in ppmv as hexane as measured by Method 25 in 40 CFR part 60, appendix A; and

$C_{CEM}$ = Average concentration of total hydrocarbons in ppmv as hexane as measured using the CEMS during the source test.

(3) For two or more exhaust streams from one or more automated conveyor and pallet cooling lines or automated shakeout lines, compute the flow-weighted average concentration of VOHAP emissions for each combination of exhaust streams using Equation 5 of this section:

$$C_W = \frac{\sum_{i=1}^{n} C_i Q_i}{\sum_{i=1}^{n} Q_i} \qquad \text{(Eq. 5)}$$

Where:

$C_W$ = Flow-weighted concentration of VOHAP or VOC, ppmv (as hexane);

$C_i$ = Concentration of VOHAP or VOC from exhaust stream ‘‘i’’, ppmv (as hexane);

n = Number of exhaust streams sampled; and

$Q_i$ = Volumetric flow rate of effluent gas from exhaust stream ‘‘i,’’, dscfm.

(g) To determine compliance with the emissions limit or standard in §63.7690(a)(11) for a TEA cold box mold or core making line, follow the test methods in 40 CFR part 60, appendix A, specified in paragraphs (g)(1) through (4) of this section.

(1) Determine the TEA concentration for each test run according to the test methods in 40 CFR part 60, appendix A that are specified in paragraphs (g)(1)(i) through (v) of this section.

(i) Method 1 or 1A to select sampling port locations and the number of traverse points in each stack or duct. If you elect to meet the 99 percent reduction standard, sampling sites must be located both at the inlet to the control device and at the outlet of the control device prior to any releases to the atmosphere. If you elect to meet the concentration limit, the sampling site must be located at the outlet of the control device (or at the outlet of the emissions source if no control device is present) prior to any releases to the atmosphere.

(ii) Method 2, 2A, 2C, 2D, 2F, or 2G to determine the volumetric flow rate of the stack gas.

(iii) Method 3, 3A, or 3B to determine the dry molecular weight of the stack gas.

(iv) Method 4 to determine the moisture content of the stack gas.

(v) Method 18 to determine the TEA concentration. Alternatively, you may use NIOSH Method 2010 (incorporated by reference—see §63.14) to determine the TEA concentration provided the performance requirements outlined in section 13.1 of EPA Method 18 are satisfied. The sampling option and time must be sufficiently long such that either the TEA concentration in the field sample is at least 5 times the limit of detection for the analytical method or the test results calculated using the laboratory's reported analytical detection limit for the specific field samples are less than 1/5 of the applicable emissions limit. When using Method 18, the adsorbent tube approach, as described in section 8.2.4 of Method 18, may be required to achieve the necessary analytical detection limits. The sampling time must be at least 1 hour in all cases.

(2) If you use a wet acid scrubber, conduct the test as soon as practicable after adding fresh acid solution and the system has reached normal operating conditions.

(3) If you use a wet acid scrubber that is subject to the operating limit in §63.7690(b)(5)(ii) for pH level, determine the pH of the scrubber blowdown using the procedures in paragraph (g)(3)(i) or (ii) of this section.

(i) Measure the pH of the scrubber blowdown with the CPMS required in §63.7740(f)(2) during each TEA sampling run in intervals of no more than 15 minutes. Determine and record the 3-hour average; or

(ii) Measure and record the pH level using the probe and meter required in §63.7740(f)(2) once each sampling run. Determine and record the average pH level for the three runs.

(4) If you are subject to the 99 percent reduction standard, calculate the mass emissions reduction using Equation 6 of this section:

$$\%\text{reduction} = \frac{E_i - E_o}{E_i} x100\% \qquad \text{(Eq. 6)}$$

Where:

$E_i$ = Mass emissions rate of TEA at control device inlet, kilograms per hour (kg/hr); and

$E_o$ = Mass emissions rate of TEA at control device outlet, kg/hr.

(h) To determine compliance with the PM or total metal HAP emissions limits in §63.7690(a)(1) through (6) when one or more regulated emissions sources are combined with either another regulated emissions

source subject to a different emissions limit or other non-regulated emissions sources, you may demonstrate compliance using one of the procedures in paragraphs (h)(1) through (3) of this section.

(1) Meet the most stringent applicable emissions limit for the regulated emissions sources included in the combined emissions stream for the combined emissions stream.

(2) Use the procedures in paragraphs (h)(2)(i) through (iii) of this section.

(i) Determine the volumetric flow rate of the individual regulated streams for which emissions limits apply.

(ii) Calculate the flow-weighted average emissions limit, considering only the regulated streams, using Equation 5 of this section, except $C_w$ is the flow-weighted average emissions limit for PM or total metal HAP in the exhaust stream, gr/dscf; and $C_i$ is the concentration of PM or total metal HAP in exhaust stream ''i'', gr/dscf.

(iii) Meet the calculated flow-weighted average emissions limit for the regulated emissions sources included in the combined emissions stream for the combined emissions stream.

(3) Use the procedures in paragraphs (h)(3)(i) through (iii) of this section.

(i) Determine the PM or total metal HAP concentration of each of the regulated streams prior to the combination with other exhaust streams or control device.

(ii) Measure the flow rate and PM or total metal HAP concentration of the combined exhaust stream both before and after the control device and calculate the mass removal efficiency of the control device using Equation 6 of this section, except $E_i$ is the mass emissions rate of PM or total metal HAP at the control device inlet, lb/hr and $E_o$ is the mass emissions rate of PM or total metal HAP at the control device outlet, lb/hr.

(iii) Meet the applicable emissions limit based on the calculated PM or total metal HAP concentration for the regulated emissions sources using Equation 7 of this section:

$$C_{released} = C_i x\left(1 - \frac{\%reduction}{100}\right) \qquad \text{(Eq. 7)}$$

Where:

$C_{released}$= Calculated concentration of PM (or total metal HAP) predicted to be released to the atmosphere from the regulated emissions source, gr/dscf; and

$C_i$= Concentration of PM (or total metal HAP) in the uncontrolled regulated exhaust stream, gr/dscf.

(i) To determine compliance with an emissions limit for situations when multiple sources are controlled by a single control device, but only one source operates at a time, or other situations that are not expressly considered in paragraphs (b) through (h) of this section, a site-specific test plan should be submitted to the Administrator for approval according to the requirements in § 63.7(c)(2) and (3).

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7219, February 7, 2008]

**§ 63.7733 What procedures must I use to establish operating limits?**

(a) For each capture system subject to operating limits in §63.7690(b)(1)(ii), you must establish site-specific operating limits in your operation and maintenance plan according to the procedures in paragraphs (a)(1) through (3) of this section.

(1) Concurrent with applicable emissions and opacity tests, measure and record values for each of the operating limit parameters in your capture system operation and maintenance plan according to the monitoring requirements in §63.7740(a).

(2) For any dampers that are manually set and remain at the same position at all times the capture system is operating, the damper position must be visually checked and recorded at the beginning and end of each run.

(3) Review and record the monitoring data. Identify and explain any times the capture system operated outside the applicable operating limits.

(b) For each wet scrubber subject to the operating limits in §63.7690(b)(2) for pressure drop and scrubber water flow rate, you must establish site-specific operating limits according to the procedures specified in paragraphs (b)(1) and (2) of this section.

(1) Using the CPMS required in §63.7740(c), measure and record the pressure drop and scrubber water flow rate in intervals of no more than 15 minutes during each PM test run.

(2) Compute and record the average pressure drop and average scrubber water flow rate for each valid sampling run in which the applicable emissions limit is met.

(c) For each combustion device applied to emissions from a scrap preheater or TEA cold box mold or core making line subject to the operating limit in §63.7690(b)(4) for combustion zone temperature, you must establish a site-specific operating limit according to the procedures specified in paragraphs (c)(1) and (2) of this section.

(1) Using the CPMS required in §63.7740(e), measure and record the combustion zone temperature during each sampling run in intervals of no more than 15 minutes.

(2) Compute and record the average combustion zone temperature for each valid sampling run in which the applicable emissions limit is met.

(d) For each acid wet scrubber subject to the operating limit in §63.7690(b)(5), you must establish a site-specific operating limit for scrubbing liquid flow rate according to the procedures specified in paragraphs (d)(1) and (2) of this section.

(1) Using the CPMS required in §63.7740(f), measure and record the scrubbing liquid flow rate during each TEA sampling run in intervals of no more than 15 minutes.

(2) Compute and record the average scrubbing liquid flow rate for each valid sampling run in which the applicable emissions limit is met.

(e) You may change the operating limits for a capture system, wet scrubber, acid wet scrubber, or combustion device if you meet the requirements in paragraphs (e)(1) through (3) of this section.

(1) Submit a written notification to the Administrator of your request to conduct a new performance test to revise the operating limit.

(2) Conduct a performance test to demonstrate compliance with the applicable emissions limitation in §63.7690.

(3) Establish revised operating limits according to the applicable procedures in paragraphs (a) through (d) of this section.

(f) You may use a previous performance test (conducted since December 22, 2002) to establish an operating limit provided the test meets the requirements of this subpart.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7221, February 7, 2008]

**§ 63.7734 How do I demonstrate initial compliance with the emissions limitations that apply to me?**

(a) You have demonstrated initial compliance with the emissions limits in §63.7690(a) by meeting the applicable conditions in paragraphs (a)(1) through (11) of this section. When alternative emissions limitations are provided for a given emissions source, you are not restricted in the selection of which applicable alternative emissions limitation is used to demonstrate compliance.

(1) For each electric arc metal melting furnace, electric induction metal melting furnace, or scrap preheater at an existing iron and steel foundry,

(i) The average PM concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(b), did not exceed 0.005 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.0004 gr/dscf.

(2) For each cupola metal melting furnace at an existing iron and steel foundry,

(i) The average PM concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(b), did not exceed 0.006 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.0005 gr/dscf; or

(iii) The average PM mass emissions rate, determined according to the performance test procedures in §63.7732(b), did not exceed 0.10 pound of PM per ton (lb/ton) of metal charged; or

(iv) The average total metal HAP mass emissions rate, determined according to the performance test procedures in §63.7732(c), did not exceed 0.008 pound of total metal HAP per ton (lb/ton) of metal charged.

(3) For each cupola metal melting furnace or electric arc metal melting furnace at a new iron and steel foundry,

(i) The average PM concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(b), did not exceed 0.002 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.0002 gr/dscf.

(4) For each electric induction metal melting furnace or scrap preheater at a new iron and steel foundry,

(i) The average PM concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(b), did not exceed 0.001 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.00008 gr/dscf.

(5) For each pouring station at an existing iron and steel foundry,

(i) The average PM concentration in the exhaust stream, measured according to the performance test procedures in §63.7732(b), did not exceed 0.010 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.0008 gr/dscf.

(6) For each pouring area or pouring station at a new iron and steel foundry,

(i) The average PM concentration in the exhaust stream, measured according to the performance test procedures in §63.7732(b), did not exceed 0.002 gr/dscf; or

(ii) The average total metal HAP concentration in the exhaust stream, determined according to the performance test procedures in §63.7732(c), did not exceed 0.0002 gr/dscf.

(7) For each building or structure housing any iron and steel foundry emissions source at the iron and steel foundry, the opacity of fugitive emissions from foundry operations discharged to the atmosphere, determined according to the performance test procedures in §63.7732(d), did not exceed 20 percent (6-minute average), except for one 6-minute average per hour that did not exceed 27 percent opacity.

(8) For each cupola metal melting furnace at a new or existing iron and steel foundry, the average VOHAP concentration, determined according to the performance test procedures in §63.7732(e), did not exceed 20 ppmv corrected to 10 percent oxygen.

(9) For each scrap preheater at an existing iron and steel foundry that does not meet the work practice standards in §63.7700(e)(1) or (2) and for each scrap preheater at a new iron and steel foundry that does not meet the work practice standard in §63.7700(f), the average VOHAP concentration determined according to the performance test procedures in §63.7732(e), did not exceed 20 ppmv.

(10) For one or more automated conveyor and pallet cooling lines that use a sand mold system or automated shakeout lines that use a sand mold system at a new foundry,

(i) You have reduced the data from the CEMS to 3-hour averages according to the performance test procedures in §63.7732(f)(1) or (2); and

(ii) The 3-hour flow-weighted average VOHAP concentration, measured according to the performance test procedures in §63.7332(f)(1) or (2), did not exceed 20 ppmv.

(11) For each TEA cold box mold or core making line in a new or existing iron and steel foundry, the average TEA concentration, determined according to the performance test procedures in §63.7732(g), did not exceed 1 ppmv or was reduced by 99 percent.

(b) You have demonstrated initial compliance with the operating limits in §63.7690(b) if:

(1) For each capture system subject to the operating limit in §63.7690(b)(1)(ii),

(i) You have established appropriate site-specific operating limits in your operation and maintenance plan according to the requirements in §63.7710(b); and

(ii) You have a record of the operating parameter data measured during the performance test in accordance with §63.7733(a); and

(2) For each wet scrubber subject to the operating limits in §63.7690(b)(2) for pressure drop and scrubber water flow rate, you have established appropriate site-specific operating limits and have a record of the pressure drop and scrubber water flow rate measured during the performance test in accordance with §63.7733(b).

(3) For each combustion device subject to the operating limit in §63.7690(b)(3) for combustion zone temperature, you have a record of the combustion zone temperature measured during the performance test in accordance with §63.7732(e)(4).

(4) For each combustion device subject to the operating limit in §63.7690(b)(4) for combustion zone temperature, you have established appropriate site-specific operating limits and have a record of the combustion zone temperature measured during the performance test in accordance with §63.7733(c).

(5) For each acid wet scrubber subject to the operating limits in §63.7690(b)(5) for scrubbing liquid flow rate and scrubber blowdown pH,

(i) You have established appropriate site-specific operating limits for the scrubbing liquid flow rate and have a record of the scrubbing liquid flow rate measured during the performance test in accordance with §63.7733(d); and

(ii) You have a record of the pH of the scrubbing liquid blowdown measured during the performance test in accordance with §63.7732(g)(3).

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7221, February 7, 2008]

**§ 63.7735 How do I demonstrate initial compliance with the work practice standards that apply to me?**

(a) For each iron and steel foundry subject to the certification requirement in §63.7700(b), you have demonstrated initial compliance if you have certified in your notification of compliance status that: “At all times, your foundry will purchase and use only metal ingots, pig iron, slitter, or other materials that do not include post-consumer automotive body scrap, post-consumer engine blocks, post-consumer oil filters, oily turnings, lead components, mercury switches, plastics, or free organic liquids.”

(b) For each iron and steel foundry subject to the requirements in §63.7700(c) for a scrap inspection and selection plan, you have demonstrated initial compliance if you have certified in your notification of compliance status that:

(1) You have submitted a written plan to the Administrator for approval according to the requirements in §63.7700(c); and

(2) You will operate at all times according to the plan requirements.

(c) For each furan warm box mold or core making line in a new or existing foundry subject to the work practice standard in §63.7700(d), you have demonstrated initial compliance if you have certified in your notification of compliance status that:

(1) You will meet the no methanol requirement for the catalyst portion of each binder chemical formulation; and

(2) You have records documenting your certification of compliance, such as a material safety data sheet (provided that it contains appropriate information), a certified product data sheet, or a manufacturer's hazardous air pollutant data sheet, onsite and available for inspection.

(d) For each scrap preheater at an existing iron and steel foundry subject to the work practice standard in §63.7700(e)(1) or (2), you have demonstrated initial compliance if you have certified in your notification of compliance status that:

(1) You have installed a gas-fired preheater where the flame directly contacts the scrap charged, you will operate and maintain each gas-fired scrap preheater such that the flame directly contacts the scrap charged, and you have records documenting your certification of compliance that are onsite and available for inspection; or

(2) You will charge only material that is subject to and in compliance with the scrap certification requirements in §63.7700(b) and you have records documenting your certification of compliance that are onsite and available for inspection.

(e) For each scrap preheater at a new iron and steel foundry subject to the work practice standard in §63.7700(f), you have demonstrated initial compliance if you have certified in your notification of compliance status that you will charge only material that is subject to and in compliance with the scrap certification requirements in §63.7700(b) and you have records documenting your certification of compliance that are onsite and available for inspection.

[69 FR 21923, Apr. 22, 2004, as amended at 70 FR 29404, May 20, 2005]

**§ 63.7736 How do I demonstrate initial compliance with the operation and maintenance requirements that apply to me?**

(a) For each capture system subject to an operating limit in §63.7690(b), you have demonstrated initial compliance if you have met the conditions in paragraphs (a)(1) and (2) of this section.

(1) You have certified in your notification of compliance status that:

(i) You have submitted the capture system operation and maintenance plan to the Administrator for approval according to the requirements of §63.7710(b); and

(ii) You will inspect, operate, and maintain each capture system according to the procedures in the plan.

(2) You have certified in your performance test report that the system operated during the test at the operating limits established in your operation and maintenance plan.

(b) For each control device subject to an operating limit in §63.7690(b), you have demonstrated initial compliance if you have certified in your notification of compliance status that:

(1) You have submitted the control device operation and maintenance plan to the Administrator for approval according to the requirements of §63.7710(b); and

(2) You will inspect, operate, and maintain each control device according to the procedures in the plan.

(c) For each bag leak detection system, you have demonstrated initial compliance if you have certified in your notification of compliance status that:

(1) You have submitted the bag leak detection system monitoring information to the Administrator within the written O&M plan for approval according to the requirements of §63.7710(b);

(2) You will inspect, operate, and maintain each bag leak detection system according to the procedures in the plan; and

(3) You will follow the corrective action procedures for bag leak detection system alarms according to the requirements in the plan.

(d) For each pouring area and pouring station in a new or existing foundry, you have demonstrated initial compliance if you have certified in your notification of compliance status report that:

(1) You have submitted the mold vent ignition plan to the Administrator for approval according to the requirements in §63.7710(b); and

(2) You will follow the procedures for igniting mold vent gases according to the requirements in the plan.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7221, February 7, 2008]

**Continuous Compliance Requirements**

**§ 63.7740 What are my monitoring requirements?**

(a) For each capture system subject to an operating limit in §63.7690(b)(1), you must install, operate, and maintain a CPMS according to the requirements in §63.7741(a) and the requirements in paragraphs (a)(1) and (2) of this section.

(1) If you use a flow measurement device to monitor the operating limit parameter, you must at all times monitor the hourly average rate ( e.g., the hourly average actual volumetric flow rate through each separately ducted hood or the average hourly total volumetric flow rate at the inlet to the control device).

(2) Dampers that are manually set and remain in the same position are exempt from the requirement to install and operate a CPMS. If dampers are not manually set and remain in the same position, you must make a visual check at least once every 24 hours to verify that each damper for the capture system is in the same position as during the initial performance test.

(b) For each negative pressure baghouse or positive pressure baghouse equipped with a stack that is applied to meet any PM or total metal HAP emissions limitation in this subpart, you must at all times monitor the relative change in PM loadings using a bag leak detection system according to the requirements in § 63.7741(b).

(c) For each baghouse, regardless of type, that is applied to meet any PM or total metal HAP emissions limitation in this subpart, you must conduct inspections at their specified frequencies according to the requirements specified in paragraphs (c)(1) through (8) of this section.

(1) Monitor the pressure drop across each baghouse cell each day to ensure pressure drop is within the normal operating range identified in the manual.

(2) Confirm that dust is being removed from hoppers through weekly visual inspections or other means of ensuring the proper functioning of removal mechanisms.

(3) Check the compressed air supply for pulse-jet baghouses each day.

(4) Monitor cleaning cycles to ensure proper operation using an appropriate methodology.

(5) Check bag cleaning mechanisms for proper functioning through monthly visual inspections or equivalent means.

(6) Make monthly visual checks of bag tension on reverse air and shaker-type baghouses to ensure that bags are not kinked (kneed or bent) or lying on their sides. You do not have to make this check for shaker-type baghouses using self-tensioning (spring-loaded) devices.

(7) Confirm the physical integrity of the baghouse through quarterly visual inspections of the baghouse interior for air leaks.

(8) Inspect fans for wear, material buildup, and corrosion through quarterly visual inspections, vibration detectors, or equivalent means.

(d) For each wet scrubber subject to the operating limits in §63.7690(b)(2), you must at all times monitor the 3-hour average pressure drop and scrubber water flow rate using CPMS according to the requirements in §63.7741(c).

(e) For each combustion device subject to the operating limit in §63.7690(b)(3), you must at all times monitor the 15-minute average combustion zone temperature using a CPMS according to the requirements of §63.7741(d).

(f) For each combustion device subject to the operating limit in §63.7690(b)(4), you must at all times monitor the 3-hour average combustion zone temperature using CPMS according to the requirements in §63.7741(d).

(g) For each wet acid scrubber subject to the operating limits in §63.7690(b)(5),

(1) You must at all times monitor the 3-hour average scrubbing liquid flow rate using CPMS according to the requirements of §63.7741(e)(1); and

(2) You must at all times monitor the 3-hour average pH of the scrubber blowdown using CPMS according to the requirements in §63.7741(e)(2) or measure and record the pH of the scrubber blowdown once per production cycle using a pH probe and meter according to the requirements in §63.7741(e)(3).

(h) For one or more automated conveyor and pallet cooling lines and automated shakeout lines at a new iron and steel foundry subject to the VOHAP emissions limit in §63.7690(a)(10), you must at all times monitor the 3-hour average VOHAP concentration using a CEMS according to the requirements of §63.7741(g).

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7221, February 7, 2008]

**§ 63.7741 What are the installation, operation, and maintenance requirements for my monitors?**

(a) For each capture system subject to an operating limit in §63.7690(b)(1), you must install, operate, and maintain each CPMS according to the requirements in paragraphs (a)(1) through (3) of this section.

(1) If you use a flow measurement device to monitor an operating limit parameter for a capture system, you must meet the requirements in paragraphs (a)(1)(i) through (iv) of this section.

(i) Locate the flow sensor and other necessary equipment such as straightening vanes in a position that provides a representative flow and that reduces swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.

(ii) Use a flow sensor with a minimum measurement sensitivity of 2 percent of the flow rate.

(iii) Conduct a flow sensor calibration check at least semiannually.

(iv) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(2) If you use a pressure measurement device to monitor the operating limit parameter for a capture system, you must meet the requirements in paragraphs (a)(2)(i) through (vi) of this section.

(i) Locate the pressure sensor(s) in or as close as possible to a position that provides a representative measurement of the pressure and that minimizes or eliminates pulsating pressure, vibration, and internal and external corrosion.

(ii) Use a gauge with a minimum measurement sensitivity of 0.5 inch of water or a transducer with a minimum measurement sensitivity of 1 percent of the pressure range.

(iii) Check the pressure tap for pluggage daily. If a ‘‘non-clogging’’ pressure tap is used, check for pluggage monthly.

(iv) Using a manometer or equivalent device such as a magnahelic or other pressure indicating transmitter, check gauge and transducer calibration quarterly.

(v) Conduct calibration checks any time the sensor exceeds the manufacturer's specified maximum operating pressure range, or install a new pressure sensor.

(vi) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(3) Record the results of each inspection, calibration, and validation check.

(b) For each negative pressure baghouse or positive pressure baghouse equipped with a stack that is applied to meet any PM or total metal HAP emissions limitation in this subpart, you must install, operate, and maintain a bag leak detection system according to the requirements in paragraphs (b)(1) through (7) of this section.

(1) The system must be certified by the manufacturer to be capable of detecting emissions of particulate matter at concentrations of 10 milligrams per actual cubic meter (0.0044 grains per actual cubic foot) or less.

(2) The bag leak detection system sensor must provide output of relative particulate matter loadings and the owner or operator shall continuously record the output from the bag leak detection system using electronic or other means ( e.g., using a strip chart recorder or a data logger).

(3) The system must be equipped with an alarm that will sound when an increase in relative particulate loadings is detected over the alarm set point established in the operation and maintenance plan, and the alarm must be located such that it can be heard by the appropriate plant personnel.

(4) The initial adjustment of the system must, at minimum, consist of establishing the baseline output by adjusting the sensitivity (range) and the averaging period of the device, and establishing the alarm set points and the alarm delay time (if applicable).

(5) Following the initial adjustment, do not adjust the sensitivity or range, averaging period, alarm set point, or alarm delay time without approval from the Administrator. Except, once per quarter, you may adjust the sensitivity of the bag leak detection system to account for seasonable effects including temperature and humidity according to the procedures in the operation and maintenance plan required by §63.7710(b).

(6) For negative pressure, induced air baghouses, and positive pressure baghouses that are discharged to the atmosphere through a stack, the bag leak detector sensor must be installed downstream of the baghouse and upstream of any wet scrubber.

(7) Where multiple detectors are required, the system's instrumentation and alarm may be shared among detectors.

(c) For each wet scrubber subject to the operating limits in §63.7690(b)(2), you must install and maintain CPMS to measure and record the pressure drop and scrubber water flow rate according to the requirements in paragraphs (c)(1) and (2) of this section.

(1) For each CPMS for pressure drop you must:

(i) Locate the pressure sensor in or as close as possible to a position that provides a representative measurement of the pressure drop and that minimizes or eliminates pulsating pressure, vibration, and internal and external corrosion.

(ii) Use a gauge with a minimum measurement sensitivity of 0.5 inch of water or a transducer with a minimum measurement sensitivity of 1 percent of the pressure range.

(iii) Check the pressure tap for pluggage daily. If a ‘‘non-clogging’’ pressure tap is used, check for pluggage monthly

(iv) Using a manometer or equivalent device such as a magnahelic or other pressure indicating transmitter, check gauge and transducer calibration quarterly.

(v) Conduct calibration checks any time the sensor exceeds the manufacturer's specified maximum operating pressure range, or install a new pressure sensor.

(vi) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(2) For each CPMS for scrubber liquid flow rate, you must:

(i) Locate the flow sensor and other necessary equipment in a position that provides a representative flow and that reduces swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.

(ii) Use a flow sensor with a minimum measurement sensitivity of 2 percent of the flow rate.

(iii) Conduct a flow sensor calibration check at least semiannually according to the manufacturer's instructions.

(iv) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(d) For each combustion device subject to the operating limit in §63.7690(b)(3) or (4), you must install and maintain a CPMS to measure and record the combustion zone temperature according to the requirements in paragraphs (d)(1) through (8) of this section.

(1) Locate the temperature sensor in a position that provides a representative temperature.

(2) For a noncryogenic temperature range, use a temperature sensor with a minimum tolerance of 2.2 °C or 0.75 percent of the temperature value, whichever is larger.

(3) For a cryogenic temperature range, use a temperature sensor with a minimum tolerance of 2.2 °C or 2 percent of the temperature value, whichever is larger.

(4) Shield the temperature sensor system from electromagnetic interference and chemical contaminants.

(5) If you use a chart recorder, it must have a sensitivity in the minor division of at least 20 °F.

(6) Perform an electronic calibration at least semiannually according to the procedures in the manufacturer's owners manual. Following the electronic calibration, conduct a temperature sensor validation check, in which a second or redundant temperature sensor placed nearby the process temperature sensor must yield a reading within 16.7 °C of the process temperature sensor's reading.

(7) Conduct calibration and validation checks any time the sensor exceeds the manufacturer's specified maximum operating temperature range, or install a new temperature sensor.

(8) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(e) For each wet acid scrubber subject to the operating limits in §63.7690(b)(5), you must:

(1) Install and maintain CPMS to measure and record the scrubbing liquid flow rate according to the requirements in paragraph (c)(2) of this section; and

(2) Install and maintain CPMS to measure and record the pH of the scrubber blowdown according to the requirements in paragraph (e)(2)(i) through (iv) of this section.

(i) Locate the pH sensor in a position that provides a representative measurement of the pH and that minimizes or eliminates internal and external corrosion.

(ii) Use a gauge with a minimum measurement sensitivity of 0.1 pH or a transducer with a minimum measurement sensitivity of 5 percent of the pH range.

(iii) Check gauge calibration quarterly and transducer calibration monthly using a manual pH gauge.

(iv) At least monthly, visually inspect all components, including all electrical and mechanical connections, for proper functioning.

(3) As an alternative to the CPMS required in paragraph (e)(2) of this section, you may use a pH probe to extract a sample for analysis by a pH meter that meets the requirements in paragraphs (e)(3)(i) through (iii) of this section.

(i) The pH meter must have a range of at least 1 to 5 or more;

(ii) The pH meter must have an accuracy of ±0.1; and

(iii) The pH meter must have a resolution of at least 0.1 pH.

(f) You must operate each CPMS used to meet the requirements of this subpart according to the requirements specified in paragraphs (f)(1) through (3) of this section.

(1) Each CPMS must complete a minimum of one cycle of operation for each successive 15-minute period. You must have a minimum of three of the required four data points to constitute a valid hour of data.

(2) Each CPMS must have valid hourly data for 100 percent of every averaging period.

(3) Each CPMS must determine and record the hourly average of all recorded readings and the 3-hour average of all recorded readings.

(g) For each automated conveyor and pallet cooling line and automated shakeout line at a new iron and steel foundry subject to the VOHAP emissions limit in §63.7690(a)(10), you must install, operate, and maintain a CEMS to measure and record the concentration of VOHAP emissions according to the requirements in paragraphs (g)(1) through (3) of this section.

(1) You must install, operate, and maintain each CEMS according to Performance Specification 8 in 40 CFR part 60, appendix B.

(2) You must conduct a performance evaluation of each CEMS according to the requirements of §63.8 and Performance Specification 8 in 40 CFR part 60, appendix B.

(3) You must operate each CEMS according to the requirements specified in paragraph (g)(3)(i) through (iv) of this section.

(i) As specified in §63.8(c)(4)(ii), each CEMS must complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(ii) You must reduce CEMS data as specified in §63.8(g)(2).

(iii) Each CEMS must determine and record the 3-hour average emissions using all the hourly averages collected for periods during which the CEMS is not out-of-control.

(iv) Record the results of each inspection, calibration, and validation check.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7221, February 7, 2008]

**§ 63.7742 How do I monitor and collect data to demonstrate continuous compliance?**

(a) Except for monitoring malfunctions, associated repairs, and required quality assurance or control activities (including as applicable, calibration checks and required zero and span adjustments), you must monitor continuously (or collect data at all required intervals) any time a source of emissions is operating.

(b) You may not use data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities in data averages and calculations used to report emissions or operating levels or to fulfill a minimum data availability requirement, if applicable. You must use all the data collected during all other periods in assessing compliance.

(c) A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring system to provide valid data. Monitoring failures that are caused in part by poor maintenance or careless operation are not malfunctions.

**§ 63.7743 How do I demonstrate continuous compliance with the emissions limitations that apply to me?**

(a) You must demonstrate continuous compliance by meeting the applicable conditions in paragraphs (a)(1) through (12) of this section. When alternative emissions limitations are provided for a given emissions source, you must comply with the alternative emissions limitation most recently selected as your compliance alternative.

(1) For each electric arc metal melting furnace, electric induction metal melting furnace, or scrap preheater at an existing iron and steel foundry,

(i) Maintaining the average PM concentration in the exhaust stream at or below 0.005 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.0004 gr/dscf.

(2) For each cupola metal melting furnace at an existing iron and steel foundry,

(i) Maintaining the average PM concentration in the exhaust stream at or below 0.006 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.0005 gr/dscf; or

(iii) Maintaining the average PM mass emissions rate at or below 0.10 pound of PM per ton (lb/ton) of metal charged; or

(iv) Maintaining the average total metal HAP mass emissions rate at or below 0.008 pound of total metal HAP per ton (lb/ton) of metal charged.

(3) For each cupola metal melting furnace or electric arc metal melting furnace at new iron and steel foundry, (i) Maintaining the average PM concentration in the exhaust stream at or below 0.002 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.0002 gr/dscf.

(4) For each electric induction metal melting furnace or scrap preheater at a new iron and steel foundry,

(i) Maintaining the average PM concentration in the exhaust stream at or below 0.001 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.00008 gr/dscf.

(5) For each pouring station at an existing iron and steel foundry,

(i) Maintaining the average PM concentration in the exhaust stream at or below 0.010 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.0008 gr/dscf.

(6) For each pouring area or pouring station at a new iron and steel foundry,

(i) Maintaining the average PM concentration in the exhaust stream at or below 0.002 gr/dscf; or

(ii) Maintaining the average total metal HAP concentration in the exhaust stream at or below 0.0002 gr/dscf.

(7) For each building or structure housing any iron and steel foundry emissions source at the iron and steel foundry, maintaining the opacity of any fugitive emissions from foundry operations discharged to the atmosphere at or below 20 percent opacity (6-minute average), except for one 6-minute average per hour that does not exceed 27 percent opacity.

(8) For each cupola metal melting furnace at a new or existing iron and steel foundry, maintaining the average VOHAP concentration in the exhaust stream at or below 20 ppmv corrected to 10 percent oxygen.

(9) For each scrap preheater at an existing new iron and steel foundry that does not comply with the work practice standard in §63.7700(e)(1) or (2) and for each scrap preheater at a new iron and steel foundry that does not comply with the work practice standard in §63.7700(f), maintaining the average VOHAP concentration in the exhaust stream at or below 20 ppmv.

(10) For one or more automated conveyor and pallet cooling lines or automated shakeout lines that use a sand mold system at a new iron and steel foundry,

(i) Maintaining the 3-hour flow-weighted average VOHAP concentration in the exhaust stream at or below 20 ppmv;

(ii) Inspecting and maintaining each CEMS according to the requirements of §63.7741(g) and recording all information needed to document conformance with these requirements; and

(iii) Collecting and reducing monitoring data for according to the requirements of §63.7741(g) and recording all information needed to document conformance with these requirements.

(11) For each TEA cold box mold or core making line at a new or existing iron and steel foundry, maintaining a 99 percent reduction in the VOHAP concentration in the exhaust stream or maintaining the average VOHAP concentration in the exhaust stream at or below 1 ppmv.

(12) Conducting subsequent performance tests at least every 5 years for each emissions source subject to an emissions limit for PM, total metal HAP, VOHAP, or TEA in §63.7690(a) and subsequent

performance tests at least every 6 months for each building or structure subject to the opacity limit in §63.7690(a)(7).

(b) You must demonstrate continuous compliance for each capture system subject to an operating limit in §63.7690(b)(1) by meeting the requirements in paragraphs (b)(1) and (2) of this section.

(1) Operating the capture system at or above the lowest values or settings established for the operating limits in your operation and maintenance plan; and

(2) Monitoring the capture system according to the requirements in §63.7740(a) and collecting, reducing, and recording the monitoring data for each of the operating limit parameters according to the applicable requirements in this subpart.

(c) For each baghouse,

(1) Inspecting and maintaining each baghouse according to the requirements of §63.7740(c)(1) through (8) and recording all information needed to document conformance with these requirements; and

(2) If the baghouse is equipped with a bag leak detection system, maintaining records of the times the bag leak detection system sounded, and for each valid alarm, the time you initiated corrective action, the corrective action taken, and the date on which corrective action was completed.

(d) For each wet scrubber that is subject to the operating limits in §63.7690(b)(2), you must demonstrate continuous compliance by:

(1) Maintaining the 3-hour average pressure drop and 3-hour average scrubber water flow rate at levels no lower than those established during the initial or subsequent performance test;

(2) Inspecting and maintaining each CPMS according to the requirements of §63.7741(c) and recording all information needed to document conformance with these requirements; and

(3) Collecting and reducing monitoring data for pressure drop and scrubber water flow rate according to the requirements of §63.7741(f) and recording all information needed to document conformance with these requirements.

(e) For each combustion device that is subject to the operating limit in §63.7690(b)(3), you must demonstrate continuous compliance by:

(1) Maintaining the 15-minute average combustion zone temperature at a level no lower than 1,300 °F;

(2) Inspecting and maintaining each CPMS according to the requirements of §63.7741(d) and recording all information needed to document conformance with these requirements; and

(3) Collecting and reducing monitoring data for combustion zone temperature according to the requirements of §63.7741(f) and recording all information needed to document conformance with these requirements.

(f) For each combustion device that is subject to the operating limit in §63.7690(b)(4), you must demonstrate continuous compliance by:

(1) Maintaining the 3-hour average combustion zone temperature at a level no lower that established during the initial or subsequent performance test;

(2) Inspecting and maintaining each CPMS according to the requirements of §63.7741(d) and recording all information needed to document conformance with these requirements; and

(3) Collecting and reducing monitoring data for combustion zone temperature according to the requirements of §63.7741(f) and recording all information needed to document conformance with these requirements.

(g) For each acid wet scrubber subject to the operating limits in §63.7690(b)(5), you must demonstrate continuous compliance by:

(1) Maintaining the 3-hour average scrubbing liquid flow rate at a level no lower than the level established during the initial or subsequent performance test;

(2) Maintaining the 3-hour average pH of the scrubber blowdown at a level no higher than 4.5 (if measured by a CPMS) or maintaining the pH level of the scrubber blowdown during each production shift no higher than 4.5;

(3) Inspecting and maintaining each CPMS according to the requirements of §63.7741(e) and recording all information needed to document conformance with these requirements; and

(4) Collecting and reducing monitoring data for scrubbing liquid flow rate and scrubber blowdown pH according to the requirements of §63.7741(f) and recording all information needed to document conformance with these requirements. If the pH level of the scrubber blowdown is measured by a probe and meter, you must demonstrate continuous compliance by maintaining records that document the date, time, and results of each sample taken for each production shift.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7222, February 7, 2008]

**§ 63.7744 How do I demonstrate continuous compliance with the work practice standards that apply to me?**

(a) You must maintain records that document continuous compliance with the certification requirements in §63.7700(b) or with the procedures in your scrap selection and inspection plan required in §63.7700(c). Your records documenting compliance with the scrap selection and inspection plan must include a copy (kept onsite) of the procedures used by the scrap supplier for either removing accessible mercury switches or for purchasing automobile bodies that have had mercury switches removed, as applicable.

(b) You must keep records of the chemical composition of all catalyst binder formulations applied in each furan warm box mold or core making line at a new or existing iron and steel foundry to demonstrate continuous compliance with the requirements in §63.7700(d).

(c) For a scrap preheater at an existing iron and steel foundry, you must operate and maintain each gas-fired preheater such that the flame directly contacts the scrap charged to demonstrate continuous compliance with the requirement §63.7700(e)(1). If you choose to meet the work practice standard in §63.7700(e)(2), you must keep records to document that the scrap preheater charges only material that is subject to and in compliance with the scrap certification requirements in §63.7700(b).

(d) For a scrap preheater at a new iron and steel foundry, you must keep records to document that each scrap preheater charges only material that is subject to and in compliance with the scrap certification requirements in §63.7700(b) to demonstrate continuous compliance with the requirement in §63.7700(f).

**§ 63.7745 How do I demonstrate continuous compliance with the operation and maintenance requirements that apply to me?**

(a) For each capture system and control device for an emissions source subject to an emissions limit in §63.7690(a), you must demonstrate continuous compliance with the operation and maintenance requirements of §63.7710 by:

(1) Making monthly inspections of capture systems and initiating corrective action according to §63.7710(b)(1) and recording all information needed to document conformance with these requirements;

(2) Performing preventative maintenance for each control device according to the preventive maintenance plan required by §63.7710(b)(3) and recording all information needed to document conformance with these requirements;

(3) Operating and maintaining each bag leak detection system according to the site-specific monitoring plan required by §63.7710(b)(4) and recording all information needed to demonstrate conformance with these requirements;

(4) Initiating and completing corrective action for a bag leak detection system alarm according to the corrective action plan required by §63.7710(b)(5) and recording all information needed to document conformance with these requirements; and

(5) Igniting gases from mold vents according to the procedures in the plan required by §63.7710(b)(6). (Any instance where you fail to follow the procedures is a deviation that must be included in your semiannual compliance report.)

(b) You must maintain a current copy of the operation and maintenance plans required by §63.7710(b) onsite and available for inspection upon request. You must keep the plans for the life of the iron and steel foundry or until the iron and steel foundry is no longer subject to the requirements of this subpart.

**§ 63.7746 What other requirements must I meet to demonstrate continuous compliance?**

(a) Deviations. You must report each instance in which you did not meet each emissions limitation in §63.7690 (including each operating limit) that applies to you. This requirement includes periods of startup, shutdown, and malfunction. You also must report each instance in which you did not meet each work practice standard in §63.7700 and each operation and maintenance requirement of §63.7710 that applies to you. These instances are deviations from the emissions limitations, work practice standards, and operation and maintenance requirements in this subpart. These deviations must be reported according to the requirements of §63.7751.

(b) Startups, shutdowns, and malfunctions. (1) Consistent with the requirements of §§63.6(e) and 63.7(e)(1), deviations that occur during a period of startup, shutdown, or malfunction are not violations if you demonstrate to the Administrator's satisfaction that you were operating in accordance with §63.6(e)(1).

(2) The Administrator will determine whether deviations that occur during a period of startup, shutdown, or malfunction are violations according to the provisions in §63.6(e).

[69 FR 21923, Apr. 22, 2004, as amended at 71 FR 20468, Apr. 20, 2006]

**§ 63.7747 How do I apply for alternative monitoring requirements for a continuous emissions monitoring system?**

(a) You may request an alternative monitoring method to demonstrate compliance with the VOHAP emissions limits in §63.7690(a)(10) for automated pallet cooling lines or automated shakeout lines at a new iron and steel foundry according to the procedures in this section.

(b) You can request approval to use an alternative monitoring method in the notification of construction or reconstruction for new sources, or at any time.

(c) You must submit a monitoring plan that includes a description of the control technique or pollution prevention technique, a description of the continuous monitoring system or method including appropriate operating parameters that will be monitored, test results demonstrating compliance with the emissions limit, operating limit(s) (if applicable) determined according to the test results, and the frequency of measuring and recording to establish continuous compliance. If applicable, you must also include operation and maintenance requirements for the monitors.

(d) The monitoring plan is subject to approval by the Administrator. Use of the alternative monitoring method must not begin until approval is granted by the Administrator.

**Notifications, Reports, and Records**

**§ 63.7750 What notifications must I submit and when?**

(a) You must submit all of the notifications required by §§63.6(h)(4) and (5), 63.7(b) and (c); 63.8(e); 63.8(f)(4) and (6); 63.9(b) through (h) that apply to you by the specified dates.

(b) As specified in §63.9(b)(2), if you start up your iron and steel foundry before April 22, 2004, you must submit your initial notification no later than August 20, 2004.

(c) If you start up your new iron and steel foundry on or after April 22, 2004, you must submit your initial notification no later than 120 calendar days after you become subject to this subpart.

(d) If you are required to conduct a performance test, you must submit a notification of intent to conduct a performance test at least 60 calendar days before the performance test is scheduled to begin as required by §63.7(b)(1).

(e) If you are required to conduct a performance test or other initial compliance demonstration, you must submit a notification of compliance status according to the requirements of §63.9(h)(2)(ii). For opacity performance tests, the notification of compliance status may be submitted with the semiannual compliance report in §63.7751(a) and (b) or the semiannual part 70 monitoring report in § 63.7551(d).

(1) For each initial compliance demonstration that does not include a performance test, you must submit the notification of compliance status before the close of business on the 30th calendar day following completion of the initial compliance demonstration.

(2) For each initial compliance demonstration that does include a performance test, you must submit the notification of compliance status, including the performance test results, before the close of business on the 60th calendar day following the completion of the performance test according to the requirement specified in §63.10(d)(2).

**§ 63.7751 What reports must I submit and when?**

(a) Compliance report due dates. Unless the Administrator has approved a different schedule, you must submit a semiannual compliance report to your permitting authority according to the requirements specified in paragraphs (a)(1) through (5) of this section.

(1) The first compliance report must cover the period beginning on the compliance date that is specified for your iron and steel foundry by §63.7683 and ending on June 30 or December 31, whichever date comes first after the compliance date that is specified for your iron and steel foundry.

(2) The first compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date comes first after your first compliance report is due.

(3) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(4) Each subsequent compliance report must be postmarked or delivered no later than July 31 or January 31, whichever date comes first after the end of the semiannual reporting period.

(5) For each iron and steel foundry that is subject to permitting regulations pursuant to 40 CFR part 70 or 40 CFR part 71, and if the permitting authority has established dates for submitting semiannual reports pursuant to 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), you may submit the first and subsequent compliance reports according to the dates the permitting authority has established instead of the dates specified in paragraphs (a)(1) through (4) of this section.

(b) Compliance report contents. Each compliance report must include the information specified in paragraphs (b)(1) through (3) of this section and, as applicable, paragraphs (b)(4) through (8) of this section.

(1) Company name and address.

(2) Statement by a responsible official, with that official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(3) Date of report and beginning and ending dates of the reporting period.

(4) If you had a startup, shutdown, or malfunction during the reporting period and you took action consistent with your startup, shutdown, and malfunction plan, the compliance report must include the information in §63.10(d)(5)(i).

(5) If there were no deviations from any emissions limitations (including operating limit), work practice standards, or operation and maintenance requirements, a statement that there were no deviations from the emissions limitations, work practice standards, or operation and maintenance requirements during the reporting period.

(6) If there were no periods during which a continuous monitoring system (including a CPMS or CEMS) was out-of-control as specified by §63.8(c)(7), a statement that there were no periods during which the CPMS was out-of-control during the reporting period.

(7) For each deviation from an emissions limitation (including an operating limit) that occurs at an iron and steel foundry for which you are not using a continuous monitoring system (including a CPMS or CEMS) to comply with an emissions limitation or work practice standard required in this subpart, the compliance

report must contain the information specified in paragraphs (b)(1) through (4) and (b)(7)(i) and (ii) of this section. This requirement includes periods of startup, shutdown, and malfunction.

(i) The total operating time of each emissions source during the reporting period.

(ii) Information on the number, duration, and cause of deviations (including unknown cause) as applicable and the corrective action taken.

(8) For each deviation from an emissions limitation (including an operating limit) or work practice standard occurring at an iron and steel foundry where you are using a continuous monitoring system (including a CPMS or CEMS) to comply with the emissions limitation or work practice standard in this subpart, you must include the information specified in paragraphs (b)(1) through (4) and (b)(8)(i) through (xi) of this section. This requirement includes periods of startup, shutdown, and malfunction.

(i) The date and time that each malfunction started and stopped.

(ii) The date and time that each continuous monitoring system was inoperative, except for zero (low-level) and high-level checks.

(iii) The date, time, and duration that each continuous monitoring system was out-of-control, including the information in §63.8(c)(8).

(iv) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period.

(v) A summary of the total duration of the deviations during the reporting period and the total duration as a percent of the total source operating time during that reporting period.

(vi) A breakdown of the total duration of the deviations during the reporting period into those that are due to startup, shutdown, control equipment problems, process problems, other known causes, and unknown causes.

(vii) A summary of the total duration of continuous monitoring system downtime during the reporting period and the total duration of continuous monitoring system downtime as a percent of the total source operating time during the reporting period.

(viii) A brief description of the process units.

(ix) A brief description of the continuous monitoring system.

(x) The date of the latest continuous monitoring system certification or audit.

(xi) A description of any changes in continuous monitoring systems, processes, or controls since the last reporting period.

(c) Immediate startup, shutdown, and malfunction report. If you had a startup, shutdown, or malfunction during the semiannual reporting period that was not consistent with your startup, shutdown, and malfunction plan and the source exceeds any applicable emissions limitation in § 63.7690, you must submit an immediate startup, shutdown, and malfunction report according to the requirements of §63.10(d)(5)(ii).

(d) Part 70 monitoring report. If you have obtained a title V operating permit for an iron and steel foundry pursuant to 40 CFR part 70 or 40 CFR part 71, you must report all deviations as defined in this subpart in the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A). If you submit a compliance report for an iron and steel foundry along with, or as part of, the semiannual monitoring report required by 40 CFR 70.6(a)(3)(iii)(A) or 40 CFR 71.6(a)(3)(iii)(A), and the compliance report includes all the required information concerning deviations from any emissions limitation or operation and maintenance requirement in this subpart, submission of the compliance report satisfies any obligation to report the same deviations in the semiannual monitoring report. However, submission of a compliance report does not otherwise affect any obligation you may have to report deviations from permit requirements for an iron and steel foundry to your permitting authority.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7222, February 7, 2008]

**§ 63.7752 What records must I keep?**

(a) You must keep the records specified in paragraphs (a)(1) through (4) of this section:

(1) A copy of each notification and report that you submitted to comply with this subpart, including all documentation supporting any initial notification or notification of compliance status that you submitted, according to the requirements of §63.10(b)(2)(xiv).

(2) The records specified in §63.6(e)(3)(iii) through (v) related to startup, shutdown, and malfunction.

(3) Records of performance tests and performance evaluations as required by §63.10(b)(2)(viii).

(4) Records of the annual quantity of each chemical binder or coating material used to coat or make molds and cores, the Material Data Safety Sheet or other documentation that provides the chemical composition of each component, and the annual quantity of HAP used in these chemical binder or coating materials at the foundry as calculated from the recorded quantities and chemical compositions (from Material Data Safety Sheets or other documentation).

(b) You must keep the following records for each CEMS.

(1) Records described in §63.10(b)(2)(vi) through (xi).

(2) Previous ( i.e., superseded) versions of the performance evaluation plan as required in §63.8(d)(3).

(3) Request for alternatives to relative accuracy tests for CEMS as required in §63.8(f)(6)(i).

(4) Records of the date and time that each deviation started and stopped, and whether the deviation occurred during a period of startup, shutdown, or malfunction or during another period.

(c) You must keep the records required by §§63.7743, 63.7744, and 63.7745 to show continuous compliance with each emissions limitation, work practice standard, and operation and maintenance requirement that applies to you.

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7222, February 7, 2008]

**§ 63.7753 In what form and for how long must I keep my records?**

(a) You must keep your records in a form suitable and readily available for expeditious review, according to the requirements of §63.10(b)(1).

(b) As specified in §63.10(b)(1), you must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record.

(c) You must keep each record onsite for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record according to the requirements in §63.10(b)(1). You can keep the records for the previous 3 years offsite.

**Other Requirements and Information**

**§ 63.7760 What parts of the General Provisions apply to me?**

Table 1 to this subpart shows which parts of the General Provisions in §§63.1 through 63.15 apply to you.

**§ 63.7761 Who implements and enforces this subpart?**

(a) This subpart can be implemented and enforced by us, the U.S. Environmental Protection Agency (EPA), or a delegated authority such as your State, local, or tribal agency. If the U.S. EPA Administrator has delegated authority to your State, local, or tribal agency, then that agency, in addition to the U.S. EPA, has the authority to implement and enforce this subpart. You should contact your U.S. EPA Regional Office to find out if implementation and enforcement of this subpart is delegated to your State, local, or tribal agency.

(b) In delegating implementation and enforcement authority of this subpart to a State, local, or tribal agency under 40 CFR part 63, subpart E, the authorities contained in paragraph (c) of this section are retained by the Administrator of the U.S. EPA and are not transferred to the State, local, or tribal agency.

(c) The authorities that cannot be delegated to State, local, or tribal agencies are specified in paragraphs (c)(1) through (4) of this section.

(1) Approval of alternatives to non-opacity emissions limitations in §63.7690 and work practice standards in §63.7700 under §63.6(g).

(2) Approval of major alternatives to test methods under §63.7(e)(2)(ii) and (f) and as defined in §63.90.

(3) Approval of major alternatives to monitoring under §63.8(f) and as defined in §63.90.

(4) Approval of major alternatives to recordkeeping and reporting under §63.10(f) and as defined in §63.90.

**Definitions**

**§ 63.7765 What definitions apply to this subpart?**

Terms used in this subpart are defined in the Clean Air Act (CAA), in §63.2, and in this section.

*Automated conveyor and pallet cooling line* means any dedicated conveyor line or area used for cooling molds received from pouring stations.

*Automated shakeout line* means any mechanical process unit designed for and dedicated to separating a casting from a mold. These mechanical processes include, but are not limited to, shaker decks, rotary separators, and high-frequency vibration units. Automated shakeout lines do not include manual

processes for separating a casting from a mold, such as personnel using a hammer, chisel, pick ax, sledge hammer, or jackhammer.

*Bag leak detection system* means a system that is capable of continuously monitoring relative particulate matter (dust) loadings in the exhaust of a baghouse to detect bag leaks and other upset conditions. A bag leak detection system includes, but is not limited to, an instrument that operates on triboelectric, electrodynamic, light scattering, light transmittance, or other effect to continuously monitor relative particulate matter loadings.

*Binder chemical* means a component of a system of chemicals used to bind sand together into molds, mold sections, and cores through chemical reaction as opposed to pressure.

*Capture system* means the collection of components used to capture gases and fumes released from one or more emissions points and then convey the captured gas stream to a control device or to the atmosphere. A capture system may include, but is not limited to, the following components as applicable to a given capture system design: duct intake devices, hoods, enclosures, ductwork, dampers, manifolds, plenums, and fans.

*Cold box mold or core making line* means a mold or core making line in which the formed aggregate is hardened by catalysis with a gas.

*Combustion device* means an afterburner, thermal incinerator, or scrap preheater.

*Conveyance* means the system of equipment that is designed to capture pollutants at the source, convey them through ductwork, and exhaust them using forced ventilation. A conveyance may, but does not necessarily include, control equipment designed to reduce emissions of the pollutants. Emissions that are released through windows, vents, or other general building ventilation or exhaust systems are not considered to be discharged through a conveyance.

*Cooling* means the process of molten metal solidification within the mold and subsequent temperature reduction prior to shakeout.

*Cupola* means a vertical cylindrical shaft furnace that uses coke and forms of iron and steel such as scrap and foundry returns as the primary charge components and melts the iron and steel through combustion of the coke by a forced upward flow of heated air.

*Deviation* means any instance in which an affected source or an owner or operator of such an affected source:

(1) Fails to meet any requirement or obligation established by this subpart including, but not limited to, any emissions limitation (including operating limits), work practice standard, or operation and maintenance requirement;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any iron and steel foundry required to obtain such a permit; or

(3) Fails to meet any emissions limitation (including operating limits) or work practice standard in this subpart during startup, shutdown, or malfunction, regardless of whether or not such failure is permitted by this subpart. A deviation is not always a violation. The determination of whether a deviation constitutes a violation of the standard is up to the discretion of the entity responsible for enforcement of the standards.

*Electric arc furnace* means a vessel in which forms of iron and steel such as scrap and foundry returns are melted through resistance heating by an electric current flowing through the arcs formed between the electrodes and the surface of the metal and also flowing through the metal between the arc paths.

*Electric induction furnace* means a vessel in which forms of iron and steel such as scrap and foundry returns are melted though resistance heating by an electric current that is induced in the metal by passing an alternating current through a coil surrounding the metal charge or surrounding a pool of molten metal at the bottom of the vessel.

*Emissions limitation* means any emissions limit or operating limit.

*Exhaust stream* means gases emitted from a process through a conveyance as defined in this subpart.

*Free organic liquids* means material that fails the paint filter test by EPA Method 9095A (incorporated by reference—see §63.14). That is, if any portion of the material passes through and drops from the filter within the 5-minute test period, the material contains free liquids.

*Fresh acid solution* means a sulfuric acid solution used for the control of triethylamine emissions that has a pH of 2.0 or less.

*Fugitive emissions* means any pollutant released to the atmosphere that is not discharged through a conveyance as defined in this subpart.

*Furan warm box mold or core making line* means a mold or core making line in which the binder chemical system used is that system commonly designated as a furan warm box system by the foundry industry.

*Hazardous air pollutant* means any substance on the list originally established in 112(b)(1) of the CAA and subsequently amended as published in the Code of Federal Regulations.

*Iron and steel foundry* means a facility or portion of a facility that melts scrap, ingot, and/or other forms of iron and/or steel and pours the resulting molten metal into molds to produce final or near final shape products for introduction into commerce. Research and development facilities and operations that only produce non-commercial castings are not included in this definition.

*Metal melting furnace* means a cupola, electric arc furnace, or electric induction furnace that converts scrap, foundry returns, and/or other solid forms of iron and/or steel to a liquid state. This definition does not include a holding furnace, an argon oxygen decarburization vessel, or ladle that receives molten metal from a metal melting furnace, to which metal ingots or other material may be added to adjust the metal chemistry.

*Mold or core making line* means the collection of equipment that is used to mix an aggregate of sand and binder chemicals, form the aggregate into final shape, and harden the formed aggregate. This definition does not include a line for making green sand molds or cores.

*Mold vent* means an intentional opening in a mold through which gases containing pyrolysis products of organic mold and core constituents produced by contact with or proximity to molten metal normally escape the mold during and after metal pouring.

*Off blast* means those periods of cupola operation when the cupola is not actively being used to produce molten metal. Off blast conditions include cupola startup when air is introduced to the cupola to preheat the sand bed and other cupola startup procedures as defined in the startup, shutdown, and malfunction plan. Off blast conditions also include idling conditions when the blast air is turned off or down to the point that the cupola does not produce additional molten metal.

*On blast* means those periods of cupola operation when combustion (blast) air is introduced to the cupola furnace and the furnace is capable of producing molten metal. On blast conditions are characterized by both blast air introduction and molten metal production.

*Pouring area* means an area, generally associated with floor and pit molding operations, in which molten metal is brought to each individual mold. Pouring areas include all pouring operations that do not meet the definition of a pouring station.

*Pouring station* means the fixed location to which molds are brought in a continuous or semicontinuous manner to receive molten metal, after which the molds are moved to a cooling area.

*Responsible official* means responsible official as defined in §63.2.

*Scrap preheater* means a vessel or other piece of equipment in which metal scrap that is to be used as melting furnace feed is heated to a temperature high enough to eliminate volatile impurities or other tramp materials by direct flame heating or similar means of heating. Scrap dryers, which solely remove moisture from metal scrap, are not considered to be scrap preheaters for purposes of this subpart.

*Scrubber blowdown* means liquor or slurry discharged from a wet scrubber that is either removed as a waste stream or processed to remove impurities or adjust its composition or pH before being returned to the scrubber.

*Total metal HAP* means, for the purposes of this subpart, the sum of the concentrations of antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, mercury, nickel, and selenium as measured by EPA Method 29 (40 CFR part 60, appendix A). Only the measured concentration of the listed analytes that are present at concentrations exceeding one-half the quantitation limit of the analytical method are to be used in the sum. If any of the analytes are not detected or are detected at concentrations less than one-half the quantitation limit of the analytical method, the concentration of those analytes will be assumed to be zero for the purposes of calculating the total metal HAP for this subpart.

*Work practice standard* means any design, equipment, work practice, or operational standard, or combination thereof, that is promulgated pursuant to section 112(h) of the CAA.

[69 FR 21923, Apr. 22, 2004, as amended at 70 FR 29404, May 20, 2005; 73 FR 7222, February 7, 2008]

**Table 1 to Subpart EEEEE of Part 63—Applicability of General Provisions to Subpart EEEEE**

[As stated in §63.7760, you must meet each requirement in the following table that applies to you.]

| Citation | Subject | Applies to Subpart EEEEE? | Explanation |
|---|---|---|---|
| 63.1 | Applicability | Yes | |
| 63.2 | Definitions | Yes | |
| 63.3 | Units and abbreviations | Yes | |
| 63.4 | Prohibited activities | Yes | |
| 63.5 | Construction/reconstruction | Yes | |

| | | | |
|---|---|---|---|
| 63.6(a)–(g) | Compliance with standards and maintenance requirements | Yes | |
| 63.6(h) | Opacity and visible emissions standards | Yes | |
| 63.6(i)–(j) | Compliance extension and Presidential compliance exemption | Yes | |
| 63.7(a)(1)–(a)(2) | Applicability and performance test dates | No | Subpart EEEEE specifies applicability and performance test dates. |
| 63.7(a)(3), (b)–(h) | Performance testing requirements | Yes | |
| 63.8(a)(1)–(a)(3), (b), (c)(1)–(c)(3), (c)(6)–(c)(8), (d), (e), (f)(1)–(f)(6), (g)(1)–(g)(4) | Monitoring requirements | Yes | Subpart EEEEE specifies requirements for alternative monitoring systems. |
| 63.8(a)(4) | Additional monitoring requirements for control devices in §63.11 | No | Subpart EEEEE does not require flares. |
| 63.8(c)(4) | Continuous monitoring system (CMS) requirements | No | Subpart EEEEE specifies requirements for operation of CMS and CEMS. |
| 63.8(c)(5) | Continuous opacity monitoring system (COMS) Minimum Procedures | No | Subpart EEEEE does not require COMS. |
| 63.8(g)(5) | Data reduction | No | Subpart EEEEE specifies data reduction requirements. |
| 63.9 | Notification requirements | Yes | Except: for opacity performance tests, Subpart EEEEE allows the notification of compliance status to be submitted with the semiannual compliance report or the semiannual part 70 monitoring report. |
| 63.10(a)–(b), (c)(1)–(6), (c)(9)–(15), (d)(1)–(2), (e)(1)–(2), (f) | Recordkeeping and reporting requirements | Yes | Additional records for CMS in §63.10(c)(1)–(6), (9)–(15) apply only to CEMS. |
| 63.10(c)(7)–(8) | Records of excess emissions and parameter monitoring exceedances for CMS | No | Subpart EEEEE specifies records requirements. |
| 63.10(d)(3) | Reporting opacity or visible emissions observations | Yes | |
| 63.10(e)(3) | Excess emissions reports | No | Subpart EEEEE specifies reporting requirements. |
| 63.10(e)(4) | Reporting COMS data | No | Subpart EEEEE data does |

| | | | |
|---|---|---|---|
| | | | not require COMS. |
| 63.11 | Control device requirements | No | Subpart EEEEE does not require flares. |
| 63.12 | State authority and delegations | Yes | |
| 63.13–63.15 | Addresses of State air pollution control agencies and EPA regional offices. Incorporation by reference. Availability of information and confidentiality | Yes | |

[69 FR 21923, Apr. 22, 2004, as amended at 73 FR 7223, February 7, 2008]

EPA-452/F-03-030

# Air Pollution Control Technology Fact Sheet

**Name of Technology**: Wet Electrostatic Precipitator (ESP)- Wire-Plate Type

**Type of Technology:** Control Device - Capture/Disposal

**Applicable Pollutants:**

Particulate Matter (PM), including particulate matter less than or equal to 10 micrometers (µm) in aerodynamic diameter ($PM_{10}$), particulate matter less than or equal to 2.5 µm in aerodynamic diameter ($PM_{2.5}$), and hazardous air pollutants (HAPs) that are in particulate form, such as most metals (mercury is the notable exception, as a significant portion of emissions are in the form of elemental vapor). Wet ESPs are often used to control acid mists and can provide incidental control of volatile organic compounds.

**Achievable Emission Limits/Reductions:**

Typical new equipment design efficiencies are between 99 and 99.9%. Older existing equipment have a range of actual operating efficiencies of 90 to 99.9%. While several factors determine ESP collection efficiency, ESP size is most important. Size determines treatment time; the longer a particle spends in the ESP, the greater its chance of being collected. Maximizing electric field strength will maximize ESP collection efficiency (STAPPA/ALAPCO, 1996). Collection efficiency is also affected to some extent by dust resistivity, gas temperature, chemical composition (of the dust and the gas), and particle size distribution. Cumulative collection efficiencies of PM, $PM_{10}$, and $PM_{2.5}$ for actual operating ESPs in various types of applications are presented in Table 1.

**Table 1. Cumulative PM, $PM_{10}$, and $PM_{2.5}$ Collection Efficiencies for Wet ESPs (EPA, 1998; EPA, 1997)**

| Application | Collection Efficiency (%) | | |
|---|---|---|---|
| | Total PM (EPA, 1997) | $PM_{10}$ (EPA, 1998) | $PM_{2.5}$ (EPA, 1998) |
| Primary Copper Production | | | |
| Multiple hearth roaster | 99.0 | 99.0 | 99.1 |
| Reverbatory smelter | 99.0 | 97.1 | 97.4 |
| Iron and Steel Production | | | |
| Open hearth furnace | 99.2 | 99.2 | 99.2 |
| Sinter oven | 98.0 | 94.0 | 90.0 |

**Applicable Source Type:** Point

**Typical Industrial Applications:**

Wet ESPs are used in situations for which dry are not suited, such as when the material to be collected is wet, sticky, flammable, explosive, or has a high resistivity. Also, as higher collection efficiencies have become more desirable, wet ESP applications have been increasing (EPA, 1998). Wet ESPs are commonly used by the wood products, metalurgical, and sulfuric acid manufacturing industries, though other ESP types are also employed. Common applications of wet wire-plate ESPs are presented in Table 2.

**Table 2. Typical Industrial Applications of Wet Wire-Plate ESPs (EPA, 1998)**

| Application | Source Category Code (SCC) |
|---|---|
| Chemical Manufacture | 3-01-001...999 |
| Non-Ferrous Metals Processing (Primary and Secondary): | |
| Copper | 3-03-005<br>3-04-002 |
| Lead | 3-03-010<br>3-04-004 |
| Zinc | 3-03-030<br>3-04-008 |
| Aluminum | 3-03-000...002<br>3-04-001 |
| Other metals production | 3-03-011...014<br>3-04-005...006<br>3-04-010...022 |
| Ferrous Metals Processing: | |
| Iron and Steel Production | 3-03-008...009 |
| Steel Foundries | 3-04-007,-009 |
| Mineral Products: | |
| Stone Quarrying and Processing | 3-05-020 |
| Other | 3-05-003...999 |
| Wood, Pulp, and Paper | 3-07-001 |

**Emission Stream Characteristics:**

**a.** **Air Flow:** Typical gas flow rates for wet wire-plate ESPs are 50 to 250 standard cubic meters per second ($sm^3$/sec) (100,000 to 500,000 standard cubic feet per minute (scfm)). Most smaller plate-type ESPs (50 $sm^3$/sec to 100 $sm^3$/sec, or 100,000 to 200,000 scfm) use flat plates instead of wires for the high-voltage electrodes (AWMA, 1992).

**b.** **Temperature:** Wet wire-plate ESPs are limited to operating at temperatures lower than approximately 80 to 90°C (170 to 190°F) (EPA, 1998; Flynn, 1999).

**c.** **Pollutant Loading:** Typical inlet concentrations to a wire-plate ESP are 2 to 110 g/$m^3$ (1 to 50 gr/scf). It is common to pretreat a waste stream, usually with a water spray or scrubber, to bring the temperature and pollutant concentration into a manageable range. Highly toxic flows with concentrations below 1 g/$m^3$ (0.5 gr/scf) are also sometimes controlled with ESPs (Bradburn, 1999; Boyer, 1999; Brown, 1999).

d. **Other Considerations:** Dust resistivity is not a factor for wet ESPs, because of the high humidity atmosphere which lowers the resistivity of most materials. Particle size is much less of a factor for wet ESPs, compared to dry ESPs. Much smaller particles can be efficiently collected by wet ESPs due to the lack of resistivity concerns and the reduced reentrainment (Flynn, 1999).

**Emission Stream Pretreatment Requirements:**

When the pollutant loading is exceptionally high or consists of relatively large (> 2 µm) particles, venturi scrubbers or spray chambers may be used to reduce the load on the ESP. Much larger particles (> 10 µm), are controlled with mechanical collectors such as cyclones. Gas conditioning equipment to reduce both inlet concentration and gas temperature is occasionally used as part of the original design of a wet ESP (AWMA, 1992; Flynn, 1999).

**Cost Information:**

The following are cost ranges (expressed in 2002 dollars) for wire-plate ESPs of conventional design under typical operating conditions, developed using EPA cost-estimating spreadsheets for dry wire-plate ESPs with adjustments made to reflect wet wire-plate ESPs (EPA, 1996). Costs can be substantially higher than in the ranges shown for pollutants which require an unusually high level of control, or which require the ESP to be constructed of special materials such as titanium. Capital and operating costs are generally higher due to noncorrosive materials requirements, increased water usage, and treatment and disposal of wet effluent. In most cases, smaller units controlling a low concentration waste stream will not be as cost effective as a large unit cleaning a high pollutant load flow (EPA, 1998).

a. **Capital Cost:** \$42,000 to \$85,000 per $sm^3$/sec (\$20 to \$40 per scfm)

b. **O & M Cost:** \$11,000 to \$85,000 per $sm^3$/sec (\$5 to \$40 per scfm), annually

c. **Annualized Cost:** \$19,000 to \$100,000 per $sm^3$/sec (\$9 to \$47 per scfm), annually

d. **Cost Effectiveness:** \$53 to \$570 per metric ton (\$48 to \$520 per short ton)

**Theory of Operation:**

An ESP is a particulate control device that uses electrical forces to move particles entrained within an exhaust stream onto collector plates. The entrained particles are given an electrical charge when they pass through a corona, a region where gaseous ions flow. Electrodes in the center of the flow lane are maintained at high voltage and generate the electrical field that forces the particles to the collector walls. In wet ESPs, the collectors are either intermittently or continuously washed by a spray of liquid, usually water. The collection hoppers used by dry ESPs are replaced with a drainage system. The wet effluent is collected, and often treated on-site (EPA, 1998).

In the wire-plate ESP, the exhaust gas flows horizontally and parallel to vertical plates of sheet metal. Plate spacing is typically between 19 to 38 cm (9 to 18 inches (in.)) (AWMA, 1992). The high voltage electrodes are long wires that are weighted and hang between the plates. Some later designs use rigid electrodes (hollow pipes approximately 25 mm to 40 mm in diameter) in place of wire (Cooper and Alley, 1994). Within each flow path, gas flow must pass each wire in sequence as it flows through the unit. The flow areas between the plates are called ducts. Duct heights are typically 6 to 14 meters (m) (20 to 45 feet) (EPA, 1998).

The power supplies for the ESP convert the industrial AC voltage (220 to 480 volts) to pulsating DC voltage in the range of 20,000 to 100,000 volts as needed. The voltage applied to the electrodes causes the gas between the electrodes to break down electrically, an action known as a "corona." The electrodes are usually given a negative polarity because a negative corona supports a higher voltage than does a positive corona before sparking occurs. The ions generated in the corona follow electric field lines from the wires to the collecting plates. Therefore, each wire establishes a charging zone through which the particles must pass. As larger particles (>10 µm diameter) absorb many times more ions than small particles (>1 µm diameter), the electrical forces are much stronger on the large particles (EPA, 1996).

Due to necessary clearances needed for nonelectrified internal components at the top of the ESP, part of the gas may flow around the charging zones. This is called "sneakage" and places an upper limit on the collection efficiency. Anti-sneakage baffles are placed to force the sneakage flow to mix with the main gas stream for collection in later sections (EPA, 1998).

Wet ESPs require a source of wash water to be injected or sprayed near the top of the collector plates either continuously or at timed intervals. This wash system replaces the rapping mechanism usually used by dry ESPs. The water flows with the collected particles into a sump from which the fluid is pumped or drained. A portion of the fluid may be recycled to reduce the total amount of water required. The remainder is pumped into a settling pond or passed through a dewatering stage, with subsequent disposal of the sludge (AWMA, 1992).

Unlike dry ESPs, resistivity of the collected material is generally not a major factor in performance. Because of the high humidity in a wet ESP, the resistivity of particles is lowered, eliminating the "back corona" condition. The frequent washing of the plates also limits particle buildup on the collectors (EPA, 1998).

**Advantages:**

Wet wire-plate ESPs and other ESPs in general, because they act only on the particulate to be removed, and only minimally hinder flue gas flow, have very low pressure drops (typically less than 13 mm (0.5 in.) water column). As a result, energy requirements and operating costs tend to be low. They are capable of very high efficiencies, even for very small particles. Operating costs are relatively low. ESPs are capable of operating under high pressure (to 1,030 kPa (150 psi)) or vacuum conditions, and relatively large gas flow rates can be effectively handled (AWMA, 1992).

Wet ESPs can collect sticky particles and mists, as well as highly resistive or explosive dusts. The continuous or intermittent washing with a liquid eliminates the reentrainment of particles due to rapping which dry ESPs are subject to. The humid atmosphere that results from the washing in a wet ESP enables them to collect high resistivity particles, absorb gases or cause pollutants to condense, and cools and conditions the gas stream. Liquid particles or aerosols present in the gas stream are collected along with particles and provide another means of rinsing the collection electrodes (EPA, 1998).

**Disadvantages:**

ESPs generally have high capital costs. The wire discharge electrodes (approximately 2.5 mm (0.01 in.) in diameter) are high-maintenance items. Corrosion can occur near the top of the wires because of air leakage and acid condensation. Also, long weighted wires tend to oscillate - the middle of the wire can approach the plate, causing increased sparking and wear. Newer ESP designs are tending toward rigid electrodes (Cooper and Alley, 1994).

ESPs in general are not suited for use in processes which are highly variable because they are very sensitive to fluctuations in gas stream conditions (flow rates, temperatures, particulate and gas composition, and particulate loadings). ESPs are also difficult to install in sites which have limited space since ESPs must be

relatively large to obtain the low gas velocities necessary for efficient PM collection (Cooper and Alley, 1994). Relatively sophisticated maintenance personnel are required, as well as special precautions to safeguard personnel from the high voltage. Ozone is produced by the negatively charged electrode during gas ionization (AWMA, 1992). Wet ESPs add the complexity of a wash system, and the fact that the resulting slurry must be handled more carefully than a dry product, and in many cases requires treatment, especially if the dust can be sold or recycled. Wet ESPs are limited to operating at stream temperatures under approximately 80 to 90°C (170 to 190°F), and generally must be constructed of noncorrosive materials (EPA, 1998; Flynn, 1999).

**Other Considerations:**

For wet ESPs, consideration must be given to handling wastewaters. For simple systems with innocuous dusts, water with particles collected by the ESP may be discharged from the ESP system to a solids-removing clarifier (either dedicated to the ESP or part of the plant wastewater treatment system) and then to final disposal. More complicated systems may require skimming and sludge removal, clarification in dedicated equipment, pH adjustment, and/or treatment to remove dissolved solids. Spray water from an ESP preconditioner may be treated separately from the water used to wash the ESP collecting plates so that the cleaner of the two treated water streams may be returned to the ESP. Recirculation of treated water to the ESP may approach 100 percent (AWMA, 1992).

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# Indiana Department of Environmental Management
# Office of Air Quality

# Technical Support Document (TSD) for a PSD/Part 70 Significant Source and Permit Modification.

## Source Description and Location

| | |
|---|---|
| **Source Name:** | ThyssenKrupp Waupaca, Inc Plant 5 |
| **Source Location:** | 9856 State Highway 66, Tell City, IN 47586 |
| **County:** | Perry |
| **SIC Code:** | 3321 |
| **Operation Permit No.:** | T 123-27047-00019 |
| **Operation Permit Issuance Date:** | July 23, 2009 |
| **PSD/Significant Source Modification No.:** | 123-29490-00019 |
| **Significant Permit Modification No.:** | 123-29497-00019 |
| **Permit Reviewer:** | Josiah Balogun |

## Existing Approvals

The source was issued Part 70 Operating Permit No.T123-27047-00019 on July 23, 2009. The source has since received the following approvals:

(a) Exemption No. 123-27152-00019, issued on November 17, 2008; and

(b) Significant Permit Modification No. 123-28470-00019, issued on November 20, 2009.

## County Attainment Status

The source is located in Perry County.

| Pollutant | Designation |
|---|---|
| $SO_2$ | Better than national standards. |
| CO | Unclassifiable or attainment effective November 15, 1990. |
| $O_3$ | Unclassifiable or attainment effective June 15, 2004, for the 8-hour ozone standard.[1] |
| $PM_{2.5}$ | Unclassifiable effective June 15, 2005. |
| $PM_{10}$ | Unclassifiable effective November 15, 1990. |
| $NO_2$ | Cannot be classified or better than national standards. |
| Pb | Not designated. |
| [1]Unclassifiable or attainment effective October 18, 2000, for the 1-hour ozone standard which was revoked effective June 15, 2005.Unclassifiable or attainment effective April 5, 2005, for PM2.5. | |

(a) Ozone Standards
Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Perry County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) PM2.5
Perry County has been classified as attainment for PM2.5. On May 8, 2008 U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM2.5 emissions, and the effective date of these rules was July 15th, 2008. Indiana has three years from the publication of these rules to revise its PSD rules, 326 IAC 2-2, to include those requirements. The May 8, 2008 rule revisions require IDEM to regulate PM10 emissions as a surrogate for PM2.5 emissions until 326 IAC 2-2 is revised.

(c) Other Criteria Pollutants
Perry County has been classified as attainment or unclassifiable in Indiana for all criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(d) Fugitive Emissions
Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2 or 326 IAC 2-3, fugitive emissions are counted toward the determination of PSD and Emission Offset applicability.

## Source Status

The table below summarizes the potential to emit of the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

| Pollutant | Emissions (tons/year) |
|---|---|
| PM | > 100 |
| PM10 | > 100 |
| $SO_2$ | > 100 |
| VOC | > 100 |
| CO | > 100 |
| $NO_x$ | > 100 |

(a) This existing source is a major stationary source, under PSD (326 IAC 2-2), because a regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).

(b) These emissions are based upon Part 70 Renewal No. 123-27047-00019, issued on July 23, 2009.

The table below summarizes the potential to emit HAPs for the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

| HAPs | Potential To Emit (tons/year) |
|---|---|
| Single HAP | greater than 10 |
| Total HAPs | greater than 25 |

This existing source is a major source of HAPs, as defined in 40 CFR 63.41, because HAP emissions are greater than ten (10) tons per year for a single HAP and greater than twenty-five (25) tons per year for a combination of HAPs. Therefore, this source is a major source under Section 112 of the Clean Air Act (CAA).

## Description of Proposed Modification

The Office of Air Quality (OAQ) has reviewed a modification application, submitted by ThyssenKrupp Waupaca, Inc Plant 5 on July 23, 2010, relating to the following changes to plant 5;

(1) P30 and P33 – Phase I and II Cupolas - Add oxygen and dehumidification to increase the combined cupola melt capacity from 150 to 200 tons per hour of iron requiring increases to gaseous emission limitations but no changes to existing PM, Pb and Be limitations.

(2) P35 - Ductile Iron Treatment Stations #1 and #2 - Change in type of iron inoculation equipment from George Fischer to Tundish ladle method. The capacity of this process will increase from 80 to 100 tons per hour of iron. It will require no changes to existing emission limitations for PM, Pb and Be.

(3) P34 - Desulfurization Ladle – Add a new operation to share the existing baghouse C44 requiring no change to current PM limitations from this baghouse. The capacity of this new process will be 100 tons per hour of iron. It will require no changes to existing emission limitations for PM, Pb and Be for baghouse C44.

(4) P01 to P08 - Casting Lines 1 to 8 and Ancillary Operations - Increase the throughput capacity of each casting line and ancillary metal and sand handling operations to utilize the new cupola melting capacity. This will require increases to existing gaseous emission limitations with no changes to existing PM, Pb and Be limitations.

(5) Updates Compliance Monitoring Requirements for Existing Operations – When the permit for Plant 5 is modified to address the proposed cupola project, TKW proposes that the following updates also be made to the compliance monitoring requirements for existing operations:

The following is a list of the modified emission unit(s) and pollution control device(s):

**New Unit**

(a) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.

**Modified Units**

Phase I

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of 100 tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(B) One (1) shakeout operation, identified as P02, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of 28 tons per hour, using three (3) baghouses (C01, C02,

C03) for particulate control, exhausting to stacks S01 and S04;

(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2

(A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P07, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P08, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P09, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3

(A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P12, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P13, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P14, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4

(A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P17, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P18, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P19, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

Phase II

(c) One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of 100 tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(d) Four (4) production lines, each constructed in 1998, consisting of the following:

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1)cast cooling operation, identified as P72, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(e) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of 50 tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15.

## Enforcement Issues

There are no pending enforcement actions.

## Emission Calculations

See Appendix A of this document for detailed emission calculations.

## Permit Level Determination – Part 70

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emission unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, IDEM, or the appropriate local air pollution control agency."

The following table is used to determine the appropriate permit level under 326 IAC 2-7-10.5. This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

**New Emission unit**

| Pollutant | Potential To Emit (tons/year) |
|---|---|
| PM | 477 |
| PM10 | 477 |
| $SO_2$ | - |
| VOC | - |
| CO | - |
| $NO_x$ | - |
| CO2 | 46,655 |
| Pb | 0.64 |
| Be | 0.013 |

**Modified Units**

| Pollutant | PTE Before Modification (tons/year) | PTE After Modification (tons/year) | Net Difference (tons/year) |
|---|---|---|---|
| PM | 61,207 | 81,557 | 20350 |
| PM10 | 61,207 | 81,557 | 20350 |
| $SO_2$ | 486 | 648 | 162 |
| VOC | 1,038 | 1384 | 346 |
| CO | 99,207 | 132,276 | 33,069 |
| $NO_X$ | 296 | 394 | 99 |
| Pb | 444.52 | 592.46 | 147.9 |
| Be | 1.99 | 2.72 | 0.73 |

The uncontrolled emissions of PM10, VOC, SO2 and NOx are greater than 25 tons per year, each and the uncontrolled CO emissions are more than 100 tons per year, therefore, this project requires a significant source modification under 326 IAC 2-7-10.5(f). The modification also includes a reevaluation of PSD BACT for CO, VOC, SO2, NOx Pb and Be. Therefore, this source modification shall be processed as a PSD/Significant Source Modification pursuant to 326 IAC 2-7-10.5(f)(1) and (4). Additionally, the modification will be incorporated into the Part 70 Operating Permit through a significant permit modification issued pursuant to 326 IAC 2-7-12(d), because modifying the existing operating conditions of the emission units in the Part 70 Operating Permit requires a case-by-case determination of the emission limits.

**Permit Level Determination – PSD**

The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered federally enforceable only after issuance of this Part 70 permit modification, and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

| Past Actual to Future Projected Analysis for Modified Emission Units and sourcewide emissions units | |
|---|---|
| | PM10 (Tons) |
| Sourcewide Past Actual for existing units | 336.7 |
| Sourcewide Projected Actual for existing units | 330.3 |
| Sourcewide Actual To Projected Actual emission increase for existing units | 6.4 |
| **New Unit PTE - P34 Desulfurization Ladle** | 2.8 |
| **Total for Modification** | 9.2 |
| **PSD Significant Level** | **15** |

The Permittee completed an ATPA for PM10 (pursuant to 326 IAC 2-2-2, and 326 IAC 2-1.1-5) for this modification at a major stationary source that indicates that the modification will not be major for Prevention of Significant Deterioration (PSD) (326 IAC 2-2) or Nonattainment NSR (326 IAC 2-1.1.5 ). IDEM, OAQ has not reviewed this information and will not be making any determination in this regard as part of this approval. The applicant will be required to keep records and report in accordance with 326 IAC 2-2-8 (Source Obligation) for all the units included in the ATPA.

The PM10 emissions from the ATPA and the P34 Desulfurization Ladle are less than the PSD significant level. It is reasonable to conclude that filterable PM2.5 would be equal or less than the filterable PM10 emissions. Therefore, IDEM has determined that PM10 is a reasonable surrogate for PM2.5 for the purposes of this permit.

| | **Potential to Emit (tons/year)** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Process/ Emission Unit** | **PM** | **$SO_2$** | **VOC** | **CO** | **$NO_X$** | **CO2** | **Pb** | **Be** |
| **Casting Lines 1 to 8** | **0.0*** | 4.4 | 306.6 | 1314.0 | 2.2 | 46,655 | --- | --- |
| **Cupolas P30 & P33** | **0.0*** | 48.2 | 4.4 | 87.6 | 96.4 | | --- | --- |
| **P35 Ductile Iron Station #1 and #2** | 20.6 | 0 | 0 | 0 | 0 | | 0.02063 | 0.0004 |
| **P34 Desulfurization Ladle** | 2.8 | 0 | 0 | 0 | 0 | | 0.0028 | 0.0001 |
| **Total for Modification** | 23.4 | 52.6 | 311.0 | 1401.6 | 98.6 | | 0.0234 | 0.0005 |
| **PSD Significant Level** | 25 | 40 | 40 | 100 | 40 | 75,000 | 0.6 | 0.0004 |

Note* There is no change to the PM BACT Limits for the Casting Lines and the Cupolas.

This modification to an existing stationary source is major for PSD because the emission increase of VOC, CO, SO2 NOx and Be are greater than the PSD significant level and it is one of the twenty-eight (28) listed source categories. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do apply.

The CO2 emissions from this modification are less than the PSD significant level of 75,000 tons per year.

## Federal Rule Applicability Determination

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this proposed modification.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) applicable to this proposed modification.

(c) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is applicable to new or modified emission units that involve a pollutant-specific emission unit and meet the following criteria:

(1) has a potential to emit before controls equal to or greater than the major source threshold for the pollutant involved;

(2) is subject to an emission limitation or standard for that pollutant; and

(3) uses a control device, as defined in 40 CFR 64.1, to comply with that emission limitation or standard.

The following table is used to identify the applicability of each of the criteria, under 40 CFR 64.1, to each new or modified emission unit involved:

| Emission Unit | Control Device Used | Emission Limitation (Y/N) | Uncontrolled PTE (tons/year) | Controlled PTE (tons/year) | Major Source Threshold (tons/year) | CAM Applicable (Y/N) | Large Unit (Y/N) |
|---|---|---|---|---|---|---|---|
| P34-Desulfurization Ladle (PM) | Y | Y | 477 | 2.8 | 100 | Y | N |
| P34-Desulfurization Ladle (PM10) | Y | Y | 477 | 2.8 | 100 | Y | N |

Based on this evaluation, the requirements of 40 CFR Part 64, CAM are applicable to P34-Desulfurization Ladle for PM and PM10 upon issuance of the Title V Renewal. A CAM plan must be submitted as part of the Renewal application.

## State Rule Applicability Determination

**326 IAC 2-2-3 (PSD BACT: Control Technology Review Requirements)**
Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the Best Available Control Technologies (BACT) for these units shall be as follows:

(a) The combined sulfur dioxide (SO2) emissions from the Casting Lines 1 - 4 shall not exceed 0.02 pounds per ton and 1.98 pounds per hour, for both stacks S01 and S04.

(b) The sulfur dioxide (SO2) emissions from the Casting Lines 5 - 8 shall not exceed 2.02 pounds per ton and 0.6 pounds per hour for stack 15.

(c) The sulfur dioxide (SO2) emissions from the two (2) Cupolas P30 and P33 shall be controlled by a dry injection scrubber and the SO2 emissions shall not exceed 0.22 pounds per ton of metal based on 30-day rolling average and 44 pounds per hour based on a 3-hour rolling average.

(d) The combined nitrogen oxide (NOx) emissions from the Casting Lines 1 - 4 shall not exceed 0.01 pounds per ton of iron and 0.99 pounds per hour, for both stacks S01 and S04.

(e) The nitrogen oxide (NOx) emissions from the Casting Lines 5 - 8 shall not exceed 0.01 pounds per ton of iron and 1.01 pounds per hour, for stack S15.

(f) The nitrogen oxide (NOx) emissions from the cupola P30 and P33 shall not exceed 0.44 pounds per ton of iron and 88 pounds per hour.

(g) The combined carbon dioxide (CO) emissions from the Casting Line 1 - 4 shall be controlled by a mold vent off gas ignition and the emissions shall not exceed 6.0 pounds per ton of iron and 594 pounds per hour for both pouring/mold cooling and shakeout operations, for both stacks S01 and S04.

(h) The combined carbon dioxide (CO) emissions from the Casting Lines 5 - 8 shall be controlled by a mold vent off gas ignition and the emissions shall not exceed 6.0 pounds per ton of iron and 606 pounds per hour for both pouring/mold cooling and shakeout operations, for both stacks S15 and S16.

(i) The carbon dioxide (CO) emissions from the cupola P30 and P33 shall be controlled by an incineration system and the CO emissions shall not exceed 0.4 pounds per ton of iron and 80 pounds per hour.

(j) The combined volatile organic compounds (VOCs) emissions from the casting lines 1 - 4 shall be controlled by a mold vent off gas ignition and the combined VOC emissions shall not exceed 1.4 pounds per ton of iron and 138.60 pounds per hour for both stacks S01 and S04.

(k) The combined volatile organic compounds (VOCs) emissions from the casting lines 5 - 8 shall be controlled by a mold vent off gas ignition and the combined VOC emissions shall not exceed 1.4 pounds per ton of iron and 141.4 pounds per hour for both stacks S15 and S16.

(l) The volatile organic compounds (VOCs) emissions from the cupolas P30 and P33 shall be controlled by an incineration and the VOC emissions shall not exceed 0.02 pounds per ton of iron of iron and 4.0 pounds per hour.

(m) The particulate matter (PM) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the PM emissions shall not exceed an outlet concentration 0.005 grains per dry standard cubic foot for PM and 0.64 pounds per hour.

(n) The PM emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the PM emissions shall not exceed an outlet concentration 0.005 grains per dry standard cubic foot for PM and 4.7 pounds per hour.

(o) The lead (Pb) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the Pb emissions shall not exceed 1,000 ppm and 0.00064 pounds per hour.

(p) The beryllium (Be) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the Be emissions shall not exceed 20 ppm and 0.00001 pounds per hour.

(q) The lead (Pb) emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the lead emissions shall not exceed 1,000 ppm and 0.0047 pounds per hour.

(r) The beryllium (Be) emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the Be emissions shall not exceed 20 ppm and 0.00009 pounds per hour.

**326 IAC 2-2 (Prevention of Significant Deterioration (PSD))**
This source is a major source for PSD because the potential to emit of at least one of the regulated pollutants is greater than 100 tons per year and this source is in 1 of the 28 listed source categories. The uncontrolled potential to emit of this modification is greater than 15 tons per year for PM10. In order to make the requirements of 326 IAC 2-2 (PSD) not applicable to the 2010 modification, the Permittee has taken the following limits:

(a) PM10 emissions from the P34 - Desulfurization Ladle shall not exceed 0.64 pounds per hour.

Compliance with these limits will ensure that the PM10 emissions from the proposed modification (P34 - Desulfurization Ladle ) is less than 15 tons per year, and render the requirements of 326 IAC 2-2 (PSD) not applicable to this modification.

**326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))**
The operation of these emission units in this modification will emit greater than ten (10) tons per year for a single HAP and/or greater than twenty-five (25) tons per year for a combination of HAPs. Therefore, 326 IAC 2-4.1 would apply to the these units, however, pursuant to 326 IAC 2-4.1-1(b)(2), because these units are specifically regulated by NESHAP 40 CFR 63, Subpart EEEEE, which was issued pursuant to Section 112(d) of the CAA, these units are exempt from the requirements of 326 2-4.1.

**326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)**
Pursuant to 326 IAC 6-3-1(c)(1), the P34-desulfurization ladle is subject to 326 IAC 2-2-3 because the BACT limit is more stringent than 326 IAC 6-3-2, therefore, this emission unit is exempt from the requirements of 326 IAC 6-3-2.

**326 IAC 7-1.1-2 (Sulfur Dioxide Emission Limitations)**
The potential to emit sulfur dioxide from the spreader stoker boiler, identified as Unit #1 is greater than twenty-five (25) tons per year. The spreader boiler is a wood waste-fired boiler not a natural gas, fuel oil or coal - fired boiler, therefore, pursuant to 326 IAC 7-1.1-2 (a), the requirements of 326 IAC 7-1.1-2 (Sulfur Dioxide Emission Limitations) are not applicable to this emission unit.

**326 IAC 8-1-6 (New Facilities; General Reduction Requirements)**
This rule requires that new facilities (as of January 1, 1980), which have potential VOC emissions of 25 tons or more per year, located anywhere in the state, which are not otherwise regulated by other provisions of 326 IAC 8, shall reduce VOC emissions using Best Available Control Technology (BACT). The source is subject to 326 IAC 2-2-3 (PSD BACT), therefore, PSD BACT will satisfy for the requirements of 326 IAC 8-1-6 at this source.

**326 IAC 9-1 (Carbon Monoxide Emission Limits)**
This source is subject to 326 IAC 9-1 because it is a stationary source of CO emissions commencing operation after March 21, 1972 and has CO emissions of more than 100 tons per year. There are no applicable CO emission limits, under this state rule, established for this type of operation.
**326 IAC 2-2-4 (Air Quality Analysis Requirements)**
Section (4)(a) of this rule, requires that the PSD application shall contain an analysis of ambient air quality in the area that the major stationary source would affect for pollutants that are emitted at major levels or significant amount. ThyssenKrupp Waupaca, Inc, Plant 5 has submitted an air

quality analysis, which has been evaluated by IDEM's Technical Support and Modeling Section. See details in Appendix C.

NAAQS modeling for the appropriate time-averaging periods for $NO_2$ and $SO_2$ was conducted and compared to the respective NAAQS limit. OAQ modeling results are shown in Appendix C. All maximum-modeled concentrations were compared to the respective NAAQS limit. All maximum-modeled concentrations during the five years were below the NAAQS limits and further modeling was not required.

**326 IAC 2-2-5 (Air Quality Impact Requirements)**
326 IAC 2-2-5(e)(1) of this rule, requires that the air quality impact analysis required by this section shall be conducted in accordance with the following provisions:

(1) Any estimates of ambient air concentrations used in the demonstration processes required by this section shall be based upon the applicable air quality models, data bases, and other requirements specified in 40 CFR Part 51, Appendix W (Requirements for Preparation, Adoption, and Submittal of Implementation Plans, Guideline on Air Quality Models)*.

(2) Where an air quality impact model specified in the guidelines cited in subdivision (1) is inappropriate, a model may be modified or another model substituted provided that all applicable guidelines are satisfied.

(3) Modifications or substitution of any model may only be done in accordance with guideline documents and with written approval from U.S. EPA and shall be subject to public comment procedures set forth in 326 IAC 2-1.1-6.

**Economic Growth**
The purpose of the growth analysis is to quantify project associated growth and estimate the air quality impacts from this growth either quantitatively or qualitatively.

The proposed cupola project will increase the facility production capacity. As a result, there will be an increase in actual production. Since this plant had complete Phase I and II modification on 1996 and 1998 and this project will result in a significant smaller increase in production compared to the previous modification. It is expected that this project will not cause significant increase in work force and need for housing.

**Soils and Vegetation Analysis**
A list of soil types present in the general area was determined. Soil types include the following: Loamy Glacial Till, Moderate Thick Loess over Weathered Loamy Glacial Till and Discontinuous Loess over Weathered Sandstone and Shale; Discontinuous Loess over Weathered Limestone and Shale;

Due to the agricultural nature of the land, crops in the Perry County area consist mainly of corn, sorghum, wheat, soybeans, and oats (2002 Agricultural Census for Perry County). The maximum modeled concentrations for ThyssenKrupp Waupaca, Inc are well below the threshold limits necessary to have adverse impacts on the surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail, and milkweed (Flora of Indiana – Charles Deem). Livestock in Perry County consist mainly of hogs, cattle, and sheep (2002 Agricultural Census for Perry County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

**Federal and State Endangered Species Analysis**
Federal and state endangered or threatened species are listed by the U.S. Fish and Wildlife Service; Division of Endangered Species for Indiana, and includes 5 amphibians, 27 birds, 10 fishes, 7 mammals, 15 mollusks, and 15 reptiles. Of the federal and state endangered species on

the list, 1 amphibian, 5 reptiles, 14 mollusks, 5 fish, 9 birds, 3 insects and 4 mammals have habitat within Perry County. The mollusks, mussel bed, amphibians and certain species of birds and mammals are found along rivers and lakes while the other species of birds and mammals are found in forested areas. The facility is not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the industrial, farming, and residential activities in the area.

Federal and state endangered or threatened plants are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana. They list 17 state significant species of plants. At this time no federally endangered plant species are found in Perry County. The endangered plants do not thrive in industrialized and residential areas. The facility is not expected to adversely affect any plant on the endangered species list.

**326 IAC 2-2-6 (Increment Consumption Requirements)**
326 IAC 2-2-6(a) requires that any demonstration under section 5 of this rule shall demonstrate that increased emissions caused by the proposed major stationary source will not exceed eighty percent (80%) of the available maximum allowable increases (MAI) over the baseline concentration of sulfur dioxide, particulate matter, and nitrogen dioxide indicated in subsection (b)(1) of this rule.

**326 IAC 2-2-7 (Additional Analysis, Requirements)**
326 IAC 2-2-7(a) requires an analysis of the impairment to visibility, soils and vegetation. An analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial, and other growth associated with the source. See detailed analysis in Appendix C.

**326 IAC 2-2-8 (Source Obligation)**

(1) Pursuant to 2-2-8(1), approval to construct, shall become invalid if construction is not commenced within eighteen (18) months after receipt of the approval, if construction is discontinued for a period of eighteen (18) months or more, or if construction is not completed within a reasonable time.

(2) Approval for construction shall not relieve the Permittee of the responsibility to comply fully with applicable provisions of the state implementation plan and any other requirements under local, state, or federal law.

**326IAC 2-2-10 (Source Information)**
The Permittee has submitted all information necessary to perform an analysis or make the determination required under this rule.

**326 IAC 2-2-12 (Permit Rescission)**
The permit issued under this rule shall remain in effect unless and until it is rescinded, modified, revoked, or it expires in accordance with 326 IAC 2-1.1-9.5 or section 8 of this rule.

## Compliance Determination and Monitoring Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, Compliance Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

If the Compliance Determination Requirements are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance

Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The Compliance Determination Requirements applicable to this modification are as follows:

| Emission Unit | Control Device | When to test | Pollutant | Frequency of Testing |
|---|---|---|---|---|
| P34- desulfurization ladle Stack S44 | Baghouse | 60 days / no later than 180 days | PM | Every five (5) years |
| P34- desulfurization ladle Stack S44 | Baghouse | 60 days / no later than 180 days | PM10 | Every five (5) years |
| P34- desulfurization ladle Stack S44 | Baghouse | 60 days / no later than 180 days | Pb | Every five (5) years |
| P34- desulfurization ladle Stack S44 | Baghouse | 60 days / no later than 180 days | Be | Every five (5) years |

## Proposed Changes

The changes listed below have been made to Part 70 Operating Permit No. 123-27047-00019. Deleted language appears as ~~strikethroughs~~ and new language appears in **bold**:

Change 1: The emission descriptions in Section A.2 have been revised and a new emission unit has been added to this section.

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

Phase I

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of ~~80~~ **100** tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(B) One (1) shakeout operation, identified as P02, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of ~~25~~ **28** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one

(1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2
- (A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P07, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P08, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P09, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;
- (E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3
- (A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P12, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P13, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P14, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;
- (E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4
- (A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (B) One (1) shakeout operation, identified as P17, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (C) One (1) cast cooling operation, identified as P18, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (D) One (1) pick & sort operation, identified as P19, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
- (E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(c) Sand handling operations and ancillary operations, each constructed in 1996, consisting of the following:

(1) One (1) return sand handling & screen operation, identified as P21, with a

maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(2) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(3) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(4) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of ~~50~~ **54** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(5) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(6) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of ~~30~~ **33** tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(7) One (1) core sand handling operation, identified as P40, with a maximum throughput of 16 tons per hour, using one (1) baghouse (C08) for particulate control, exhausting to stack S08;

(8) One (1) core manufacturing operation, identified as P41, with a maximum throughput of 16 tons per hour, exhausting to stack S11;

(9) One (1) core machine & oven operation, identified as P51, with a maximum heat input capacity of 16.8 MMBtu per hour, combusting natural gas, exhausting to stack S11;

(10) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;

(11) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of ~~80~~ **100** tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(12) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of ~~80~~ **100** tons per hour; **release as fugitive emissions,** and

(13) One (1) ladle cleaning with burn bars, identified as P86.

**(14) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.**

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Phase II

(a) One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of ~~80~~ **100** tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(b) Four (4) production lines, each constructed in 1998, consisting of the following:

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of ~~25~~ **28** tons per hour. Particulate matter emissions

are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P72, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum

throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(c) Sand handling operations and ancillary operations, each constructed in 1998, consisting of the following:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of ~~50~~ **55** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of ~~40~~ **44** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of ~~91.2~~ **114.0** tons per hour;

(7) One (1) ladle filling and iron transport operation with a maximum capacity of ~~150~~ **188** tons of iron per hour, and a ladle cleaning operation with an average usage

of 13.2 pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(8) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of ~~40~~ **50** tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

Change 2: The emission descriptions in Section D.1 have been revised and most of the conditions in this section have been revised because of the BACT analysis.

**SECTION D.1 EMISSIONS UNIT OPERATION CONDITIONS**

**Emissions Unit Description:**

**MELTING OPERATION**
Phase I

One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of ~~80~~ **100** tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and volatile organic compound emissions control, and one (1) lime injection system (C12A) using dry injection system for sulfur dioxide control, exhausting to stack S09;

Phase II

One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of ~~80~~ **100** tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.1.4 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

(a) Pursuant to **PSD/SSM 123-29490-00019 and** 326 IAC 2-2-3(a)(3), the sulfur dioxide ($SO_2$) emissions from the cupolas shall be limited to 0.22 pounds per ton of metal melted based on a 30-day rolling average and ~~35.2~~ **44.0** pounds per hour based on a 3-hour rolling average.

(b) Pursuant to ~~CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), coke usage shall not exceed ~~192~~ **240** tons per day for each cupola.

D.1.5 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to ~~CP-123-8451-00019, issued on February 4 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019,** 326 IAC 2-2-3(a)(3) and 326 IAC 8-1-6 (General Reduction Requirements for New Facilities), the volatile organic compound (VOC) emissions from the cupolas shall be limited to 0.02 pounds per ton of iron and ~~3.20~~ **4.0** pounds per hour.

D.1.6 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)] [326 IAC 9-1-2]

(a) Pursuant to ~~CP-123-8451-00019, issued on February 4 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the cupolas shall be limited to 0.4 pounds per ton of iron and ~~64.00~~ **80.0** pounds per hour.

(b) Pursuant to 326 IAC 9-1-2 (Carbon Monoxide Emission Limits), the carbon monoxide emissions from the cupolas shall be controlled by the recuperative incinerator/heat recovery systems, which shall maintain a minimum temperature of one thousand three hundred (1,300) degrees Fahrenheit for a minimum retention time of three-tenths (0.3) second.

D.1.7 PSD BACT for Nitrogen Oxide [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP-123-8451-00019, issued on February 4 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the nitrogen oxide ($NO_X$) emissions from the cupolas shall be limited to 0.44 pounds per ton of iron and ~~70.40~~ **88.0** pounds per hour.

D.1.8 Operating Requirements [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP123-8451-00019 issued on February 4, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), each cupola shall be limited to a maximum melt rate of ~~80~~ **100** tons per hour, based on a 24 hour average.

**Compliance Determination Requirements**

D.1.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

**(a)** **Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour**, ~~In~~ **in** order to determine compliance with Conditions D.1.1, D.1.2, **and** D.1.3, ~~D.1.5, D.1.6 and D.1.7~~, the Permittee shall perform PM, opacity, ~~VOC, NOx, CO~~, lead and beryllium testing ~~before December 2009~~ on both cupolas, identified as P30 and P33 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and half (2.5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**.

**(b)** **Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour, in order to determine compliance with Conditions D.1.4, D.1.5, D.1.6 and D.1.7, the Permittee shall perform SO2, VOC, NOx, and CO, testing on both cupolas, identified as P30 and P33 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every two and half (2.5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.**

D.1.13 VOC, CO, and NOx Control **[326 IAC 2-2-3]**

.....

D.1.14 Continuous Emissions Monitoring and Continuous Opacity Monitoring **[326 IAC 2-7-6(1)]**

.....

Change 3: The emission descriptions in Section D.2 have been revised and most of the conditions in this section have been revised because of the BACT analysis.

**SECTION D.2 EMISSIONS UNIT OPERATION CONDITIONS**

| |
|---|
| **Emissions Unit Description:**<br>Facilities exhausting to stacks S01, S04, or S07<br>Phase I |

(A) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1

(a) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(b) One (1) shakeout operation, identified as P02, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) cast cooling operation, identified as P03, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(d) One (1) pick & sort operation, identified as P04, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01; and

(e) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(2) Line 2

(a) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) shakeout operation, identified as P07, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) cast cooling operation, identified as P08, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) pick & sort operation, identified as P09, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07; and

(e) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(3) Line 3

(a) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) shakeout operation, identified as P12, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) cast cooling operation, identified as P13, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) pick & sort operation, identified as P14, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07; and

(e) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(4) Line 4

(a) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) shakeout operation, identified as P17, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control,

exhausting to stack S01;

(c) One (1) cast cooling operation, identified as P18, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) pick & sort operation, identified as P19, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01; and

(e) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07.

(5) Sand handling operations and ancillary operations

(a) One (1) return sand handling & screen operation, identified as P21, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(b) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(c) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(d) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of ~~50~~ **54** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(e) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(f) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of ~~30~~ **33** tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.2.4 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)]

Pursuant to ~~PSD/SSM 123-26008-00019,~~ **PSD/SSM 123-29490-00019,** and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for volatile organic compounds (VOC) for the Pouring/Mold Cooling and shakeout Operation for Phase 1 Lines 1 to 4 exhausting through stack S01 and S04.

The combined VOC emissions from the pouring/mold cooling and shakeout operation shall be controlled by mold vent off-gas ignition and shall not exceed ~~1.9~~ **1.4** pounds per ton of iron poured and ~~112~~ **138.6** lbs/hour, combined for both stacks, identified as S01 and S04.

D.2.5 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | CO Emission Limits for Individual Processes (lb/**ton** ~~hr~~) ~~unless otherwise specified~~ | CO Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | ~~79.5~~ **5.0** | ~~442.0~~ **510.0** |
| | Line 1 Shakeout | P02 | 1.0 ~~lb/ton iron~~ | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | ~~80.0~~ **5.0** | |
| | Line 2 Shakeout | P07 | ~~16.0~~ **1.0** | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | ~~80.0~~ **5.0** | |
| | Line 3 Shakeout | P12 | **1.0** | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | ~~125.0~~ **5.0** | |
| | Line 4 Shakeout | P17 | ~~25.0~~ **1.0** | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air makeup units | P52 | ~~18.2~~ | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | ~~45.5~~ **5.0** | ~~45.5~~ **84.0** |
| | Line 1 Cast Cooling | P03 | | |

D.2.6 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP-123-4593-00019, issued on January 19, 1996, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the sulfur dioxide (SO2) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | SO2 Emission Limits ~~for Individual Processes~~ (lb/~~hr~~ **ton**) | SO2 Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | ~~0.64~~ ~~0.64~~ ~~0.64~~ ~~1.0~~ ~~0.039~~ **0.02** | ~~3.0~~ **1.68** |
| | Line 1 Shakeout | P02 | | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | | |
| | Line 2 Shakeout | P07 | | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | | |
| | Line 3 Shakeout | P12 | | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | | |
| | Line 4 Shakeout | P17 | | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air Makeup Units | P52 | | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | ~~0.36~~ **0.02** | ~~0.36~~ **0.3** |
| | Line 1 Cast Cooling | P03 | | |

D.2.7 PSD BACT for Nitrogen Oxide [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP-123-4593-00019, issued on January 19, 1996, CP123-8451 issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the (NOX) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | NOx Emission Limits ~~for Individual Processes~~ (lb/~~hr~~ **ton**) | NOx Emission Limits for Stacks (lb/hr) |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| S01 | Line 1 Pouring/Mold Cooling | P01 | ~~0.16~~ ~~0.32~~ ~~0.32~~ ~~0.50~~ ~~2.98~~ **0.01** | ~~4.03~~ **0.89** |
| | Line 1 Shakeout | P02 | | |
| | Line 1 Cast Cooling | P03 | | |
| | Line 1 Pick and Sort | P04 | | |
| | Line 2 Pouring/Mold Cooling | P06 | | |
| | Line 2 Shakeout | P07 | | |
| | Line 2 Cast Cooling | P08 | | |
| | Line 3 Pouring/Mold Cooling | P11 | | |
| | Line 3 Shakeout | P12 | | |
| | Line 3 Cast Cooling | P13 | | |
| | Line 4 Pouring/Mold Cooling | P16 | | |
| | Line 4 Shakeout | P17 | | |
| | Line 4 Cast Cooling | P18 | | |
| | Line 4 Pick and Sort | P19 | | |
| | Return Sand Handling/ Screening | P21 | | |
| | Sand Cooling/Water Addition | P22 | | |
| | Sand Mulling/Handling | P23 | | |
| | Spent Sand Handling/Processing | P24 | | |
| | Air Makeup Units | P52 | | |
| S04 | Line 1 Pouring/Mold Cooling | P01 | ~~0.09~~ **0.01** | ~~0.09~~ **0.1** |
| | Line 1 Cast Cooling | P03 | | |

D.2.8 Operating Conditions [326 IAC 2-2-3)]

Pursuant to ~~CP-123-8451-00019, issued on February 4 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the following limitations shall apply:

(a) the return sand handling/screening process, identified as P21, shall be limited to a maximum throughput capacity of ~~480~~ **522** tons of sand per hour;

(b) the sand cooling/water addition process, identified as P22, shall be limited to a maximum throughput capacity of ~~480~~ **522** tons of sand per hour;

(c) the sand mulling/handling process, identified as P23, shall be limited to a maximum throughput capacity of ~~480~~ **522** tons of sand per hour; and

~~(d) Pursuant to Agreed Order for Case # 2005-14739-A, issued on June 28, 2007, SSM 123-26008-00019 and 326 IAC 2-2-3(a)(3), the Pouring/Mold Cooling Shakeout and Pick & Sort processes shall comply with the following limitation:~~

| ~~Phase 1 Derated Pouring/Mold Cooling, Shakeout and Pick & Sort Operation~~ | |
|---|---|
| ~~Derated Operation~~ | ~~Capacity (tons/hour)~~ |
| ~~P01 - Line 1 Pouring/Mold Cooling~~ | |
| ~~P02 - Line 1 Shakeout~~ | |
| ~~P04 - Line 1 Pick & Sort~~ | |
| ~~P06 - Line 2 Pouring/Mold Cooling~~ | |
| ~~P07 - Line 2 Shakeout~~ | |
| ~~P09 - Line 2 Pick & Sort~~ | |
| ~~P011 - Line 3 Pouring/Mold Cooling~~ | |
| ~~P012 - Line 3 Shakeout~~ | |
| ~~P014 - Line 3 Pick & Sort~~ | |
| ~~P016 - Line 4 Pouring/Mold Cooling~~ | |
| ~~P017 - Line 4 Shakeout~~ | |
| ~~P019 - Line 4 Pick & Sort~~ | |
| ~~Total Capacity for Phase 1~~ | ~~80 tons/hr~~ |
| ~~Limited Capacity for Phase~~ | ~~1,920 tons/day~~ |

~~(e) Pursuant to the Agreed Order for Case # 2005-14739-A, issued on June 28, 2007, PSD/SSM123-26008-00019 and 326 IAC 2-2-3(a)(3), the Cast Cooling and Millroom processes shall comply with the following limitations:~~

| ~~Phase 1 Derated Cast Cooling and Millroom Operation~~ | |
|---|---|
| ~~Derated Operation~~ | ~~Capacity (tons/hour)~~ |
| ~~P03 - Line 1 Cast Cooling~~ | ~~25~~ |
| ~~P05 - Line 1 Cleaning/Grinding~~ | |
| ~~P08 - Line 2 Cast Cooling~~ | ~~12~~ |
| ~~P10 - Line 2 Cleaning/Grinding~~ | |
| ~~P07 - Line 3 Cast Cooling~~ | ~~12~~ |
| ~~P09 - Line 3 Cleaning/Grinding~~ | |
| ~~P011 - Line 4 Cast Cooling~~ | ~~18~~ |
| ~~P012 - Line 4 Cleaning/Grinding~~ | |
| ~~Total Capacity~~ | ~~67~~ |
| ~~Limited Capacity for Phase 1 Millroom~~ | ~~1,344 tons/day~~ |

~~(f) The hourly capacities of the phase 1 derated Pouring, Mold/Cooling, and Shakeout operation under Condition D.2.8(d) and Pick & Sort Operations and the Derated Casting Cooling and Millroom operation under Condition D.2.8(e) shall be based on a 24hour average.~~

D.2.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) **Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour** ~~Before August 1, 2012~~, the Permittee shall perform PM, opacity, lead and beryllium testing on the facilities exhausting to stacks S01, S04 and S07 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits listed in Conditions D.2.1, D.2.2, and D.2.3. ~~During the stack test, the Permittee shall monitor and record those parameters required to be measured by Condition D.2.16.~~ These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**. All facilities exhausting to the same stack shall be in operation during the stack test in order for the test to be considered a valid test.

(b) **Within one hundred and eighty (180) days, after the Phase 1 cupola (P30) achieves a melt rate greater than 80 tons per hour** ~~Before August 2012~~, the Permittee shall perform VOC**, CO, SO2 and NOx** testing on the emission units exhausting to stacks S01 and S04 simultaneously using Method 25, 25A, or other methods approved by the Commissioner, in order to demonstrate compliance with the total stack limit listed in Condition**s** D.2.4**, D.2.5, D.2.6 and D.2.7**. ~~During the stack test, the Permittee shall monitor and record those parameters required to be measured by Condition D.2.16~~. These tests shall be repeated at least once every five (5) years from the date of the last valid compliance demonstration. Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**. All facilities exhausting to the same stack shall be in operation during the stack test in order for the test to be considered a valid test. If the VOC emissions normally exhausted to SO4 are directed to S01 during the stack test, then only S01 is required to be tested.

Change 4: The emission descriptions in Section D.3 have been revised and most of the conditions in this section have been revised because of the BACT analysis.

**SECTION D.3 EMISSIONS UNIT OPERATION CONDITIONS**

**Emissions Unit Description:**
**Facilities Exhausting to Stacks S15 and S16**
Phase II

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16,that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of ~~30~~ **34** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P72, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

Phase II

Sand Handling Operations and Ancillary Operations:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of ~~50~~ **55** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of ~~40~~ **44** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system,

identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) Tumbleblast shotblast machine, identified as P55, with a maximum capacity of ~~18~~ **20** tons of metal castings per hour, with emissions controlled by existing baghouse C15, and exhausting to stack S15.

(d) One (1) autogrinder operation, to be constructed in 2008, identified as P87, with a maximum capacity of 22.5 tons of castings per hour, with emissions controlled by existing Baghouse C16 and exhausting to stack S16.

Ductile Iron Treatment Operations

(1) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of ~~40~~ **50** tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

Combustion Units

(1) Natural gas fired air make-up units equipped with low-NOx burners, identified as P54, with a maximum heat input rate of 80 MMBtu per hour exhausting to Stack S15.

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.3.1 PSD BACT for Particulate Matter [326 IAC 2-2-3(a)(3)]

(a) Pursuant to ~~CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, SSM123-12331-00019 issued on January 31, 2001,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the particulate matter emissions from the following operations shall be limited as shown in the table below:

| Stack ID | Process | Process ID | PM Emission Limitation (gr/dscf) | **PM Emission Limitation (lbs/hr)** |
|---|---|---|---|---|
| S15 | Return Sand Handling/ Screening | P80 | 0.005 | **30.9** |
| | Sand Mulling and Handling | P81 | | |
| | Sand Blending and Cooling | P82 | | |
| | Spent Sand and Dust Handling | P83 | | |
| | Metal Returns Handling System | P84 | | |
| | Line 5 Pouring/Mold Cooling | P60 | | |
| | Line 5 Shakeout | P61 | | |
| | Line 5 Cast Cooling | P62 | | |
| | Line 6 Pouring/Mold Cooling | P65 | | |
| | Line 6 Shakeout | P66 | | |
| | Line 6 Cast Cooling | P67 | | |

| Stack ID | Process | Process ID | PM Emission Limitation (gr/dscf) | **PM Emission Limitation (lbs/hr)** |
|---|---|---|---|---|
| | Line 7 Pouring/Mold Cooling | P70 | | |
| | Line 7 Shakeout | P71 | | |
| | Line 7 Cast Cooling | P72 | | |
| | Line 8 Pouring/Mold Cooling | P75 | | |
| | shotblast machine | P55 | | |
| | ductile iron treatment stations #1 and #2 | P35 | | |
| S16 | Return Sand Handling/ Screening | P80 | 0.005 | **17.2** |
| | Line 5 Pick and Sort | P63 | | |
| | Line 5 Cleaning/ Grinding | P64 | | |
| | Line 6 Shakeout | P66 | | |
| | Line 6 Cast Cooling | P67 | | |
| | Line 6 Pick and Sort | P68 | | |
| | Line 6 Cleaning/ Grinding | P69 | | |
| | Line 7 Shakeout | P71 | | |
| | Line 7 Cast Cooling | P72 | | |
| | Line 7 Pick and Sort | P73 | | |
| | Line 7 Cleaning/ Grinding | P74 | | |
| | Line 8 Shakeout | P76 | | |
| | Line 8 Cast Cooling | P77 | | |
| | Line 8 Pick and Sort | P78 | | |
| | Line 8 Cleaning/ Grinding | P79 | | |

(b) Pursuant to CP123-4593-00019 issued on January 19, 1996, visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity.

D.3.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

**(a)** Pursuant to CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, SSM123-12331-00019 issued on January 31, 2001, and 326 IAC 2-2-3(a)(3) and revised by PSD/SSM 123-25303-00019, the lead (Pb) emissions from the following operations shall be limited as shown in the table below:

.....

**(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for lead (Pb) for the P35-ductile iron treatment stations #1 and #2, exhausting through stack S15.**

**The lead emissions from the P35-ductile iron treatment stations #1 and #2 shall be controlled by a fabric filter baghouse and the lead emission shall not exceed 1,000 ppm and 0.0047 pounds per hour.**

D.3.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

**(a)** Pursuant to CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998, SSM123-12331-00019 issued on January 31, 2001, and 326 IAC 2-2-3(a)(3) and revised by PSD/SSM 123-25303-00019, the beryllium (Be) emissions from the processes listed below shall be limited as shown in the table below:

.....

**(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for beryllium (Be) for the P35-ductile iron treatment stations #1 and #2, exhausting through stack S15.**

**The beryllium emissions from the P35-ductile iron treatment stations #1 and #2 shall be controlled by a fabric filter baghouse and the beryllium emissions shall not exceed 20 ppm and 0.00009 pounds per hour.**

D.3.4 PSD BACT for Sulfur Dioxide [326 IAC 2-2-3(a)(3)]

Pursuant to ~~CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the sulfur dioxide ($SO_2$) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | $SO_2$ Emission Limitation~~s for individual processes~~ (lb/~~hr~~ **ton**) | $SO_2$ Emission Limitation for stack (lb/hr) |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | ~~1.00~~<br>~~0.72~~ | |
| | Line 6 Pouring/Mold Cooling | P65 | ~~1.2~~<br>~~0.72~~ | ~~3.69~~<br>**2.02** |
| | Line 7 Pouring/Mold Cooling | P70 | | |
| | Line 8 Pouring/Mold Cooling | P75 | **0.02** | |

D.3.5 PSD BACT for Volatile Organic Compound [326 IAC 2-2-3(a)(3)] [326 IAC 8-1-6]

Pursuant to ~~CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019,** 326 IAC 2-2-3(a)(3) and 326 IAC 8-1-6 (General Reduction Requirements for New Facilities), the volatile organic compound (VOC) emissions from the following processes shall be limited as shown in the table below:

**The following limit is determined as Best Available Control Technology (BACT) for volatile organic compounds (VOC) for the Pouring/Mold Cooling and Shakeout Operations for Phase 2 Lines 5 to 8 exhausting through Stacks S15 and S16.**

**The combined VOC emissions from the pouring/mold cooling and shakeout operation shall be controlled by mold vent off-gas ignition and shall not exceed 1.4 pounds per ton of iron poured and 141.4 lbs/hour, combined for both stacks, identified as S15 and S16.**

| ~~Stack ID~~ | ~~Process~~ | ~~Process ID~~ | ~~VOC Emission Limitations for individual processes (lb/hr)~~ | ~~VOC Emission Limitation for stack (lb/hr)~~ |
|---|---|---|---|---|
| ~~S15~~ | ~~Line 5 Pouring/Mold Cooling~~ | ~~P60~~ | ~~12.5~~ | ~~52.3~~ |
| | ~~Line 5 Shakeout~~ | ~~P61~~ | ~~1.25~~ | |
| | ~~Line 6 Pouring/Mold Cooling~~ | ~~P65~~ | ~~9.00~~ | |
| | ~~Line 6 Shakeout~~ | ~~P66~~ | ~~1.13~~ | |
| | ~~Line 7 Pouring/Mold Cooling~~ | ~~P70~~ | ~~15.0~~ | |
| | ~~Line 7 Shakeout~~ | ~~P71~~ | ~~1.5~~ | |
| | ~~Line 8 Pouring/Mold Cooling~~ | ~~P75~~ | ~~9.00~~ | |
| ~~S16~~ | ~~Line 5 Shakeout~~ | ~~P61~~ | ~~1.25~~ | ~~5.23~~ |
| | ~~Line 6 Shakeout~~ | ~~P66~~ | ~~0.675~~ | |
| | ~~Line 7 Shakeout~~ | ~~P71~~ | ~~1.5~~ | |
| | ~~Line 8 Shakeout~~ | ~~P76~~ | ~~1.8~~ | |

D.3.6 PSD BACT for Carbon Monoxide [326 IAC 2-2-3(a)(3)]

Pursuant ~~to CP 123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the carbon monoxide (CO) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | CO Emission Limitations for individual processes (lb/ton iron) | **CO Emission Limitations for Stacks (lbs/hr)** |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | 5.0 | **546.0** |
| | Line 5 Shakeout | P61 | 1.0 | |
| | Line 6 Pouring/Mold Cooling | P65 | 5.0 | |
| | Line 6 Shakeout | P66 | 1.0 | |
| | Line 7 Pouring/Mold Cooling | P70 | 5.0 | |
| | Line 7 Shakeout | P71 | 1.0 | |
| | Line 8 Pouring/Mold Cooling | P75 | 5.0 | |
| | **P54 Natural Gas Air Make-up** | **P54** | | |
| | **P53B Phase II Ladle Preheating** | **P53B** | | |
| S16 | Line 5 Shakeout | P61 | 1.0 | **60.0** |
| | Line 6 Shakeout | P66 | 1.0 | |
| | Line 7 Shakeout | P71 | 1.0 | |

| | | | | |
|---|---|---|---|---|
| | Line 8 Shakeout | P76 | 1.0 | |

D.3.7 PSD BACT for NOx [326 IAC 2-2-3(a)(3)]

(a) Pursuant to ~~CP-123-8451-00019, issued on February 4, 1998, Amendment 123-9740-00019, issued May 22, 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the ($NO_X$) emissions from the following processes shall be limited as shown in the table below:

| Stack ID | Process | Process ID | NOx Emission Limitations ~~for individual processes~~ (lb/ton iron) | **NOx Emission Limitations for Stacks (lbs/hr)** |
|---|---|---|---|---|
| S15 | Line 5 Pouring/Mold Cooling | P60 | ~~0.01~~ ~~0.01~~ | **1.01** |
| | Line 6 Pouring/Mold Cooling | P65 | | |
| | Line 7 Pouring/Mold Cooling | P70 | 0.01 | |
| | Line 8 Pouring/Mold Cooling | P75 | | |
| | **P54 Natural Gas Air Make-up** | **P54** | ~~0.01~~ | |
| | **P53B Phase II Ladle Preheating** | **P53B** | | |

(b) Pursuant to CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3), the natural gas fired air makeup units, identified as P54, shall be equipped with low-NOx burners and shall be limited to a maximum heat input rate of 80 MMBtu per hour.

D.3.8 Operating Requirements [326 IAC 2-2-3(a)(3)]

(a) Pursuant to ~~SSM123-11479-00019 issued on June 7, 2001,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the maximum production rate of both ductile iron treatment stations identified as P35 shall not exceed a combined total of ~~80~~ **100** tons of iron per hour, based on a 24 hour average.

(b) Pursuant to ~~CP-123-8451-00019, issued on February 4 1998,~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the sand handling operations shall comply with the following limitations:

(1) the return sand handling/screening process, identified as P80, shall be limited to a maximum throughput capacity of ~~600~~ **660** tons of sand per hour;

(2) the sand mulling/handling process, identified as P81, shall be limited to a maximum throughput capacity of ~~600~~ **660** tons of sand per hour.

(3) the sand blending and cooling process, identified as P82, shall be limited to a maximum throughput capacity of ~~600~~ **660** tons of sand per hour; and

(4) the spent sand and dust handling system, identified as P83, shall be limited to a maximum throughput capacity of ~~50~~ **55** tons of sand per hour.

(c) Pursuant to ~~CP-123-8451-00019, issued on February 4 1998~~ **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3), the metal returns handling system, identified as P84, shall be limited to a maximum capacity of ~~40~~ **44** tons per hour.

~~(d) Pursuant to Agreed Order for Case # 2005-14739-A, issued on June 28, 2007,~~

~~PSD/SSM123-26008-00019 and 326 IAC 2-2-3(a)(3), the Pouring/Mold Cooling, Shakeout and Pick & Sort processes shall comply with the following limitations:~~

| ~~Phase 2 Derated Pouring, Mold/Cooling, Shakeout and Pick & Sort Operations~~ | |
|---|---|
| ~~Derated Operation~~ | ~~Capacity (tons/hour)~~ |
| ~~P60 - Line 5 Pouring /Mold Cooling~~ | |
| ~~P61 - Line 5 Shakeout~~ | |
| ~~P63 - Line 5 Pick & Sort~~ | |
| ~~P65 - Line 6 Pouring /Mold Cooling~~ | |
| ~~P66 - Line 6 Shakeout~~ | |
| ~~P68 - Line 6 Pick & Sort~~ | |
| ~~P70 - Line 7 Pouring /Mold Cooling~~ | |
| ~~P71 - Line 7 Shakeout~~ | |
| ~~P73 - Line 7 Pick & Sort~~ | |
| ~~P75 - Line 8 Pouring /Mold Cooling~~ | |
| ~~P79 - Line 8 Shakeout~~ | |
| ~~P78 - Line 8 Pick & Sort~~ | |
| ~~Total Capacity for Phase 2~~ | ~~70 tons/hr~~ |
| ~~Limited Capacity for Phase~~ | ~~1,680 tons/day~~ |

~~(e) Pursuant to Agreed Order for Case # 2005-14739-A, issued on June 28, 2007, PSD/SSM123-26008-00019 and 326 IAC 2-2-3(a)(3), the Cast Cooling and Millroom processes shall comply with the following limitations:~~

| ~~Phase 2 Derated Cast Cooling and Millroom Operation~~ | |
|---|---|
| ~~Derated Operation~~ | ~~Capacity (tons/hour)~~ |
| ~~P62 - Line 5 Cast Cooling~~ | ~~14~~ |
| ~~P64 - Line 5 Cleaning/Grinding~~ | |
| ~~P67 - Line 6 Cast Cooling~~ | ~~10~~ |
| ~~P69 - Line 6 Cleaning/Grinding~~ | |
| ~~P72 - Line 7 Cast Cooling~~ | ~~17~~ |
| ~~P74- Line 7 Cleaning/Grinding~~ | |
| ~~P77 - Line 8 Cast Cooling~~ | ~~10~~ |
| ~~P79 - Line 8 Cleaning/Grinding~~ | |
| ~~Total Capacity~~ | ~~51~~ |
| ~~Limited Capacity for Phase 2 Millroom~~ | ~~960 tons/day~~ |

~~(f) Pursuant to SSM123-12331-00019 issued on January 31, 2001, the shotblast machine, identified as P55, shall be limited to a maximum throughput capacity of 18 tons of metal castings per hour.~~

~~(g) The hourly capacities of the Phase 2 derated Pouring, Mold/Cooling, and Shakeout operation under Condition D.2.8(d) and Pick & Sort Operations and the Derated Casting Cooling and Millroom operation under Condition D.2.8(e) shall be based on a 24hour average.~~

D.3.9 PSD Minor Limit [326 IAC 2-2]

The PM and PM10 emissions from the autogrinder process exhausting to stack S16 shall not exceed ~~0.60~~ **1.0** pounds per hour.

Compliance with these limits will limit the potential PM and PM10 emissions from the sand handling operations and the autogrinder to less than 25 and 15 tons per year and render the requirements of 326 IAC 2-2 not applicable to the sand handling operations and the autogrinder **constructed in 2008**.

**Compliance Determination Requirements**

D.3.12 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

**(a)** **Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour** ~~Before December 2009~~, the Permittee shall perform ~~PM, opacity~~, lead, and beryllium testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Conditions ~~D.3.1,~~ D.3.2**(a)**, and D.3.3**(a)**. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**.

**(b)** **Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform, lead, and beryllium testing on the processes exhausting to stack S15 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Conditions D.3.2(b), and D.3.3(b). These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition**.

**(c)** **Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform PM and opacity, testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Condition D.3.1. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition**.

**(d)** **Within one hundred and eighty (180) days, after the Phase 2 cupola (P33) achieves a melt rate greater than 80 tons per hour, the Permittee shall perform SO2, VOC, CO and NOx, testing on the processes exhausting to stacks S15 and S16 using methods as approved by the Commissioner, in order to demonstrate compliance with the total stack limits specified in Conditions D.3.4, D.3.5, D.3.6 and D.3.7. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition**.

D.3.15 Baghouse Parametric Monitoring [40 CFR 64]

(a) The Permittee shall record the pressure drop across ~~each of~~ the baghouse~~s~~ **C15** used in conjunction with the processes listed in this section, at least once per day when the associated process is in operation. When for any one reading, the pressure drop across a baghouse is outside the normal range of 1.0 and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to

Excursions or Exceedances, shall be considered a deviation from this permit.

. .....

**(b) The baghouse C16 shall be equipped with a bag leak detection system. This system shall be operated pursuant to site-specific monitoring plan and corrective action plan required under 40 CFR 63.7710(b)(4) and (5).**

D.3.17 Record Keeping Requirement

(a) To document compliance with Conditions D.3.14 the Permittee shall maintain records of visible emission notations of each baghouse stack exhaust once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day).

(b) To document compliance with Conditions D.3.15**(a)** the Permittee shall maintain records of the pressure drop across ~~each~~ **the** baghouse **C15** once per day. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of pressure drop reading (e.g. the process did not operate that day).

Change 5: The Testing Requirements and the Parametric Monitoring conditions have been revised in Section D.4.

D.4.10 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

(a) In order to determine compliance with Condition D.4.2(h) and (i), the Permittee shall perform DMIPA testing by December 2014 on the scrubber controlling the core machines identified as P43 and P44 utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with Section C- Performance Testing.

(b) Within one hundred and eighty (180) days after the startup of the core machines, identified as P45A and P45B, in order to determine compliance with Condition D.4.2(j), the Permittee shall perform DMIPA testing on the core machines, utilizing methods as approved by the Commissioner. These tests shall be repeated at least once every five (5) years from the date of this valid compliance determination. Testing shall be conducted in accordance with Section C- Performance Testing.

~~(c) In order to determine compliance with Condition D.4.2(c), the Permittee shall perform VOC (Non- DMIPA) testing before or after the scrubber before December 2009 on the scrubber controlling the core machines identified as P44 utilizing methods as approved by the Commissioner. Testing shall be conducted in accordance with Section C- Performance Testing.~~

~~(1) If the Permittee can not comply with Condition D.4.2(c) without the scrubber as VOC control, the test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.~~

~~(2) These test requirements for P44 shall satisfy the VOC (non-DMIPA) test requirements for P47 under D.6.7(a) if the Permittee can demonstrate compliance with the limit before the control device.~~

~~(d) In order to determine compliance with Condition D.4.2(d), the Permittee shall perform VOC testing before December 2009 on the mixers, identified as P44 utilizing methods as approved by the Commissioner. Testing shall be conducted in accordance with Section C- Performance Testing.~~

~~(1) The test requirements for P44 satisfy the testing requirements for P47.~~

~~(2) This test will be valid for the same ratio of resin to catalyst under which the test was conducted for your plant.~~

~~(3) The Permittee shall conduct a VOC performance test to determine compliance with Condition D.4.2(d) within Sixty (60) days of catalyst to resin ratio changes.~~

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.4.11 Packed Bed Scrubber Parametric Monitoring

(a) The Permittee shall monitor and record the pH of the scrubber solution and the pressure drop across the scrubber, identified as C14 at least once per day. When for any one reading, the pressure drop across the scrubber is outside the normal range of ~~2~~ **0.5** to 5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. When for any one reading, the pH level of the scrubbing liquid exceeds the normal maximum of 4.5 or a maximum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

.....

Change 6: A new emission unit has been added to Section D.5 and some of the conditions have been revised. Subsequent conditions have been renumbered in the permit.

**SECTION D.5 EMISSIONS UNIT OPERATION CONDITIONS**

**Emissions Unit Description:**

Phase I

(1) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;

(2) One (1) charge and make-up operation, identified as P32, with a maximum throughput of ~~80~~ **100** tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(3) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of ~~80~~ **100** tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44; and

(4) One (1) ladle cleaning with burn bars, identified as P86, using one (1) baghouse (C44) for particulate control, exhausting to stack S44.

**(5) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.**

Phase II

(1) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of ~~91.2~~ **114** tons per hour using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(2) One (1) ladle filling and iron transport operation with a maximum capacity of ~~150~~ **188** tons of iron per hour, and a ladle cleaning operation with an average usage of ~~13.2~~ **13** pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(3) Raw material handling including iron handling at a maximum rate of ~~150~~ **188** tons per hour, alloys handling at a maximum rate of 1.5 tons per hour, coke handling at a maximum rate of 15 tons per hour, and limestone handling at a maximum rate of 4.5 tons per hour; and

(4) One (1) ladle preheating operation, identified as P53B, with a maximum heat input

(The information describing the process contained in this emissions unit description box is descriptive information and does not constitute enforceable conditions.)

**Emission Limitations and Standards [326 IAC 2-7-5(1)]**

D.5.1 PSD BACT for Particulate Matter [326 IAC 2-2-3(a)(3)] [326 IAC 6-3-2]

Pursuant to CP-123-4593-00019, issued on January 19, 1996, **PSD/SSM 123-29490-00019** and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the following conditions shall apply:

(a) the particulate matter emissions from the baghouse C44 controlling the charge makeup operations, the molten iron handling operations, and the ladle cleaning operations shall not exceed 0.005 gr/dscf and 6.86 pounds per hour;

(b) the particulate matter emissions from the ladle preheating operation identified as P53 shall not exceed 0.16 pound per hour;

(c) visible emissions from any baghouse stack shall not exceed ten percent (10%) opacity;

(d) visible emissions from any building opening shall not exceed three percent (3%) opacity.

**(e) the PM emissions from the desulfurization operation identified as P34 shall not exceed 0.64 pounds per hour.**

D.5.2 PSD BACT for Lead [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

**(a)** Pursuant to CP-123-8451-00019 issued on February 4, 1998, and 326 IAC 2-2-3(a)(3), the lead (Pb) emissions from the charge makeup operations, the molten iron handling operations, and the ladle cleaning operations shall not exceed 0.00004 pound per hour.

**(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for lead (Pb) for the P34-Desulfurization exhausting through stack S44.**

**The lead emissions from the P34-Desulfurization shall be controlled by a fabric filter baghouse and the lead emissions shall not exceed 1,000 ppm and 0.00064 pounds per hour.**

D.5.3 PSD BACT for Beryllium [326 IAC 2-2-3(a)(3)] [326 IAC 2-4.1-1]

**(a)** Pursuant to CP-123-4593-00019, issued on January 19, 1996, CP-123-8451-00019, issued on February 4, 1998, and 326 IAC 2-2-3(a)(3) (Prevention of Significant Deterioration (PSD) Rules), the beryllium emissions from the charge makeup operation P32 shall not exceed 0.0000026 pounds per hour.

**(b) Pursuant to PSD/SSM 123-29490-00019 and 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD)), the following limit is determined as Best Available Control Technology (BACT) for beryllium (Be) for the P34-Desulfurization, exhausting through stack S44.**

**The beryllium emissions from the P34-Desulfurization shall be controlled by a fabric filter baghouse and the beryllium emission limits shall not exceed 20 ppm and 0.00001 pounds per hour.**

.....

**D.5.9 Prevention of Significant Deterioration (PSD) Minor Limits [326 IAC 2-2]**

**Pursuant to PSD/Significant Source Modification No. 123-29490-00019, the Permittee shall comply with the following:**

**(a) PM10 emissions from the P34 - Desulfurization Ladle shall not exceed 0.64 pounds per hour.**

**Compliance with these limits will ensure that the PM10 emissions from the proposed modification (P34 - Desulfurization Ladle ) is less than 15 tons per twelve (12) consecutive month period and render the requirements of 326 IAC 2-2 (PSD) not applicable to this modification.**

**D.5.12 Testing Requirements [326 IAC 2-7-6(1),(6)][326 IAC 2-1.1-11]**

**In order to demonstrate compliance with Conditions D.5.1(e), D.5.9, D.5.2(b) and D.5.3(b), within sixty (60) days of reaching maximum capacity but no later than one hundred and eighty (180) days after initial startup, the Permittee shall conduct PM, PM10, lead and beryllium stack testing on P34 exhuasting to stack S44 utilizing methods as approved by the commissioner. This test shall be repeated at least once every five years from the date of the most recent valid compliance demonstration. Testing shall be conducted in accordance with the provisions of 326 IAC 3-6 (Source Sampling Procedures). Section C - Performance Testing contains the Permittee's obligations with regard to the performance testing required by this condition.**

**Change 7:** The Testing Condition has been revised. The Scrubber Parametric Monitioring and the Baghouse Parametric Monitoring have been updated in Section D.6 in the permit.

D.6.7 Testing Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

~~(a) In order to determine compliance with Conditions D.6.2(b), the Permittee shall perform VOC (non-DMIPA) testing before or after the scrubber before December 2009 on the scrubber controlling the core machines identified as P47 utilizing methods as approved by the Commissioner. Testing shall be conducted in accordance with Section C-Performance Testing.~~

~~(1) If the Permittee can not comply with Condition D.6.2(b) without the scrubber as VOC control, the test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration.~~

~~(2) These test requirements for P47 shall satisfy the VOC (non-DMIPA) test requirements for P44 under D.4.10(c) if the Permittee can demonstrate compliance with the limit before the control device.~~

~~(b) In order to determine compliance with Condition D.6.2(c), the Permittee shall perform VOC testing before December 2009 on the mixers, identified as P47 utilizing methods as approved by the Commissioner. Testing shall be conducted in accordance with Section C-Performance Testing.~~

~~(1) The test requirements for P47 satisfy the testing requirements for P44.~~
~~(2) This test will be valid for the same ratio of resin to catalyst under which the test was conducted for your plant.~~

~~(3) The Permittee shall conduct a VOC performance test to determine compliance Condition D.6.2(c) within Sixty (60) days of catalyst to resin ratio changes~~

~~(c)~~ In order to determine compliance with Condition D.6.2(g), the Permittee shall perform DMIPA testing **by November 2014** ~~before December 2009~~ on the scrubber controlling the core machines identified as P47 utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

D.6.8 Packed Bed Scrubber Parametric Monitoring

(a) The Permittee shall monitor and record the pH of the scrubber solution and the pressure drop across the scrubber, identified as C17 at least once per day. When for any one reading, the pressure drop across the scrubber is outside the normal range of ~~2~~ **0.5** to 5 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. When for any one reading, the pH level of the scrubbing liquid exceeds the normal maximum of 4.5 or a maximum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(b) The Permittee shall monitor the flow rate of the scrubbing liquid daily. When for any one reading, the flow rate is below the normal minimum of 254 gallons per minute or a minimum established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances, shall be considered a deviation from this permit.

(c) The instruments used for determining the pressure, flow rate, and pH level shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.6.10 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouse used in conjunction with the core sand handling system (P46), at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of ~~2.0~~ **1.0** and 10.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

Change 8: The emission descriptions in Section E.1 have been revised in the permit.

**SECTION E.1 EMISSIONS UNIT OPERATION CONDITIONS**

**Emission Unit Description:**

Under the Iron and Steel Foundry NESHAP (40 CFR 63, Subpart EEEEE), the following emission units are considered as part of an existing affected source.

Phase 1

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, **modified in 2010,** with a maximum melt rate of ~~80~~ **100** tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, **modified in 2010,** consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(B) One (1) shakeout operation, identified as P02, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;

(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of ~~35~~ **38** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2

(A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P07, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P08, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P09, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3

(A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P12, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P13, with a maximum throughput of ~~16~~ **17** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P14, with a maximum throughput of ~~16~~ **17** tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of ~~16~~ **17** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4

(A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P17, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P18, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P19, with a maximum throughput of ~~25~~ **27** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of ~~25~~ **27** tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(c) Sand handling operations and ancillary operations, each constructed in 1996, consisting of the following:

(1) One (1) return sand handling & screen operation, identified as P21, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(2) One (1) sand cooling & water addition operation, identified as P22, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(3) One (1) sand mulling & handling operation, identified as P23, with a maximum throughput of ~~480~~ **522** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(4) One (1) spent sand handling & processing operation, identified as P24, with a maximum throughput of ~~50~~ **54** tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(5) Air make-up units, identified as P52, with a maximum combined heat input capacity of 65.6 million British thermal units (MMBtu) per hour, combusting natural gas, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(6) One (1) metallic returns handling operation, identified as P25, with a maximum throughput of ~~30~~ **33** tons per hour, using one(1) baghouse (C07) for particulate control, exhausting to stack S07;

(7) One (1) core sand handling operation, identified as P40, with a maximum throughput of 16 tons per hour, using one (1) baghouse (C08) for particulate control, exhausting to stack S08;

(8) One (1) core manufacturing operation, identified as P41, with a maximum throughput of 16 tons per hour, exhausting to stack S11;

(9) One (1) core machine & oven operation, identified as P51, with a maximum heat input capacity of 16.8 MMBtu per hour, combusting natural gas, exhausting to stack S11;

(10) One (1) ladle preheating operation, identified as P53, with a maximum heat input capacity of 11.5 MMBtu per hour, combusting natural gas, exhausting to stack S12;

(11) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of 80 tons per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(12) One (1) ladle filling & iron transport operation, identified as P85, with a maximum throughput of ~~80~~ **100** tons per hour; and

(13) One (1) ladle cleaning with burn bars, identified as P86

Phase II

(a) One (1) cupola iron melting system, identified as P33, constructed in 1998, **modified in 2010** with a maximum melt rate of ~~80~~ **100** tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(b) Four (4) production lines, each constructed in 1998, **modified in 2010**consisting of the following:

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of ~~25~~ **28** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1)cast cooling operation, identified as P72, with a maximum production capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of ~~30~~ **33** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of ~~18~~ **20** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(c) Sand handling operations and ancillary operations, each constructed in 1998, **modified in 2010,** consisting of the following:

(1) One (1) return sand handling and screening operation, identified as P80, with a maximum throughput capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(2) One (1) sand mulling and handling operation, identified as P81, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(3) One (1) sand blending and cooling operation, identified as P82, with a maximum capacity of ~~600~~ **660** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(4) One (1) spent sand and dust handling operation, identified as P83, with a maximum throughput capacity of ~~50~~ **55** tons of sand per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(5) One (1) metal returns handling operation, identified as P84, with a maximum capacity of ~~40~~ **50** tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(6) One (1) enclosed cupola charge make-up and handling unit with a maximum charge of ~~91.2~~ **114** tons per hour;

(7) One (1) ladle filling and iron transport operation with a maximum capacity of ~~150~~ **180** tons of iron per hour, and a ladle cleaning operation with an average usage of 13.2 pounds of burn bars per hour, using one (1) baghouse (C44) for particulate control, exhausting to stack S44;

(8) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of ~~40~~ **50** tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15;

.....

**National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements [326 IAC 2-7-5(1)]**

.....

**Other Changes**

Upon further review IDEM, OAQ has made the following changes to the Title V permit No. 123-27047-00019. (deleted language appears as ~~strikout~~ and the new language **bolded**):

Change 1: IDEM, OAQ has decided to remove all references to the source mailing address. IDEM, OAQ will continue to maintain records of the mailing address.

A.1 General Information [326 IAC 2-7-4(c)][326 IAC 2-7-5(15)][326 IAC 2-7-1(22)]

The Permittee owns and operates a stationary gray and ductile iron foundry.

Source Address: 9856 State Highway 66, Tell City, Indiana 47586
~~Mailing Address: 9856 State Highway 66, Tell City, IN 47586~~

.....

Change 2: IDEM has made the following changes throughout the permit:

... require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)**...

...by ~~the~~ **a** "responsible official"...

...by ~~the~~ **a** responsible official...

Change 3: IDEM has added clarification to Condition B.15, Permit Term, as follows:

B.2 Permit Term [326 IAC 2-7-5(2)] [326 IAC 2-1.1-9.5] [326 IAC 2-7-4(a)(1)(D)] [IC 13-15-3-6(a)]

(a) ~~This permit~~ **The Part 70 Operating Permit**, T 123-27047-00019, is issued for a fixed term of five (5) years ~~from the issuance date of this permit,~~ as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or

amendments of this permit do not affect the expiration date of this permit or of permits issued pursuant to Title IV of the Clean Air Act and 326 IAC 21 (Acid Deposition Control).

(b) ...

Change 4: There may be times when it is unnecessary for a responsible official to "certify" additional information requested by IDEM; therefore, paragraph (a) of Condition B.7, Duty to Provide Information, is revised as follows:

B.7 Duty to Provide Information [326 IAC 2-7-5(6)(E)]

(a) The Permittee shall furnish to IDEM, OAQ, within a reasonable time, any information that IDEM, OAQ may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. ~~The submittal by the Permittee does require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).~~ Upon request, the Permittee shall also furnish to IDEM, OAQ copies of records required to be kept by this permit.

(b) ...

B.8 Certification [326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)(C)]

(a) ~~Where specifically designated by this permit, any application form, report, or compliance certification submitted shall contain certification by a "responsible official" of truth, accuracy, and completeness. This certification shall state that,~~ **A certification required by this permit meets the requirements of 326 IAC 2-7-6(1) if:**

**(i) it contains a certification by a "responsible official", as defined by 326 IAC 2-7-1 (34), and**

**(ii) the certification is** based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) ~~One (1) certification shall be included, using~~ **The Permittee may use** the attached Certification Form ~~or another form meeting the requirements of 326 IAC 2-7-4(f)~~**, or its equivalent**, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.

(c) A "responsible official" is defined at 326 IAC 2-7-1(34).

B.9 Annual Compliance Certification [326 IAC 2-7-6(5)]

(a) - (c) ******

The submittal by the Permittee does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

Change 5: The Preventive Maintenance Plan requirements have been clarified as follows:

B.10 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

~~(a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) for each facility as described in 326 IAC 1-6-3. At a minimum, the PMP shall include:~~

**(a) If required by specific condition(s) in Section D of this permit where no PMP was previously required, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) no later than ninety (90) days after issuance of this permit or ninety (90) days after initial start-up, whichever is later, including the following information on each facility:**

(1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

**If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the time frame specified in Section D, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:**

**Indiana Department of Environmental Management**
**Compliance and Enforcement Branch, Office of Air Quality**
**100 North Senate Avenue**
**MC 61-53 IGCN 1003**
**Indianapolis, Indiana 46204-2251**

The PMP extension notification does not require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(b) A copy of the PMPs shall be submitted to IDEM, OAQ upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to **an exceedance of any** limitation on emissions or potential to emit. The PMPs do not require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(c) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

Change 6: The emergency provisions requirements have been clarified as follows:

B.11 Emergency Provisions [326 IAC 2-7-16]

(a) (b) ...

(1) - (3) ...

(4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ and Southwest Regional Office, ~~within~~ **no later than** four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

...

(5) ...

~~within~~ **no later than** two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

(A) - (C) ...

The notification which shall be submitted by the Permittee does not require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(6) ...

(c) - (g) ...

~~(h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.~~

Change 7: IDEM has removed the Condition B.15, Deviations from Permit Requirements and Conditions, and moved the requirements to Condition C.21, General Reporting Requirements, as follows:

~~B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]~~

~~(a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:~~

~~Indiana Department of Environmental Management~~
~~Compliance Data Section, Office of Air Quality~~
~~100 North Senate Avenue~~
~~MC 61-53 IGCN 1003~~
~~Indianapolis, Indiana 46204-2251~~

~~using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.~~

~~The Quarterly Deviation and Compliance Monitoring Report does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).~~

~~(b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.~~

Change 8: The Permit Modification, Reopening, Revocation and Reissuance, or Termination provisions have been clarified as follows:

B.1~~6~~**5** Permit Modification, Reopening, Revocation and Reissuance, or Termination [326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]

(a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 Operating Permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit.
[326 IAC 2-7-5(6)(C)] The notification by the Permittee does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

...

Change 9: The Permit Renewal requirements have been clarified as follows:

B.1~~7~~**6** Permit Renewal [326 IAC 2-7-3] [326 IAC 2-7-4] [326 IAC 2-7-8(e)]

(a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(21) and 326 IAC 2-7-1(40). The renewal application does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(b) ...

(c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the reasonable deadline specified**, pursuant to 326 IAC 2-7-4(a)(2)(D),** in writing by IDEM, OAQ any additional information identified as being needed to process the application.

Change 10: The words "or notice" have been added to Condition B.19(a) as follows:

B.1~~9~~**8** Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)] [326 IAC 2-7-12(b)(2)]

(a) No Part 70 permit revision **or notice** shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.

(b) ...

Change 11: The Operational Flexibility provisions have been clarified as follows:

B.**19**~~20~~ Operational Flexibility [326 IAC 2-7-20] [326 IAC 2-7-10.5]

...

(b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a). For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:

(1) A brief description of the change within the source;

(2) The date on which the change will occur;

(3) Any change in emissions; and

(4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted is not considered an application form, report or compliance certification. Therefore, the notification by the Permittee does not require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

...

Change 12: Condition B.21 (now B.20) has been revised in the permit.

B.2~~1~~**0** Source Modification Requirement [326 IAC 2-7-10.5]

~~(a)~~ A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 ~~and 326 IAC 2-7-10.5~~.

~~(b) Any modification at an existing major source is governed by the requirements of 326 IAC 2-2.~~

Change 13: The Transfer of Ownership or Operational Control provisions have been clarified as follows:

B.2~~3~~**2** Transfer of Ownership or Operational Control [326 IAC 2-7-11]

...

(b) ...

The application which shall be submitted by the Permittee does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

...

Change 14: The Opacity requirements have been clarified as follows:

C.2 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in **326 IAC 5-1-1 (Applicability)** and 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) - (b) ...

Change 15: The Incineration requirements have been clarified as follows:

C.4 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator ~~or incinerate any waste or refuse~~ except as provided in 326 IAC 4-2 ~~and 326 IAC 9-1-2~~ **or in this permit**. **The Permittee shall not operate a refuse incinerator or refuse burning equipment except as provided in 326 IAC 9-1-2 or in this permit.**

Change 16: The Performance Testing requirements have been clarified as follows:

C.9 Performance Testing [326 IAC 3-6]

(a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. ~~All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.~~

~~A~~ **For performance testing required by this permit, a** test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

(c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ if the Permittee submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period. **The extension request submitted by the Permittee does not require a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34).**

Change 17: The Compliance Monitoring requirements have been clarified as follows:

C.11 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

~~Unless otherwise specified in this permit, for all monitoring and record keeping requirements not already legally required shall be implemented not later than ninety (90) days after permit issuance. The Permittee shall be responsible for installing any equipment described in Section D and initiating any required monitoring related to that equipment. If due to circumstances beyond its reasonable control, that equipment cannot be installed and operated within ninety (90) days, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:~~

**Unless otherwise specified in this permit, for all monitoring requirements not already legally required, the Permittee shall be allowed up to ninety (90) days from the date of permit issuance or of initial start-up, whichever is later, to begin such monitoring. If due to circumstances beyond the Permittee's control, any monitoring equipment required by this permit cannot be installed and operated no later than ninety (90) days after permit issuance or the date of initial startup, whichever is later, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:**

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a source modification shall be implemented when operation begins.

Change 18: The general requirements for Monitoring Methods were removed from Section C as follows (This provision will be included as needed in Section D of the permit.):

~~C.14 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]~~

~~Any monitoring or testing required by Section D of this permit shall be performed according to the applicable provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60, Appendix B, 40 CFR 63, or other approved methods as specified in this permit.~~

Change 19: IDEM is revising Condition C.15 as follows:

C.1~~8~~**7** Response to Excursions or Exceedances [326 IAC 2-7-5] [326 IAC 2-7-6]

**Upon detecting an excursion where a response step is required by the D Section or an exceedance of a limitation in this permit:**

(a) ~~Upon detecting an excursion or exceedance, the~~ **The** Permittee shall **take reasonable response steps to** restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing **excess** emissions.

(b) The response shall include minimizing the period of any startup, shutdown or malfunction ~~and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions)~~. ~~Corrective actions~~ **The response** may include, but ~~are~~ **is** not limited to, the following:

(1) initial inspection and evaluation;

(2) recording that operations returned **or are returning** to normal without operator action (such as through response by a computerized distribution control system); or

(3) any necessary follow-up actions to return operation to ~~within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable~~ **normal or usual manner of operation**.

(c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not **necessarily** limited to, the following:

(1) - (3) ...

(d) Failure to take reasonable response steps shall be considered a deviation from the permit.

(e) The Permittee shall ~~maintain the following records:~~ **record the reasonable response steps taken.**

~~(1) monitoring data;~~

~~(2) monitor performance data, if applicable; and~~

~~(3) corrective actions taken.~~

Change 20: IDEM is revising paragraph (b) of Condition C.16 as follows:

C.1~~9~~**8** Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the ~~Permittee shall take appropriate response actions. The~~ Permittee shall submit a description of ~~these~~ **its** response actions to IDEM, OAQ, no later than ~~thirty (30)~~ **seventy-five (75)** days after ~~receipt~~ **the date** of the test ~~results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.~~

(b) A retest to demonstrate compliance shall be performed ~~within~~ **no later than** one hundred ~~twenty (120)~~ **eighty (180)** days ~~of receipt~~ **after the date** of the ~~original~~ test ~~results~~. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred ~~twenty (120)~~ **eighty (180)** days is not practicable, IDEM, OAQ may extend the retesting deadline.

(c) ...

The response action documents submitted pursuant to this condition do require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

Change 21: IDEM is revising paragraph (a) of Condition C.17 as follows:

C.~~20~~**19** Emission Statement [326 IAC 2-7-5(3)(C)(iii)] [326 IAC 2-7-5(7)] [326 IAC 2-7-19(c)] [326 IAC 2-6]

~~(a)~~ Pursuant to 326 IAC 2-6-3(b)(2), starting in 2005 and every three (3) years thereafter, the Permittee shall submit ~~by~~ **no later than** July 1 an emission statement covering the previous calendar year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4(c) and shall meet the following requirements:

~~(1)~~**(a)** Indicate estimated actual emissions of all pollutants listed in 326 IAC 2-6-4(a);

~~(2)~~**(b)** Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1(32) ("Regulated pollutant, which is used only for purposes of Section 19 of this rule") from the source, for purpose of fee assessment.

The statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Quality
100 North Senate Avenue
MC 61-50, IGCN 1003
Indianapolis, Indiana 46204-2251

The emission statement does require ~~the~~ **a** certification **that meets the requirements of 326 IAC 2-7-6(1)** by ~~the~~ **a** "responsible official" as defined by 326 IAC 2-7-1(34).

~~(b) The emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.~~

Change 22: The General Record Keeping requirements have been revised as follows:

C.2~~1~~**0** General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [326 IAC 2-2] [326 IAC 2-3]

(a) ...

(b) Unless otherwise specified in this permit, **for** all record keeping requirements not already legally required**, the Permittee shall be allowed up to** ~~shall be implemented not later than~~ ninety (90) days ~~after~~ **from the date of** permit issuance **or the date of initial start-up, whichever is later, to begin such record keeping**.

(c) - (d) ...

Change 23: The General Reporting Requirements have been clarified as follows:

C.2~~2~~**1** General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 2-3]

(a) ~~The Permittee shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).~~ **Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported except that a deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. This report shall be submitted not later than thirty (30) days after the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include a certification that meets the requirements of 326 IAC 2-7-6(1) by a "responsible official" as defined by 326 IAC 2-7-1(34). A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.**

(b) ~~The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:~~ **The address for report submittal is**:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53, IGCN 1003
Indianapolis, Indiana 46204-2251

(c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.

~~(d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted no later than thirty (30) days after the end of the reporting period. Unless otherwise specified in this permit, all reports required in Section D do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).~~

~~(e)~~**(d) The first report shall cover the period commencing on the date of issuance of this permit and ending on the last day of the reporting period.** Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

~~(f)~~ **(e)** If the Permittee is required to comply with the recordkeeping provisions of (d) in Section C - General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1(qq) and/or 326 IAC 2-3-1(ll)) at an existing emissions unit, and the project meets the following criteria:

(1) - (2) ...

~~(g)~~ **(f)** The report for a project at an existing emissions unit no later than sixty (60) days after the end of the year~~, which~~ shall contain the following:

(1) - (3) ...

(4) Any other information that the Permittee ~~deems fit~~ **wishes** to include in this report **such as an explanation as to why the emissions differ from the preconstruction project**.

...

~~(h)~~ **(g)** The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C - General Record Keeping Requirements available for review upon a request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ under 326 IAC 17.1.

Change 24: The Stratospheric Ozone Protection requirements have been revised as follows.

C.2~~0~~**2** Compliance with 40 CFR 82 and 326 IAC 22-1

Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with ~~the~~ **applicable** standards for recycling and emissions reduction~~:~~**.**

~~(a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.~~

~~(b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.~~

~~(c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.~~

Change 25: IDEM has made the following changes in the Record Keeping Requirements throughout the permit.

~~All records shall be maintained in accordance with~~ Section C - General Record Keeping Requirements, **contains the Permittee's obligation with regard to the records required by this condition** ~~of this permit~~.

Change 26: IDEM agrees to make the following changes throughout Section D of the permit:

~~A Preventive Maintenance Plan (PMP), in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this unit and its control device.~~ **A Preventive Maintenance Plan (PMP) is required for this unit and its control device. Section B - Preventive Maintenance Plan contains the Permittee's obligations with regard to the preventive maintenance plan required by this condition.**

Testing shall be conducted in accordance with **the provisions of 326 IAC 3-6 (Source Sampling Procedures).** Section C - Performance Testing **contains the Permittee's obligations with regard to the performance testing required by this condition**.

## Conclusion and Recommendation

The operation and construction of this proposed modification shall be subject to the conditions of the attached proposed PSD/Part 70 Significant Source Modification No. 123-29490-00019 and Significant Permit Modification No. 123-29497-00019. The staff recommends to the Commissioner that this Part 70 Significant Source and Significant Permit Modification be approved.

**Appendix A: Emissions Calculations**
**Emission Summary**

**Source Name:** ThyssenKrupp Waupaca, Inc Plant 5
**Source Location:** 9856 State Highway 66, Tell City, IN 47586
**Permit Number:** SPM123-29497-00019
**Permit Reviewer:** Josiah Balogun
**Date:** 1-Sep-2010

**Uncontrolled Potential to Emit**

| | PM (tons/yr) | $PM_{10}$ (tons/yr) | $SO_2$ (tons/yr) | VOC (tons/yr) | CO (tons/yr) | NOx (tons/yr) | CO2 | Pb (tons/yr) | Be (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | | | | | | | | | |
| Casting Lines 1 to 8 | 17170 | 17170 | 4.4 | 307 | 1314 | 2.2 | | 17.17 | 0.34 |
| Phase 1 and 2 Cupolas | 3022 | 3022 | 158 | 39 | 31755 | 96.4 | | 130.77 | 0.39 |
| P35-Ductile Iron Treatment #1 and #2 | 158 | 158 | 0 | 0 | 0 | 0 | | 0.16 | 0.003 |
| P34-New Desulfurization Ladle | 477 | 477 | 0 | 0 | 0 | 0 | 46,655 | 0.95 | 0.0095 |
| Total Emissions | 20827.00 | 20827.00 | 162.40 | 346.00 | 33069.00 | 98.60 | 46655.00 | 149.05 | 0.74 |

**Limited Potential to Emit**

| | PM (tons/yr) | $PM_{10}$ (tons/yr) | $SO_2$ (tons/yr) | VOC (tons/yr) | CO (tons/yr) | NOx (tons/yr) | CO2 | Pb (tons/yr) | Be (tons/yr) |
|---|---|---|---|---|---|---|---|---|---|
| **Emission Unit** | | | | | | | | | |
| Casting Lines 1 to 8 | 0 | 0 | 4.4 | 307 | 1314 | 2.2 | | 0 | 0 |
| Phase 1 and 2 Cupolas | 0 | 0 | 48.2 | 4.4 | 87.6 | 96.4 | | 0 | 0 |
| P35-Ductile Iron Treatment #1 and #2 | 20.6 | 20.6 | 0 | 0 | 0 | 0 | | 0.0206 | 0.0004 |
| P34-New Desulfurization Ladle | 2.8 | 2.8 | 0 | 0 | 0 | 0 | 46,655 | 0.0028 | 0.0001 |
| Total Emissions | 23.40 | 23.40 | 52.60 | 311.00 | 1401.60 | 98.60 | 46655.00 | 0.023 | 0.0005 |

Note: The PM/PM10, Pb and Be for Casting lines 1-8 and Cupolas P30 and P33 will comply with existing limits in the permit.
The CO2 emissions was an estimate from ThyssenKrupp based on this modification.

| Baseline Years | Coke Usage (tpy) | CO2 EF (tons/ton) | CO2 Emission (tpy) | Thruput Increase (%) | CO2 Increase (tpy) | CO2 Increase (mt/year) |
|---|---|---|---|---|---|---|
| 2005-06 | 67,862 | 2.75 | 186,621 | 25% | 46,655 | 42,316 |

**Appendix A: Emissions Calculations**

**Emission Summary**

**Source Name:** ThyssenKrupp Waupaca, Inc Plant 5
**Source Location:** 9856 State Highway 66, Tell City, IN 47586
**Permit Number:** SPM123-29497-00019
**Permit Reviewer:** Josiah Balogun
**Date:** 1-Sep-2010

| **Table 1 - Uncontrolled Factors** | | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| | | (lbs/ton) | (lbs/ton) | (lbs/ton) | (lbs/ton) | (lbs/ton) | (ppm) | (ppm) |
| Casting Lines 1 to 8 | | 78.4 | 0.02 | 0.01 | 6 | 1.4 | 1,000 | 20 |
| Phase 1 and 2 Cupolas | | 13.8 | 0.72 | 0.44 | 145 | 0.18 | 43,270 | 128 |
| P35-Ductile Iron Treatment (2 stations) | | 1.8 | | | | | 1,000 | 20 |
| P34 - New Desulfurization Ladle | | 1.09 | | | | | 1,000 | 20 |

| **Table 2 - Uncontrolled Emissions** | Thruput | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| **Based on Proposed Increase in Capacity** | (tph) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Casting Lines 1 to 8 | 50 | 17,170 | 4 | 2 | 1,314 | 307 | 17.17 | 0.34 |
| Phase 1 and 2 Cupolas | 50 | 3,022 | 158 | 96 | 31,755 | 39 | 130.77 | 0.39 |
| P35-Ductile Iron Treatment (2 stations) | 20 | 158 | | | | | 0.16 | 0.003 |
| P34 - New Desulfurization Ladle | 100 | 477 | | | | | 0.48 | 0.0095 |
| Total | | 20,827 | 162 | 99 | 33,069 | 346 | 149 | 0.74 |

| **Table 3 - Uncontrolled Emissions** | Thruput | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| **Based on Proposed Final Capacity** | (tph) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Casting Lines 1 to 8 | 200 | 68,678 | 18 | 9 | 5,256 | 1,226 | 68.68 | 1.37 |
| Phase 1 and 2 Cupolas | 200 | 12,089 | 631 | 385 | 127,020 | 158 | 523.08 | 1.55 |
| P35-Ductile Iron Treatment (2 stations) | 100 | 788 | | | | | 0.79 | 0.02 |
| P34 - New Desulfurization Ladle | 100 | 477 | | | | | 0.48 | 0.01 |
| Total | | 82,033 | 648 | 394 | 132,276 | 1,384 | 593 | 3 |

| **Table 4 - Limited Factors** | Flow | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| | (acfm) | (gr/acf) | (lbs/ton) | (lbs/ton) | (lbs/ton) | (lbs/ton) | (ppm) | (ppm) |
| Casting Lines 1 to 8 | 2,036,000 | 0.005 | 0.02 | 0.01 | 6 | 1.4 | 1,000 | 20 |
| Phase 1 and 2 Cupolas | 190,000 | 0.0077 | 0.22 | 0.44 | 0.4 | 0.02 | 43,270 | 128 |
| P35-Ductile Iron Treatment (2 stations) | 110,000 | 0.005 | | | | | 1,000 | 20 |
| P34 - New Desulfurization Ladle | 15,000 | 0.005 | | | | | 1,000 | 20 |

| **Table 5 - Limited Emissions** | Thruput | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| **Based on Proposed Increase in Capacity** | (tph) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Casting Lines 1 to 8 | 50 | 0 | 4.4 | 2.2 | 1,314.0 | 306.6 | 0 | 0 |
| Phase 1 and 2 Cupolas | 50 | 0 | 48.2 | 96.4 | 87.6 | 4.4 | 0 | 0 |
| P35-Ductile Iron Treatment (2 stations) | 20 | 20.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0206 | 0.0004 |
| P34 - New Desulfurization Ladle | 100 | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0028 | 0.0001 |
| Total | | 23.46 | 52.6 | 98.6 | 1,401.6 | 311.0 | 0.023 | 0.00047 |

| **Table 6 - Limited Emissions** | Thruput | PM | SO2 | NOx | CO | VOC | Pb | Be |
|---|---|---|---|---|---|---|---|---|
| **Based on Proposed Final Capacity** | (tph) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Casting Lines 1 to 8 | 200 | 382.2 | 17.5 | 8.8 | 5,256.0 | 1,226.4 | 0.3822 | 0.0076 |
| Phase 1 and 2 Cupolas | 200 | 54.6 | 192.7 | 385.4 | 350.4 | 17.5 | 2.3643 | 0.0070 |
| P35-Ductile Iron Treatment (2 stations) | 100 | 20.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0206 | 0.0004 |
| P34 - New Desulfurization Ladle | 100 | 2.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0028 | 0.0001 |
| Total | | 460.3 | 210.2 | 394.2 | 5,606.4 | 1,243.9 | 2.7699 | 0.0151 |

References for Uncontrolled Emission Factors

Casting Lines PM: USEPA, Compilation of Air Pollutant Emission Factors, Section Table 12.10-7, January 1995.
where: 78.4 lbs PM/ton iron = 4.2 + 3.2 + 17 + (3.6 x 3 operations x 5 ton sand/ton iron)
Casting Lines Gaseous: Uncontrolled factors and proposed emission limitations.
Cupolas PM: USEPA, Compilation of Air Pollutant Emission Factors, Section Table 12.10-3, January 1995.
Cupolas Gaseous: July 22, 2010 Permit Application, Section 4.0 BACT Analysis
P35: USEPA, Compilation of Air Pollutant Emission Factors, Section Table 12.10-7, January 1995.
P34: USEPA, Compilation of Air Pollutant Emission Factors, Section Table Table 12.5-1, January 1995.

References for Controlled Emission Factors

All controlled emissions are based on current or proposed emission limitations.
PM is based on flow rate and outlet loading.
Casting Lines 1 to 8 flow rate is total of Stacks S01, S04, S07, S15 and S16 minus 110,000 acfm from S15 used for P35.
The proposed capacity increase results in no change in existing flow rates so there is no change in controlled PM, Pb or Be emissions.

| Stack ID | Flow (acfm) | Control Device | Process Description | Project Changes | Limit Changes | Past Actual PM Emissions (gr/acf) | Past Actual PM Emissions (lbs/hr) | Past Actual PM Schedule (hrs/yr) | Past Actual PM Emissions (tpy) | Future Actual PM Emissions (gr/acf) | Future Actual PM Emissions (lbs/hr) | Future Actual PM Schedule (hrs/yr) | Future Actual PM Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C01-C03 | P01 - Line 1 P/MC | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits for PM. Increase BACT limits for gases. | | | | | | | | |
| | | C01-C03 | P02 - Line 1 Shakeout | | | | | | | | | | |
| | | C01-C03 | P03 - Line 1 Cast Cooling | | | | | | | | | | |
| | | C01-C03 | P04 - Line 1 Pick & Sort | | | | | | | | | | |
| | | C01-C03 | P06 - Line 2 P/MC | | | | | | | | | | |
| | | C01-C03 | P07 - Line 2 Shakeout | | | | | | | | | | |
| | | C01-C03 | P08 - Line 2 Cast Cooling | | | | | | | | | | |
| | | C01-C03 | P11 - Line 3 P/MC | | | | | | | | | | |
| | | C01-C03 | P12 - Line 3 Shakeout | | | | | | | | | | |
| | | C01-C03 | P13 - Line 3 Cast Cooling | | | | | | | | | | |
| | | C01-C03 | P16 - Line 4 P/MC | | | | | | | | | | |
| | | C01-C03 | P17 - Line 4 Shakeout | | | | | | | | | | |
| | | C01-C03 | P18 - Line 4 Cast Cooling | | | | | | | | | | |
| | | C01-C03 | P19 - Line 4 Pick & Sort | | | | | | | | | | |
| | | C01-C03 | P21 - Return Sand Handling/Screening | | | | | | | | | | |
| | | C01-C03 | P22 - Sand Cooling/Water Addition | | | | | | | | | | |
| | | C01-C03 | P23 - Sand Mulling/Handling | | | | | | | | | | |
| | | C01-C03 | P24 - Spent Sand Handling/Processing | | | | | | | | | | |
| | | C01-C03 | P52 - Natural Gas-fired Air Makeup Units | No natural gas increase required. | No change to BACT limits. | | | | | | | | |
| | | C01-C03 | P53 - Phase I Ladle Preheating (Formerly S12) | No natural gas increase required. | No change to BACT limits. | | | | | | | | |
| S01 | 726,000 | C01-C03 | **Total for this stack** | | | 0.0043 | 26.8 | 7,092 | 94.9 | 0.0043 | 26.8 | 7,272 | 97.3 |
| | | C01-C03 | P01 - Line 1 P/MC | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits for PM. Increase BACT limits for gases. | | | | | | | | |
| | | C01-C03 | P03 - Line 1 Cast Cooling | | | | | | | | | | |
| S04 | 40,000 | C01-C03 | **Total for this stack** | | | 0.0043 | 1.5 | 7,092 | 5.2 | 0.0043 | 1.5 | 7,272 | 5.4 |
| | | C07 | P05 - Line 1 Cleaning/Grinding | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits. | | | | | | | | |
| | | | P09 - Line 2 Pick and Sort | | | | | | | | | | |
| | | | P10 - Line 2 Cleaning/Grinding | | | | | | | | | | |
| | | | P14 - Line 3 Pick and Sort | | | | | | | | | | |
| | | | P15 - Line 3 Cleaning/Grinding | | | | | | | | | | |
| | | | P25 - Metallic Returns Handling | | | | | | | | | | |
| | | | P20 - Line 4 Cleaning/grinding | | | | | | | | | | |
| S07 | 180,000 | C07 | **Total for this stack** | | | 0.0043 | 6.6 | 7,092 | 23.5 | 0.0043 | 6.6 | 7,272 | 24.1 |
| | | C08 | P40 - Phase I Core Sand Handling | No thruput change required. | No change to BACT limits. | | | | | | | | |
| | | C08 | P42 - Phase II Core Sand Handling | No thruput change required. | No change to BACT limits. | | | | | | | | |
| S08 | 14,000 | C08 | **Total for this stack** | | | 0.0043 | 0.5 | 7,092 | 1.8 | 0.0043 | 0.5 | 7,272 | 1.9 |
| | | C09A-C12A | P30 - Increase Capacity of Phase I Cupola | Increase thruput from 80 to 100 tph. | | | | | | | | | |
| | | C09B-C12B | P33 - Increase Capacity of Phase II Cupola | Increase thruput from 80 to 100 tph. | | | | | | | | | |
| S09 | 190,000 | C09-C12 | **Total for this stack** | | | 0.0043 | 7.0 | 7,092 | 24.8 | 0.0043 | 7.0 | 7,272 | 25.5 |
| | (cf6/yr) | None | P41 - Core Manufacturing Operation | No thruput change required. | No change to BACT limits. | (lbs/cf6) | | | | | | | |
| | 13.9 | None | P51 - Core Machine & Oven Operation | No thruput change required. | No change to BACT limits. | 7.6 | | 7,092 | 0.053 | | | 7,272 | 0.054 |
| S11 | 24,000 | None | **Total for this stack** | | | | | | | | | | |
| S14 | | C14 | P43 - Phenolic-Urethane Core Making | No thruput change required. | No change to BACT limits. | | | | | | | | |
| | | | P44 - Phenolic-Urethane Core Making | No thruput change required. | No change to BACT limits. | | | | | | | | |
| | | | P44 - Phenolic-Urethane Core Mixing | No thruput change required. | No change to BACT limits. | | | | | | | | |
| | | | P45A - Phenolic-Urethane Core Making | No thruput change required. | No change to BACT limits. | | | | | | | | |
| S14 | 26,000 | C14 | | | | | | | | | | | |
| | | C15 | P60-Line 5 P/MC | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits. | | | | | | | | |
| | | C15 | P61-Line 5 Shakeout | | | | | | | | | | |
| | | C15 | P62-Line 5 Cast and Cooling | | | | | | | | | | |
| | | C15 | P65-Line 6 P/MC | | | | | | | | | | |
| | | C15 | P66-Line 6 Shakeout | | | | | | | | | | |
| | | C15 | P67-Line 6 Cast and Cooling | | | | | | | | | | |
| | | C15 | P70-Line 7 P/MC | | | | | | | | | | |
| | | C15 | P71-Line 7 Shakeout | | | | | | | | | | |
| | | C15 | P72-Line 7 Cast and Cooling | | | | | | | | | | |
| | | C15 | P75-Line 8 P/MC | | | | | | | | | | |
| | | C15 | P55 - Shot Blast Machine | | | | | | | | | | |
| | | C15 | P80 - Return Sand Handling/Screening | | | | | | | | | | |
| | | C15 | P81 - Sand Mulling/Handling | | | | | | | | | | |
| | | C15 | P82- Sand Blending/Cooling | | | | | | | | | | |
| | | C15 | P83-Spent Sand/Dust Handling | | | | | | | | | | |
| | | C15 | P84-Metal Returns Handling | | | | | | | | | | |
| | 110,000 | C15 & C35 | P35-Ductile Iron Treatment (2 stations) | Modify method and increase thruput | No change to BACT limits. | | | | | | | | |
| | | C15 | P54- Natural Gas Air Make-Up (mmbtu/hr) | No natural gas increase required. | No change to BACT limits. | | | | | | | | |
| | | C15 | P53B - Phase II Ladle Preheating (Formerly S13) | No natural gas increase required. | No change to BACT limits. | | | | | | | | |
| S15 | 780,000 | C15 | **Total for this stack** | | | 0.0043 | 28.7 | 7,092 | 101.9 | 0.0043 | 28.7 | 7,272 | 104.5 |
| | | C16 | P61-Line 5 Shakeout | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits for PM. Increase BACT limits for gases. | | | | | | | | |
| | | C16 | P63-Line 5 Pick & Sort | | | | | | | | | | |
| | | C16 | P64-Line 5 Cleaning & Grinding | | | | | | | | | | |
| | | C16 | P66-Line 6 Shakeout | | | | | | | | | | |
| | | C16 | P67-Line 6 Cast and Cooling | | | | | | | | | | |
| | | C16 | P68-Line 6 Pick & Sort | | | | | | | | | | |
| | | C16 | P69-Line 6 Cleaning & Grinding | | | | | | | | | | |
| | | C16 | P71-Line 7 Shakeout | | | | | | | | | | |
| | | C16 | P72-Line 7 Cast and Cooling | | | | | | | | | | |
| | | C16 | P73-Line 7 Pick & Sort | | | | | | | | | | |
| | | C16 | P74-Line 7 Cleaning & Grinding | | | | | | | | | | |
| | | C16 | P76-Line 8 Shakeout | | | | | | | | | | |
| | | C16 | P77-Line 8 Cast and Cooling | | | | | | | | | | |
| | | C16 | P78-Line 8 Pick & Sort | | | | | | | | | | |
| | | C16 | P79-Line 8 Cleaning & Grinding | | | | | | | | | | |
| | | C16 | P80 - Return Sand Handling/Screening | | | | | | | | | | |
| | | C16 | P84-Metal Returns Handling | | | | | | | | | | |
| S16 | 420,000 | C16 | **Total for this stack** | | | 0.0043 | 15.5 | 7,092 | 54.9 | 0.0043 | 15.5 | 7,272 | 56.3 |

| Stack ID | Flow (acfm) | Control Device | Process Description | Project Changes | Limit Changes | Past Actual PM Emissions (gr/acf) | Past Actual PM Emissions (lbs/hr) | Past Actual PM Schedule (hrs/yr) | Past Actual PM Emissions (tpy) | Future Actual PM Emissions (gr/acf) | Future Actual PM Emissions (lbs/hr) | Future Actual PM Schedule (hrs/yr) | Future Actual PM Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C17 | P47 - Phenolic-Urethane Core Making | No thruput change required. | No change to BACT limits. | | | | | | | | |
| | (cf6/yr) | | P45B - Phenolic-Urethane Core Making | No thruput change required. | No change to BACT limits. | (lbs/cf6) | | | | | | | |
| | 7.5 | | P48 - Core Room Ovens Natural Gas Usage | No natural gas increase required. | No change to BACT limits. | 7.6 | | 7,092 | 0.028 | | | 7,272 | 0.029 |
| | 2.7 | | P48 - Core Room Air Make-up Heaters | No natural gas increase required. | No change to BACT limits. | 7.6 | | 7,092 | 0.010 | | | 7,272 | 0.010 |
| | 4.1 | | P48A/B - Core Room Natural Gas Usage | No natural gas increase required. | No change to BACT limits. | 7.6 | | 7,092 | 0.016 | | | 7,272 | 0.016 |
| S17 | 36,000 | C17 | **Total for this stack** | | | | | | | | | | |
| S18 | 14,000 | C18 | P46 - Phenolic Urethane Core Sand Handling | No thruput change required. | No change to BACT limits. | 0.0043 | 0.5 | 7,092 | 1.8 | 0.0043 | 0.5 | 7,272 | 1.9 |
| | (gal/yr) | | | | | (lbs/gal) | | | | (lbs/gal) | | | |
| S26 | 38,847 | C26 | P26 - Painting Operations | | | 0.017 | | 7,092 | 0.33 | 0.017 | | 7,272 | 0.34 |
| | | C44 | P32 - Charge Makeup and Handling | Increase thruput capacity of the casting line operations to accommodate the cupola melt rate increase from 80 to 100 tph | No change to BACT limits for PM. | | | | | | | | |
| | | C44 | P85 - Ladle Filling & Iron Transport | | | | | | | | | | |
| | | C44 | P86 - Ladle Cleaning with Burn Bars | | | | | | | | | | |
| | | C44 | Phase II Charge Makeup and Handling | | | | | | | | | | |
| | | C44 | Phase II Ladle Filling & Iron Transport | | | | | | | | | | |
| | 145,000 | C44 | Phase II Ladle Cleaning with Burn Bars | | | 0.0043 | 5.3 | 7,092 | 19.0 | 0.0043 | 5.3 | 7,272 | 19.4 |
| | 15,000 | C44 | P34 - New Desulfurization Ladle | New Process | New BACT Limit | | | | | 0.005 | 0.6 | 8,760 | 2.8 |
| S44 | 160,000 | C44 | **Total for this stack** | | | 0.0043 | 5.9 | 7,092 | 20.9 | | | | 22.2 |
| | | | **Future Actual - Past Actual** | | | | | | | | | | |
| | | | **Significant Emissions Rate (SER)** | | | | | | | | | | |
| | | | **PSD Applicable?** | | | | | | | | | | |

**Procedures:**

For all operations, emissions are based on the baghouse exhaust flow rate, outlet concentration in units of gr/acf, and operating hours.
For modified existing operations, past actual emissions are based on test results and the average operating hours for the 2005-2006 period, where: Average operating hours = (7272 + 6912)/2 = 7082 hours per year
For modified existing operations, future actual emissions are based on test results and the maximum historical operating hours for 2005 - 7272 hours per year.
For new operations (i.e. P34 - Desulfurization), past actual emissions are zero and future actual emissions are based on the emissions limit (i.e. potential/allowable) and operation 8,760 hours per year.
For Stack S44 Baghouse C44, past actual emissions are based on the current flow rate of 160,000 acfm and future actual emissions are based on the future flow rate of 145,000 acfm. The remaining 15,000 acfm is used for the new desulfurization operation.
The actual baghouse outlet concentration if based on stack tests on Stack S16 Baghouse C16, the only stack with both measurement of PM, PM10 and PM2.5.

P25 - Painting Operations PM Emission Factor Development

The P25 - Painting Operations are not modifed with this project but the increase in actual emissions is estimated based on historical paint usage.

| Solids Content lbs/gal | Spray Gun Transfer Efficiency | Overspray Filter Efficiency | PM Factor (lbs/gal) |
|---|---|---|---|
| 4.85 | 65% | 99% | 0.017 |

**Stack S16 Baghouse C16 Stack Test Results**

| | S16 Test Date | Actual (gr/dscf) | Actual (gr/acf) |
|---|---|---|---|
| PM (FH) | 9-Apr-02 | 0.0042 | 0.0039 |
| PM (BH) | 9-Apr-02 | 0.0004 | 0.0004 |
| PM Total | 9-Apr-02 | 0.0046 | 0.0043 |
| | | | |
| PM2.5 (FH) | 31-Jul-07 | 0.0005 | 0.0004 |
| PM2.5 (BH) | 31-Jul-07 | 0.0027 | 0.0025 |
| PM2.5 Total | 31-Jul-07 | 0.0032 | 0.0029 |
| | | | |
| PM2.5/PM | | Ratio | 68% |

Non-Cupola Natural Gas Usage

The increase in PM from natural gas usage exhausting through baghouses used by modified usage is included in estimates for those baghouses.
The increase in actual PM from other natural gas usage is estimated based on historical natural gas usage.

| Capacity (mmbtu/hr) | Capacity (%) | Actual Usage (cf6/yr) | | Exhausted through Baghouses for Modified Operations |
|---|---|---|---|---|
| 65.6 | 32.4% | 54.4 | P52 - Natural Gas-fired Air Makeup Units | Yes |
| 11.5 | 5.7% | 9.5 | P53 - Phase I Ladle Preheating (Formerly S12) | Yes |
| 16.8 | 8.3% | 13.9 | P51 - Core Machine & Oven Operation | No |
| 80 | 39.5% | 66.3 | P54- Natural Gas Air Make-Up (mmbtu/hr) | Yes |
| 11.5 | 5.7% | 9.5 | P53B - Phase II Ladle Preheating (Formerly S13) | Yes |
| 9 | 4.4% | 7.5 | P48 - Core Room Ovens Natural Gas Usage | No |
| 3.2 | 1.6% | 2.7 | P48 - Core Room Air Make-up Heaters | No |
| 5 | 2.5% | 4.1 | P48A/B - Core Room Natural Gas Usage | No |
| 202.6 | 100.0% | 168.0 | Annual Usage Based on 2009 | |

| Future - Past Actual PM Emissions (tpy) | PM10:PM Ratio (%) | Past Actual PM10 Emissions (tpy) | Future Actual PM10 Emissions (tpy) | Future - Past Actual PM10 Emissions (tpy) | PM2.5:PM Ratio (%) | Past Actual PM25 Emissions (tpy) | Future Actual PM25 Emissions (tpy) | Future - Past Actual PM25 Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|
| 2.4 | 100.0% | 94.9 | 97.3 | 2.4 | 68.0% | 64.5 | 66.2 | 1.6 |
| 0.1 | 100.0% | 5.2 | 5.4 | 0.1 | 68.0% | 3.6 | 3.6 | 0.1 |
| 0.6 | 100.0% | 23.5 | 24.1 | 0.6 | 68.0% | 16.0 | 16.4 | 0.4 |
| 0.05 | 100.0% | 1.8 | 1.9 | 0.05 | 68.0% | 1.2 | 1.3 | 0.03 |
| 0.6 | 100.0% | 24.8 | 25.5 | 0.6 | 68.0% | 16.9 | 17.3 | 0.4 |
| 0.001 | 100.0% | 0.053 | 0.054 | 0.001 | 100.0% | 0.053 | 0.054 | 0.001 |
| 2.6 | 100.0% | 101.9 | 104.5 | 2.6 | 68.0% | 69.3 | 71.1 | 1.8 |
| 1.4 | 100.0% | 54.9 | 56.3 | 1.4 | 68.0% | 37.3 | 38.3 | 0.9 |

| Future - Past Actual PM Emissions (tpy) | PM10:PM Ratio (%) | Past Actual PM10 Emissions (tpy) | Future Actual PM10 Emissions (tpy) | Future - Past Actual PM10 Emissions (tpy) | PM2.5:PM Ratio (%) | Past Actual PM25 Emissions (tpy) | Future Actual PM25 Emissions (tpy) | Future - Past Actual PM25 Emissions (tpy) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| 0.001 | 100.0% | 0.028 | 0.029 | 0.001 | 100.0% | 0.028 | 0.029 | 0.001 |
| 0.000 | 100.0% | 0.010 | 0.010 | 0.000 | 100.0% | 0.010 | 0.010 | 0.000 |
| 0.000 | 100.0% | 0.016 | 0.016 | 0.000 | 100.0% | 0.016 | 0.016 | 0.000 |
| | | | | | | | | |
| | | | | | | | | |
| 0.05 | 100.0% | 1.8 | 1.9 | 0.05 | 68.0% | 1.2 | 1.3 | 0.03 |
| | | | | | | | | |
| 0.01 | 100.0% | 0.33 | 0.34 | 0.01 | 68.0% | 0.22 | 0.23 | 0.01 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | 100.0% | | 19.4 | 0.0 | 68.0% | | 13.2 | 0.0 |
| | 100.0% | 0.0 | 2.8 | 0.0 | 68.0% | 0.0 | 1.9 | 0.0 |
| 1.3 | 100.0% | 20.9 | | 1.3 | 68.0% | 14.2 | | 0.9 |
| | | | | | | | | |
| | | 330.3 | 339.5 | | | 224.6 | 230.9 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| **9.2** | | | | **9.2** | | | | **6.2** |
| | | | | | | | | |
| **25** | | | | **15** | | | | **10** |
| | | | | | | | | |
| **NO** | | | | **NO** | | | | **NO** |

| | PM10 (tpy) | PM2.5 (tpy) |
|---|---|---|
| Past Actual for Existing Operations | 330.3 | 224.6 |
| Past Actual for New Operations | 0.0 | 0.0 |
| Past Actual Total | 330.3 | 224.6 |
| Projected Actual for Existing Operations | 336.7 | 229.0 |
| Projected Future Actual for New Operations | 2.8 | 1.9 |
| Projected Future Actual Total | 339.5 | 230.9 |
| Change in Emissions | 9.2 | 6.2 |
| Actual To Projected Actual emission increase | 9.2 | 6.2 |

# Indiana Department of Environmental Management
# Office of Air Quality

Appendix B – BACT Analyses
Technical Support Document (TSD)
Prevention of Significant Deterioration (PSD)
Significant Source Modification (SSM) of a Part 70 Source
Significant Permit Modification (SPM) of Part 70 Operating Permit

## Source Background and Description

| | |
|---|---|
| **Source Name:** | ThyssenKrupp Waupaca, Inc Plant 5 |
| **Source Location:** | 9856 State Highway 66, Tell City, IN 47586 |
| **County:** | Perry |
| **SIC Code:** | 3321 |
| **Operation Permit No.:** | T 123-27047-00019 |
| **Operation Permit Issuance Date:** | July 23, 2009 |
| **Significant Source Modification No.:** | 123-29490-00019 |
| **Significant Permit Modification No.:** | 123-29497-00019 |
| **Permit Reviewer:** | Josiah Balogun |

## Proposed Expansion

ThyssenKrupp Waupaca, Inc Plant 5 facility is proposing to install new equipment and modification to their existing plant. In this Preventive of Significant Deterioration (PSD), ThyssenKrupp Waupaca, Inc Plant 5 has proposed to modify Phase 1 and 2 Cupolas, Ductile iron treatment station #1 and #2, casting lines 1 to 8 and construction of a new desulfurization Ladle.

ThyssenKrupp Waupaca, Inc Plant 5, located at 9856 State Highway 66, Tell City, IN, in Perry County submitted a PSD application to IDEM, OAQ on July 23, 2010.

## Requirement for Best Available Control Technology (BACT)

326 IAC 2-2 requires a best available control technology (BACT) review to be performed on the proposed modification because the modification has the potential to emit of PM, SO2, VOC, NOx, CO, Pb and beryllium emissions greater than 25, 40, 40, 40, 100, 0.6 and 0.0004 tons per year, respectively, which exceed the PSD significant levels for these pollutants.

The following emission units have the potential to emit Particulate matters, sulfur dioxide, volatile organic compounds (VOC), carbon monoxide (CO) nitrogen oxide, lead and berylluim; therefore, a Best Available Control Technology analyses for PM, SO2, VOC, NOx, CO, Pb and Be was performed for these units:

**New Unit**

(a) One (1) 16 ton iron bath desulfurization ladle operation, constructed in 2010, identified as P34, with a maximum throughput of 100 tons per hour, using one (1) baghouse (C44) for particulate matter control and exhausting through stack S44.

**Modified Units**

Phase I

(a) One (1) gray iron cupola, identified as P30, constructed in 1996, with a maximum melt rate of 100 tons per hour, using one (1) baghouse (C09A) for particulate control, one (1) incinerator (C11A) for carbon monoxide control and VOC emissions control, and one (1) dry alkaline injection system (C12A) for sulfur dioxide control, exhausting to stack S09;

(b) Four (4) production lines, each constructed in 1996, consisting of the following:

(1) Line 1 (modified in 1998 and approved for modification in 2007)

(A) One (1) pouring/mold cooling operation, identified as P01, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;
(B) One (1) shakeout operation, identified as P02, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(C) One (1) cast cooling operation, identified as P03, with a maximum throughput of 28 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stacks S01 and S04;
(D) One (1) pick & sort operation, identified as P04, with a maximum throughput of 38 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(E) One (1) cleaning & grinding operation, identified as P05, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(2) Line 2
(A) One (1) pouring/mold cooling operation, identified as P06, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(B) One (1) shakeout operation, identified as P07, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(C) One (1) cast cooling operation, identified as P08, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(D) One (1) pick & sort operation, identified as P09, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;
(E) One (1) cleaning & grinding operation, identified as P10, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(3) Line 3
(A) One (1) pouring/mold cooling operation, identified as P11, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(B) One (1) shakeout operation, identified as P12, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;
(C) One (1) cast cooling operation, identified as P13, with a maximum throughput of 17 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P14, with a maximum throughput of 17 tons per hour, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(E) One (1) cleaning & grinding operation, identified as P15, with a maximum throughput of 17 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

(4) Line 4

(A) One (1) pouring/mold cooling operation, identified as P16, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(B) One (1) shakeout operation, identified as P17, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(C) One (1) cast cooling operation, identified as P18, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(D) One (1) pick & sort operation, identified as P19, with a maximum throughput of 27 tons per hour, using three (3) baghouses (C01, C02, C03) for particulate control, exhausting to stack S01;

(E) One (1) cleaning & grinding operation, identified as P20, with a maximum throughput of 27 tons per hour, using a mechanical blaster, using one (1) baghouse (C07) for particulate control, exhausting to stack S07;

Phase II

(c) One (1) cupola iron melting system, identified as P33, constructed in 1998, with a maximum melt rate of 100 tons of iron per hour. VOC and CO emissions are controlled by one (1) recuperative incinerator, identified as C11B. Sulfur dioxide emissions are controlled by one (1) lime injection system (or equivalent), identified as C12B Particulate matter emissions are controlled by one (1) baghouse system, identified as C09B. The gases are then exhausted to stack S09;

(d) Four (4) production lines, each constructed in 1998, consisting of the following:

(1) Line 5

(A) One (1) pouring/mold cooling operation, identified as P60, with a maximum production capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P61, with a maximum throughout capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P62, with a maximum capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15.

(D) One (1) pick and sort operation, identified as P63, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P64, with a maximum throughput capacity of 28 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(2) Line 6

(A) One (1) pouring/mold cooling operation, identified as P65, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P66, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P67, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P68, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P69, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(3) Line 7

(A) One (1) pouring/mold cooling operation, identified as P70, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P71, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(C) One (1) cast cooling operation, identified as P72, with a maximum production capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15, that exhaust to Stack S15 or by one (1) baghouse system, identified as C16, that exhaust to Stack S16;

(D) One (1) pick and sort operation, identified as P73, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(E) One (1) cleaning and grinding operation, identified as P74, with a maximum throughput capacity of 33 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(4) Line 8

(A) One (1) pouring/mold cooling operation, identified as P75, with a maximum production capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C15. The gases are then exhausted to Stack S15;

(B) One (1) shakeout operation, identified as P76, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions

are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(C) One (1) cast cooling operation, identified as P77, with a maximum capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16;

(D) One (1) pick and sort operation, identified as P78, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16; and

(E) One (1) cleaning and grinding operation, identified as P79, with a maximum throughput capacity of 20 tons per hour. Particulate matter emissions are controlled by one (1) baghouse system, identified as C16. The gases are then exhausted to Stack S16.

(e) Two (2) ductile iron treatment stations, both identified as P35, each with a maximum production capacity of 50 tons per hour. Particulate matter emissions are controlled by two (2) baghouse systems identified as C15 and C35. The gases from both baghouses are then exhausted to Stack S15.

## Summary of the Best Available Control Technology (BACT) Process

BACT is a mass emission limitation based on the maximum degree of pollution reduction of emissions, which is achievable on a case-by-case basis. BACT analysis takes into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, work practices, and operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution, thereby protecting public health and the environment.

Federal guidance on BACT requires an evaluation that follows a “top down” process. In this approach, the applicant identifies the best-controlled similar source on the basis of controls required by regulation or permit, or controls achieved in practice. The highest level of control is then evaluated for technical feasibility.

The five (5) basic steps of a top-down BACT analysis are listed below:

*Step 1: Identify Potential Control Technologies*

The first step is to identify potentially “available” control options for each emission unit and for each pollutant under review. Available options should consist of a comprehensive list of those technologies with a potentially practical application to the emissions unit in question. The list should include lowest achievable emission rate (LAER) technologies and controls applied to similar source categories. There is no requirement in the State or Federal regulations to require innovative control to be used as BACT.

*Step 2: Eliminate Technically Infeasible Options*

The second step is to eliminate technically infeasible options from further consideration. To be considered feasible, a technology must be both available and applicable. It is important in this step that any presentation of a technical argument for eliminating a technology from further consideration be clearly documented based on physical, chemical, engineering, and source-specific factors related to safe and successful use of the controls. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency. Based on this, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in a reduction in emissions of regulated pollutants.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The third step is to rank the technologies not eliminated in Step 2 in order of descending control effectiveness for each pollutant of concern. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT. If the highest ranked technology is proposed as BACT, it is not necessary to perform any further technical or economic evaluation, except for the environmental analyses.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The fourth step entails an evaluation of energy, environmental, and economic impacts for determining a final level of control. The evaluation begins with the most stringent control option and continues until a technology under consideration cannot be eliminated based on adverse energy, environmental, or economic impacts.

*Step 5: Select BACT*

The fifth and final step is to select as BACT the most effective of the remaining technologies under consideration for each pollutant of concern. For the technologies determined to be feasible, there may be several different limits that have been set as BACT for the same control technology. The permitting agency has to choose the most stringent limit as BACT unless the applicant demonstrates in a convincing manner why that limit is not feasible. The final BACT determination would be the technology with the most stringent corresponding limit that is economically feasible. BACT must, at a minimum, be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

The Office of Air Quality (OAQ) makes BACT determinations by following the five steps identified above.

## Sulfur Dioxide ($SO_2$) BACT - Casting Lines 1 - 8

*Step 1: Identify Potential Control Technologies*

Sulfur dioxide is formed from the oxidation of sulfur compounds in waste streams. Control measures are the use of add-on controls.

1. Reductions in the Sulfur content of raw materials; and

2. Flue Gas Desulfurization (Dry and Wet Scrubbers).

Add-on control measures are generally based upon exposure of sulfur dioxide molecules to reagents that react with sulfur dioxide to form a sulfate molecule that can then be captured as a particulate. Sulfur dioxide control systems vary in reagent utilized to react with sulfur dioxide, the manner in which the reagent is exposed to sulfur dioxide, and the manner in which sulfate molecules are captured.

*Step 2: Eliminate Technically Infeasible Options*

**Reductions in the Sulfur content of raw materials**

The $SO_2$ emissions from the casting lines are generated by oxidation of sulfur in the molds and cores as molten iron comes in contact with the mold and core raw materials. This sulfur is not a raw material but is present in trace quantities in traditional foundry raw materials. Based on 200 tons per hour of proposed casting production after this project is completed, the total $SO_2$ emissions at 0.02 lbs/ton are 4.0 lbs/hr.
.
For the casting lines, reduction in the sulfur content of raw materials is eliminated from consideration as BACT because this measure is considered technically infeasible. The sulfur in the foundry raw materials is not added but is present in trace quantities. Reductions in the sulfur content of the raw materials are not feasible.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of reduction in the sulfur content of raw materials is not a technically feasible option for the Casting Lines 1 - 8 at this source.

**Flue Gas Desulfurization (FGD) System (Wet or Dry Scrubber)**

A flue gas desulfurization system (FGD) is comprised of a spray dryer that uses lime as a reagent followed by particulate control or wet scrubber that uses limestone as a reagent. FGD is an established technology. FGD typically operates at an inlet temperature of approximately 4000°F to 5000°F. The concentration of $SO_2$ in the exhaust gas is the driving force for the reaction between $SO_2$ and the reagent. Therefore, removal efficiencies are significantly reduced with lower inlet concentrations of $SO_2$. FGD systems are listed in the RBLC as BACT for sources high in $SO_2$ emissions. Even though the $SO_2$ concentrations in the exhaust gases are very low, and the airflow volume is large. The wet scrubbing FGD system is considerably cheaper than dry scrubbing.

The casting line emissions are released from Stacks which have a combined flow rate of 1,506,000 acfm. The outlet concentration at 4 lbs/hr is 0.3 ppm or 750 $\mu g/m^3$. This concentration is extremely low. For example, it is approximately double the outdoor 3-hour average background concentration reported by IDEM for Gibson County. It is lower than concentrations achievable from air pollution control equipment such as wet and dry scrubbers typically used to control $SO_2$ emissions. It is concluded the stack concentration is too low for practical application of add-on control equipment as an option for controlling $SO_2$ emissions from the casting lines.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a flue gas desulfurization system (FGD) is not a technically feasible option for the Casting Lines 1 - 8 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

None of the two control options were considered technically feasible for control of Sulfur dioxide emissions for the casting Lines. Therefore, there is no need to rank the alternatives.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed SO2 BACT determination along with the existing SO2 BACT determinations for Casting Lines. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determination for SO2 from Casting Lines 1 - 8.**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Casting Lines 1 to 8** | **Increased to 200** | **0.02 lbs/ton and 4 lbs/hr** | **None** |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, TN | 19-Jul-07 | Phase I and II Casting Lines (There are 8 lines) | 20 | 0.02 lbs/ton | None |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, TN | 19-Jul-07 | Phase II Casting Line 1 - 30 tph | 30 | 0.02 lbs/ton | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT MOLDING LINE | n/a | 0.5 lbs/hr | None |

(a) **Comparison with other BACT Limitations:**

To determine if there are any new $SO_2$ emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for $SO_2$ emissions from pouring/mold cooling operations was by the Tennessee Department of Environmental Conservation for the ThyssenKrupp Waupaca, Inc. Plant 6, Phase 2 Project, Permit No. 960724P, in Etowah, TN in 2007. The limitation for that project was similar to the 0.02 lbs/ton limit being proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but this has no $SO_2$ emission limitations. There are no known NSPS or State regulations which limit $SO_2$ emissions from the casting lines.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Sulfur Dioxide (SO2) BACT for the Casting Lines P01-P08 as follows:

The combined sulfur dioxide (SO2) emissions from the Casting Lines 1 - 4 shall not exceed 0.02 pounds per ton and 1.98 pounds per hour, for both stacks S01 and S04.

The sulfur dioxide (SO2) emissions from the Casting Lines 5 - 8 shall not exceed 0.02 pounds per ton and 2.02 pounds per hour for stack 15.

**Sulfur Dioxide ($SO_2$) BACT - Cupolas P30 and P33**

*Step 1: Identify Potential Control Technologies*

Sulfur dioxide is formed from the oxidation of sulfur compounds in waste streams. Control measures are the use of add-on controls.

1. Reductions in the Sulfur content of the coke; and

2. Dry Injection Scrubbers.

Add-on control measures are generally based upon exposure of sulfur dioxide molecules to reagents that react with sulfur dioxide to form a sulfate molecule that can then be captured as a particulate. Sulfur dioxide control systems vary in reagent utilized to react with sulfur dioxide, the manner in which the reagent is exposed to sulfur dioxide, and the manner in which sulfate molecules are captured.

*Step 2: Eliminate Technically Infeasible Options*

**Reductions in the Sulfur content of the coke**

The $SO_2$ emissions from the Phase 1 and 2 cupolas are generated by the use of coke as a fuel. The sulfur is oxidized and converted to $SO_2$ during the iron melting process. Current coke consumption by each cupola is limited to 192 tons per day based on a melt rate of 80 tons per hour, or 384 tons per day for both the Phase 1 and 2 cupolas. This is equivalent to 0.1 ton of coke per ton of iron produced. Based on the proposed total melt rate of 200 tons per hour, total maximum coke usage after this project will be 20 tons per hour or 480 tons per day. Based on 0.6% sulfur and 30% conversion to $SO_2$, the uncontrolled emission rate from both the Phase 1 and 2 cupolas will be 0.72 lbs/ton of iron, 144 lbs/hr or 631 tons per year

For these cupolas, a reduction in the sulfur content of the coke is eliminated from consideration as BACT because it is not technically feasible. The coke already contains low concentrations of sulfur (i.e. 0.6%) compared to other solid fuels like coal. Lower sulfur content coke is not available for purchase by foundries.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of reduction in the sulfur content of the coke is not a technically feasible option for the Cupolas P30 and P33 at this source.

**Dry injection**

For the cupola, use of add-on control equipment is generally considered technically feasible since the outlet emissions are sufficiently high for the use of air pollution control equipment. The Phase 1 and 2 cupolas are currently equipped with dry injection scrubbing systems located upstream of the baghouse used to capture the particulate emissions. A dry alkaline reagent is used to neutralize the $SO_2$.

This dry scrubbing method is a practical alternative to semi-dry spray drier technology or wet scrubbing due to its compatibility with existing baghouse dust collection equipment. The cupola baghouse operates at relatively low temperatures (i.e. 320 °F). Excessive humidity in the flue gas from semi-dry or wet scrubbers may result in condensation, leading to acid corrosion and blinded filters in the baghouse.

Use of a dry reagent with no water injection is the preferred design for an iron foundry cupola to avoid control system degradation and failures associated with condensation. Further, the use of a dry scrubbing system eliminates the generation of wastewater discharges associated with wet scrubbing systems previously used on cupolas. The cupolas for the existing Plant 5 Phase I and Phase II projects in Tell City, Indiana currently use dry scrubbing systems. The expertise gained with these systems assures more reliable operation of the proposed dry scrubber.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a dry injection is a technically feasible option for Cupolas P30 and P33 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

(1) Dry Injection 69%

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed SO2 BACT determination along with the existing SO2 BACT determinations for Cupolas. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for SO2 from Cupolas P30 and P33**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Phase 1 and 2 Cupolas** | **Increased to 200** | **0.22 lbs/ton 44 lbs/hr** | **Dry Injection** |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | CUPOLA - 90 tph | 90 | 0.22 lbs/ton | Dry Injection |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | CUPOLA | n/a | 13.97 lbs/hr | None |
| MI-0370 | GREDE FOUNDRIES, | 25-Nov-04 | CUPOLA - 20 tph | 20 | 0.69 lbs/ton 13.8 lbs/hr | None |

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| | INC. - IRON MOUNTAIN DIVISION | | | | | |
| MI-0369 | FRITZ ENTERPRISES | 18-Oct-04 | IRON CUPOLA - 25 tph | 25 | 0.36 lbs/ton 9 lbs/hr | Lime Sorbent Injection |

(a) **Comparison with other BACT Limitations:**

To determine if there are any new $SO_2$ emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for $SO_2$ emissions from an iron cupola was by the Wisconsin Department of Natural Resources for the ThyssenKrupp Waupaca, Inc. Plant 1, MACT/Upgrade Project, Permit #04-RV-184, in Waupaca, WI in 2006. The limitation for that project was similar to the 0.22 lbs/ton limit being proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but this has no $SO_2$ emission limitations. There are no known NSPS, State regulations which limit $SO_2$ emissions from the two Cupolas P30 and P33.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Sulfur Dioxide (SO2) BACT for the two Cupolas P30 and P33 as follows:

The sulfur dioxide (SO2) emissions from the two (2) Cupolas P30 and P33 shall be controlled by a dry injection scrubber and the SO2 emissions shall not exceed 0.22 pounds per ton of metal based on a 30-day rolling average and 44 pounds per hour based on a 3-hour rolling average.

**Nitrogen Oxide ($NO_X$) BACT - Casting Lines 1 - 8**

*Step 1: Identify Potential Control Technologies*

The general approaches to controlling $NO_X$ emissions from stationary sources includes:

1. Reduction in the nitrogen content of the raw materials;

2. Selective Catalytic Reduction (SCR); and

3. Selective Non- Catalytic Reduction (SNCR).

Add-on control technologies approaches are discussed below.

*Step 2: Eliminate Technically Infeasible Options*

Reduction in the nitrogen content of the raw materials

$NO_x$ emissions from pouring/mold cooling operations have not been extensively studied. The common USEPA air pollution control reference, *Compilation of Air Pollutant Emission Factors*, does not discuss $NO_x$ emissions from pouring/mold cooling or provide any emission factors. Similar to other sources of $NO_x$, like boilers, the formation of $NO_x$ during the pouring and cooling of molten iron into a mold is likely due to the presence of nitrogen in the mold and core raw materials.

For the casting lines, both emission control options are eliminated from consideration as BACT because they are considered technically infeasible. The nitrogen in the foundry raw materials is not added but is present in trace quantities. Reductions in the nitrogen content of the raw materials are not feasible.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a reduction in the nitrogen content of the raw materials is not a technically feasible option for the reduction of NOx in Casting Lines 1 - 8 at this source.

Selective Catalytic Reduction

Selective Catalytic Reduction (SCR) process involves the mixing of anhydrous or aqueous ammonia vapor with flue gas and passing the mixture through a catalytic reactor to reduce $NO_X$ to $N_2$. Under optimal conditions, SCR can have a removal efficiency up to 90% when used on steady state processes. The efficiency of removal will be reduced for processes that are not stable or require frequent changes in the mode of operation.

The most important factor affecting SCR efficiency is temperature. SCR can operate in a flue gas window ranging from 500°F to 1100°F, although the optimum range for SCR to be effective is 625°F to 700°F.

SCR was determined to be technologically infeasible for the following dryers because they operate at 270°F which is much lower than 500°F:

Add-on SCR control system has been applied to boilers where the combustion gases are mixed with ammonia or a comparable reagent such as urea to convert $NO_x$ emissions into nitrogen. Each of these methods requires a specified operating temperature range for the $NO_x$ to $N_2$ reaction to be effective.

The incineration system used to combust cupola CO and VOC emissions operates at a minimum temperature specified by IDEM to assure efficient reduction of these emissions. Further reductions in its operating temperature in order to potentially reduce $NO_x$ emissions are not a feasible option.

The casting line emissions are released from which have a combined flow rate of 1,506,000 acfm. The outlet concentration at 2 lbs/hr is 0.2 ppm or 400 µg/m$^3$. This concentration is extremely low, approximately double the 1-hour average National Ambient Air Quality Standard of 100 ppb or 188.7 µg/m$^3$ adopted by USEPA in 2010. It is lower than concentrations achievable from air

pollution control equipment used to control $NO_x$ emissions. It is concluded the stack concentration is too low for practical application of add-on control equipment as an option for controlling $NO_x$ emissions from the casting lines.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a Selective Catalytic Reduction (SCR) is not a technically feasible option for the reduction of NOx in Casting Lines 1 - 8 at this source.

Selective Non-Catalytic Reduction

With selective non-catalytic reduction (SNCR), $NO_X$ is selectively removed by the injection of ammonia or urea into the flue gas at an appropriate temperature window of 1600°F to 2000°F and without employing a catalyst. Similar to SCR without a catalyst bed, the injected chemicals selectively reduce the $NO_X$ to molecular nitrogen and water.

This approach avoids the problem related to catalyst fouling but the temperature window and reagent mixing residence time is critical for conducting the necessary chemical reaction. At the proper temperature, urea decomposes to produce ammonia which is responsible for $NO_X$ reduction. At a lower temperature, the rates of $NO_X$ reduction reactions become too slow resulting in urea slip (i.e., emissions of unreacted urea).

SNCR was determined to be technologically infeasible for the following dryers because they operate at much lower temperature than 1600°F:

Add-on SCR control system has been applied to boilers where the combustion gases are mixed with ammonia or a comparable reagent such as urea to convert $NO_x$ emissions into nitrogen. Each of these methods requires a specified operating temperature range for the $NO_x$ to $N_2$ reaction to be effective.

The incineration system used to combust cupola CO and VOC emissions operates at a minimum temperature assure efficient reduction of these emissions. Further reductions in its operating temperature in order to potentially reduce $NO_x$ emissions are not a feasible option.

The casting line emissions are released from Stacks which have a combined flow rate of 1,506,000 acfm. The outlet concentration at 2 lbs/hr is 0.2 ppm or 400 µg/m$^3$. This concentration is extremely low, approximately double the 1-hour average National Ambient Air Quality Standard of 100 ppb or 188.7 µg/m$^3$ adopted by USEPA in 2010. It is lower than concentrations achievable from air pollution control equipment used to control $NO_x$ emissions. It is concluded the stack concentration is too low for practical application of add-on control equipment as an option for controlling $NO_x$ emissions from the casting lines.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of Selective Non-Catalytic Reduction (SNCR) is not a technically feasible option for the reduction of NOx in Casting Lines 1 - 8 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

None of the three control options were considered technically feasible for control of Nitrogen oxide emissions for the casting Lines. Therefore, there is no need to rank the alternatives.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed NOx BACT determination along with the existing NOx BACT determinations for Casting Lines. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for NOx from Casting Lines 1 - 8.**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Casting Lines 1 to 8** | **Increased to 200** | **0.01 lbs/ton 2 lbs/hr** | **None** |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, TN | 19-Jul-07 | Phase I and II Casting Lines (There are 8 lines) | 20 | 0.2 lbs/hr (0.01 lbs/ton) | None |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, TN | 19-Jul-07 | Phase II Casting Line 1 - 30 tph | 30 | 0.2 lbs/hr (0.01 lbs/ton) | None |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | POURING/COOLING (Line 1 , 3, 4, 5 and 6) | 82 | 0.02 lbs/ton | None |

(a) **Comparison with other BACT Limitations:**

To determine if there are any new $NO_x$ emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for $NO_x$ emissions from pouring/mold cooling operations was by the Tennessee Department of Environmental Conservation for the ThyssenKrupp Waupaca, Inc. Plant 6, Phase 2 Project, Permit No. 960724P, in Etowah, TN in 2007. The limitation for that project was similar to the 0.01 lbs/ton limit being proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but these regulations have no $NO_x$ emission limitations. There are no known NSPS, State regulations which limit $NO_x$ emissions from the casting lines P01-P04.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Nitrogen Oxide (NOx) BACT for the Casting Lines 1 - 8 as follows:

The combined nitrogen oxide (NOx) emissions from the Casting Lines 1 - 4 shall not exceed 0.01 pounds per ton of iron and 0.99 pounds per hour, for both stacks S01 and S04.

The nitrogen oxide (NOx) emissions from the Casting Lines 5 - 8 shall not exceed 0.01 pounds per ton of iron and 1.01 pounds per hour, for stack S15.

**Nitrogen Oxide ($NO_X$) BACT - Cupolas P30 and P33**

*Step 1: Identify Potential Control Technologies*

The general approaches to controlling $NO_X$ emissions from stationary sources includes:

1. Reduction in the nitrogen content of the coke;
2. Combustion Modification;
3. Selective Catalytic Reduction (SCR); and
4. Selective Non- Catalytic Reduction (SNCR).

Add-on control technologies approaches are discussed below.

*Step 2: Eliminate Technically Infeasible Options*

<u>Reduction in the nitrogen content of the coke</u>

For the cupola, the common USEPA air pollution control reference, *Compilation of Air Pollutant Emission Factors*, concludes that iron melting creates nitrogen oxides but provides no emission factors or control methods. Emissions are expected to be a function of the coke usage, cupola melt zone temperature, and operation of the downstream recuperative incinerator used to control CO emissions. The coke is a required raw material for the iron production process with no alternatives.

For the cupola, it is not clear if reductions in coke nitrogen content will significantly affect $NO_x$ emissions. In any case, it is not possible to obtain coke with a lower nitrogen content.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a reduction in the nitrogen content of the coke is not a technically feasible option for the reduction of NOx in Cupolas P30 and P33 at this source.

<u>Combustion Modifications</u>

The $NO_x$ emissions from the Phase 1 and 2 cupolas are likely generated by the combustion of coke and natural gas as fuels. The nitrogen in the coke is oxidized during the iron melting process. Natural gas is burned in the incinerator used to combust CO and VOC emissions from the cupola. The high combustion temperature of the incinerator encourages the formation of $NO_x$ from the nitrogen present in the ambient air used for combustion.

The recuperative incinerator operates using the high inlet CO concentrations as fuel. During normal operation, auxiliary natural gas burners contribute little energy or $NO_x$ emissions. The operating temperature of the incinerator is 1,300 to 1,700 °F. At these operating temperatures, thermal $NO_x$ formation due to reactions between nitrogen and oxygen in the combustion air will be reduced. The Phase I and II cupolas generate $NO_x$ emissions and have an existing BACT limitation of 0.44 lbs/ton of iron. Prior determinations at Plant 5, as well as other TKW foundries in Wisconsin and Tennessee have concluded this represents BACT. Little information is available on the generation mechanism for $NO_x$ generated by the cupola.

Unlike boilers designed to produce steam, the cupola is an industrial process designed to melt and combine raw materials into molten iron. Boiler combustion modifications used to reduce temperatures and use of ambient air at high temperatures are not applicable to a cupola. The physical configuration of a cupola does not lend itself to staging or recirculating the combustion air as can be done on a boiler.

The incineration system used to combust cupola CO and VOC emissions operates at a minimum temperature specified by IDEM to assure efficient reduction of these emissions. Further reductions in its operating temperature in order to potentially reduce $NO_x$ emissions are not a feasible option.

Based on coke usage of 0.1 ton per ton of iron and $NO_x$ emissions of 0.44 lbs per ton of iron, the coke emission factor is 4.4 lbs per ton of coke. USEPA reports that coal-fired boiler emission factors range from 7.2 to 31.0 lbs per ton of coal for spreader stoker and pulverized coal type furnaces. Compared to conventional boilers, the combustion of coke by the cupola generates relatively low amounts of $NO_x$ emissions

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a combustion modification is not a technically feasible option for the reduction of NOx in Cupolas P30 and P33 at this source.

<u>Selective Catalytic Reduction</u>

Selective Catalytic Reduction (SCR) process involves the mixing of anhydrous or aqueous ammonia vapor with flue gas and passing the mixture through a catalytic reactor to reduce $NO_X$ to $N_2$. Under optimal conditions, SCR can have a removal efficiency up to 90% when used on steady state processes. The efficiency of removal will be reduced for processes that are not stable or require frequent changes in the mode of operation.

The most important factor affecting SCR efficiency is temperature. SCR can operate in a flue gas window ranging from 500°F to 1100°F, although the optimum range for SCR to be effective is 625°F to 700°F.

SCR was determined to be technologically infeasible for the following dryers because they operate at much lower temperature than 500°F:

According to USEPA, SCR has been applied to coal- and natural gas-fired electrical utility boilers, large industrial boilers, process heaters, and gas turbines. There is no known application of an SCR control system on an iron foundry cupola. The $NO_x$ reduction reaction of SCR is effective only within a given temperature range with optimum temperatures between 480 °F to 800 °F. Each of the existing cupolas at Plant 5 is equipped with an incinerator, dry injection scrubber and baghouse. The stack outlet temperature is approximately 270 °F, which is too cool for effective use of an SCR control system. Incorporation of SCR would require significant modification of the existing equipment layout and flue gas exhaust system. Locating SCR upstream of the scrubber and baghouse to utilize higher flue gas temperatures would expose the SCR to high concentrations of $SO_2$ and PM which may plug the SCR catalyst and reduce its effectiveness.

Add-on SCR control system has been applied to boilers where the combustion gases are mixed with ammonia or a comparable reagent such as urea to convert $NO_x$ emissions into nitrogen. Each of these methods requires a specified operating temperature range for the $NO_x$ to $N_2$ reaction to be effective.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a Selective Catalytic Reduction (SCR) is not a technically feasible option for the reduction of NOx in Cupolas P30 and P33 at this source.

Selective Non-Catalytic Reduction

With selective non-catalytic reduction (SNCR), $NO_X$ is selectively removed by the injection of ammonia or urea into the flue gas at an appropriate temperature window of 1600°F to 2000°F and without employing a catalyst. Similar to SCR without a catalyst bed, the injected chemicals selectively reduce the $NO_X$ to molecular nitrogen and water. This approach avoids the problem related to catalyst fouling but the temperature window and reagent mixing residence time is critical for conducting the necessary chemical reaction. At the proper temperature, urea decomposes to produce ammonia which is responsible for $NO_X$ reduction. At a lower temperature, the rates of $NO_X$ reduction reactions become too slow resulting in urea slip (i.e., emissions of unreacted urea).

SNCR was determined to be technologically infeasible for the following dryers because they operate at much lower temperature than 1600°F:

As required by its air quality permit for the Plant 6 project in Tennessee, ThyssenKrupp Waupaca in conjunction with Wheelabrator Air Pollution Control, Inc. evaluated the feasibility of using SCNR to control $NO_x$ emissions from the cupola in 2002. In its report to the Tennessee Department of Environmental Conservation, the company concluded that the cupola operation did not appear to be a viable application for SNCR. The normal cupola exhaust temperature of 1,500 to 1,600 °F is at the low end of the range at which SCNR is effective. At 1,600 °F, SNCR may achieve 50% efficiency, but at 1,575 °F the reaction efficiency drops to zero. Additionally, the uncontrolled $NO_x$ concentrations in the flue gas ranged from 20 to 40 ppm. This is at the low end of the range at which SNCR is effective. At 40 ppm, SNCR could be 20% efficient, but at 20 ppm, there would be no reaction. Wheelabrator concluded that that SNCR is not technically feasible for a cupola.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of Selective Non-Catalytic Reduction (SNCR) is not a technically feasible option for the reduction of NOx in Cupola P30 and P33 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

None of the four control options were considered technically feasible for control of Nitrogen oxide emissions for the cupola P30 and P33. Therefore, there is no need to rank the alternatives.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed NOx BACT determination along with the existing NOx BACT determinations for cupolas. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for NOx from Cupolas P30 and P33**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Phase 1 and 2 Cupolas** | **Increased to 200** | **0.44 lbs/ton and 88 lbs/hr** | **None** |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | CUPOLA - 90 tph | 90 | 0.44 lbs/ton | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | CUPOLA | n/a | 12.12 lbs/hr | None |

(a) **Comparison with other BACT Limitations:**

To determine if there are any new $NO_x$ emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for $NO_x$ emissions from an iron cupola was by the Wisconsin Department of Natural Resources for the ThyssenKrupp Waupaca, Inc. Plant 1, MACT/Upgrade Project, Permit #04-RV-184, in Waupaca, WI in 2006. The limitation for that project was similar to the 0.44 lbs/ton limit being proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but these regulations have no $NO_x$ emission limitations. There are no known NSPS or state regulations which limit $NO_x$ emissions from the two cupolas.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Nitrogen Oxide (NOx) BACT for the cupola P30 and P33 as follows:

The nitrogen oxide (NOx) emissions from the cupola P30 and P33 shall be limited to 0.44 pounds per ton of iron and 88 pounds per hour.

## Carbon Monoxide (CO) BACT – Casting Line 1 - 8

*Step 1: Identify Potential Control Technologies*

Emissions of carbon monoxide (CO) are generally controlled by oxidation. Combustion control technologies include

(a) Alternative casting production methods

(b) Incineration

(1) Recuperative thermal oxidation;

(c) Catalytic oxidation;

(d) Flares;

(e) Advance Oxidation;

(f) Mold vent off gas ignition; and

(g) No control.

*Step 2: Eliminate Technically Infeasible Options*

**Alternative casting production methods**
Casting line CO emissions are generated by the pouring/mold cooling and shakeout operations when molten iron contacts the mold and core materials, burning the organic constituents. These organic constituents are an essential part of the casting process and are required to maintain casting quality. During the 1990's, the Wisconsin Department of Natural Resources established requirements for organic HAP under Chapter NR 445, Wis. Adm. Code. ThyssenKrupp Waupaca, Inc. conducted extensive investigation of alternative production methods with a potential to reduce emissions of these pollutants. To date, no alternative casting production methods are available to the foundry industry which would provide predictable reductions in CO emissions.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of alternative casting production methods is not a technically feasible option for the reduction of CO in Casting Line 1 - 8 at this source.

**Incineration**
Add-on incineration control equipment has been applied to operations generating high concentrations of CO in the flue gas such as foundry cupolas. In these cases, incineration equipment is used to raise the exhaust gas temperature to the combustion temperature of CO. An incineration system could conceivably operate if located after the baghouse control system has removed dust in the exhaust gases. This system could consist of either a recuperative, regenerative, or catalytic design. A recuperative design has been evaluated for recent ThyssenKrupp Waupaca BACT determinations for projects in Wisconsin, Indiana, and Tennessee. The recuperative incinerator design is expected to be less sensitive to the residual contaminants leaving the baghouse system than regenerative or catalytic designs.

(1) Recuperative Thermal Oxidizer

The Recuperative Thermal Oxidizer is comprised of the combustion chamber and heat exchanger. After leaving the combustion chamber, the exhaust gas enters a heat

exchanger where it transfers heat to the waste gas through conduction. The waste gas is thus preheated.

Considerable fuel savings can be achieved by using the exhaust gas to preheat the incoming waste gas, combustion air, or both via a heat exchanger. These heat exchangers can recover up to 70% of the energy (enthalpy) in the product gas. Most heat exchangers are not designed to withstand high temperatures, so that most of the energy needed to reach ignition is supplied by the combustion of fuel in the combustion chamber and only moderate preheat temperatures are sought in practice.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a recuperative thermal oxidizer is a technically feasible option for the casting line 1 - 8 at this source.

**Catalytic Oxidizers**

Catalytic oxidation is also a widely used control technology to control pollutants where the waste gas is passed through a flame area and then through a catalyst bed for complete combustion of the waste in the gas. This technology is typically applied for destruction of organic vapors, nevertheless it is considered as a technology for controlling CO emissions. A catalyst is an element or compound that speeds up a reaction at lower temperatures compared to thermal oxidation without undergoing change itself. Catalytic oxidizers operate at 650°F to 1000°F and approximately require 1.5 to 2.0 $ft^3$ of catalyst per 1000 standard $ft^3$ per gas flow rate.

Application of catalytic oxidation to control CO emissions from the casting line operation poses a major problem which is the failure of the catalyst. Emissions from casting line operation contain significant amount of particulates and iron oxides. These particulates and iron oxides can poison the catalyst resulting in the failure of catalytic oxidation.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of catalytic oxidation is not a technically feasible option for the reduction of CO in Casting Lines 1 - 8 at this source.

**Flares**

A flare is feasible when the flue gas concentration of the combustible gas such as CO is high enough to sustain combustion without the support of an auxiliary fuel like natural gas. Unlike incineration, the gas is burned with no heat recovery and direct venting to the atmosphere. In this case, the CO concentrations from the casting lines are too low to sustain combustion.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of flares is not a technically feasible option for the reduction of CO in Casting Lines 1 - 4 at this source.

**Advanced oxidation**

This method treats the water used in the green sand cooling and mulling operations by the addition of ozone. While the primary benefit of AO is a reduction in bond consumption and lower raw material costs, a secondary benefit is a potential reduction in VOC emissions. With a reduction in VOC, there is also likely to be a reduction in CO emissions, though this has not been confirmed. CO emissions vary from foundry to foundry, and with the many variables of the casting process including casting size and shape, mold sand size and composition and core to metal ratio. The variability of VOC emission and unpredictability for the reduction of VOC emission was shown during an AO testing program at Plant 5.IDEM confirmed the variability and unpredictability of the benefits of AO in its 2003 BACT Analysis for Dalton Foundry:

*Dalton Foundry has submitted information demonstrating that VOC reductions from the use of advance oxidation system are highly variable and difficult to predict. As a result,*

*IDEM (has) included language in the permit that allows the VOC limit on Herman 3 cooling process to be adjusted up or down after the initial stack test results have been reviewed and approved by IDEM.*

Due to the unpredictability of the emission reduction benefits of AO, it is considered to be a technically infeasible option.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of advanced oxidation is not a technically feasible option for the reduction of CO in Casting Line 1 - 8 at this source.

**Mold vent off gas ignition**
After the molten iron is poured into the sand molds, the mold vent off gas spontaneously ignites, reducing the CO generated during this operation. This practice is anorganic HAP control requirement in the final MACT rule for iron and steel foundries. Mold vent off-gas ignition already occurs on the casting lines at Plant 5.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of mold vent off gas ignition is a technically feasible option for the reduction of CO in Casting Line 1 - 8 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

(1) Recuperative thermal oxidation (98 to 99 % CO Reduction)

(2) Mold Vent-Off Gas Ignition (50 % CO Reduction)

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed CO BACT determination along with the existing CO BACT determinations for casting lines. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for CO from Casting Lines**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Casting Lines 1 to 8** | **Increased to 200** | **6 lbs/ton and 1200 lb/hr** | **Mold vent off gas ignition** |
| MI-0385 | ASAMA COLDWATER MANUFACTURING, INC. | 4-Aug-08 | MELTING AND POURING | 16.5 | 44.55 lbs/hr | None |
| MI-0385 | ASAMA COLDWATER MANUFACTURING, INC. | 4-Aug-08 | Automated mold cooling conveyor system and shakeout lines | 16.5 | 62.7 lbs/hr | None |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, | 19-Jul-07 | Phase I and II Casting Lines (There are 8 | 20 | 6 lbs/ton | None |

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| | TN | | lines) | | | |
| No. 960724P | ThyssenKrupp Waupaca, Inc. Plant 6, Etowah, TN | 19-Jul-07 | Phase II Casting Line 1 - 30 tph | 30 | 6 lbs/ton | None |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | SHAKEOUT (Line 1 , 3, 4, 5 and 6) | 82 | 1 lbs/ton | None |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | POURING/COOLING (Line 1 , 3, 4, 5 and 6) | 82 | 5 lbs/ton | None |
| WI-0236 | THYSSEN KRUPP PLANT #4 | 12-Oct-06 | Pouring, mold cooling, shakeout and autopour start-up (Two lines) | 35 | 6 lbs/ton | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT FLEXKLEENS | n/a | 45.79 lbs/hr | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT MOLDING LINE | n/a | 101.75 lbs/hr | None |
| WI-0237 | THYSSEN KRUPP PLANTS #2 | 5-Dec-05 | SHAKEOUT (Lines 3 to 7) | 16 | 1 lbs/ton | None |
| WI-0237 | THYSSEN KRUPP PLANTS #2 | 5-Dec-05 | POURING/ COOLING (Lines 3 to 7) | 16 | 5 lbs/ton | None |

**CO Top-Down BACT Analysis for the casting lines**

The following table summarizes the economic, environmental, and energy impacts of the feasible control options for the pouring/mold cooling and shakeout operations.

| CO Top - Down BACT Analysis for the Casting Lines | | | | | | | |
|---|---|---|---|---|---|---|---|
| Control Option | Potential Emissions (tons/yr) | Emissions Reduction (tons/yr) | Overall Control Efficiency (%) | Economic Impacts | | | Annual Nat. Gas and Electrical Requirements |
| | | | | Total Annual Cost ($/year) | Average Cost Effectiveness ($/ton) | Incremental Cost Effectiveness ($/ton)[a] | |
| Incineration | 177.4 | 5078.6 | 96.6 | $76,251,081 | $15,014 | $15,014 | 60,162mw-hrs/yr |
| No control | 5256.0 | 0 | 0 | 0 | 0 | 0 | 0 |

The cost for incinerating the CO emissions is based on using a single recuperative incineration system sized for the combined flow from S01, S04, S15 and S16. These are the stacks which exhaust the sources of CO - pouring/mold cooling and shakeout. High air flows are needed to

capture and convey the particulate matter generator by the operations using these stacks. The high air flows force the need for a very large incinerator so it is not surprising the estimated total annual costs are so high. If we generated cost estimates for each stack, the equipment costs would likely be higher, but the energy costs similar.

The cost for the recuperative incinerator is about $231,000 per year. Most of the cost is due to the amount of natural gas required to raise the exhaust gas up to the incineration temperature of 1400 F and electricity to overcome the pressure drop of the incinerator and 70% efficient heat exchanger (i.e. 19 inches wc). We chose a recuperative type incinerator to avoid plugging from particulate.

The regenerative type can be changed to a more efficient heat exchanger the problem is that, the natural gas cost would be lower. Changing the heat exchanger efficiency from 70 to 95% reduces the annualized cost to $15 million per year and the VOC cost effectiveness to $13,000 per ton. However, theoretically there are potential problems with plugging of the heat exchanger surfaces.

To evaluate the use of recuperative incineration control system to control CO emissions from the casting lines, order-of-magnitude cost estimates were developed. These were based on methods recommended in the USEPA reference, *OAQPS Control Cost Manual*.

The CO emissions from the casting lines are generated by pouring/mold cooling and shakeout operations which exhaust through baghouses and then Stacks S01, S04, S15 and S16. These stacks have a combined flow rate of 1,966,000acfm at 100 °F. At 200 tph of total production and proposed emission factor of 6.0 lbs/ton of iron, total CO emissions will be 1,200 lbs/hr with an estimated average stack concentration of 148 ppm.

The CO concentrations from the modified operations while operating at full capacity are expected to be 148 ppm. These concentrations are much lower than other processes which use incineration to control their CO emissions. These include the iron melting cupolas used at ThyssenKrupp Waupaca, Inc. Plant 5 which has inlet CO concentrations exceeding 150,000 ppm. Secondly, the inlet gases will contain a complex mixture of solid and condensable particulates, VOC and CO. This may require pre-cleaning to avoid problems with incinerator operation. Lastly, the cost effectiveness is based on the maximum allowable CO emissions while actual emissions are expected to vary. The lack of long term CO emissions data for casting lines makes it difficult to quantify the benefits of add-on control equipment.

The estimated cost effectiveness for incineration is $15,014 per ton of CO controlled. This cost effectiveness is considered excessive for BACT. The use of recuperative incineration for the control of CO emissions is concluded to be economically infeasible.

Mold vent-off gas ignition is the remaining control alternative for the casting lines. This control method is already used by the casting lines at Plant 5 so its benefit is included in the emission estimates.

(a) To determine if there are any new CO emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for CO emissions from pouring/mold cooling and shakeout operations was by the Tennessee Department of Environmental Conservation for the ThyssenKrupp Waupaca, Inc. Plant 6, Phase 2 Project, Permit #960724P, in Etowah, TN in 2007. The limitation for that project was similar to the 6.0 lbs/ton limit proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but these regulations have no CO emission limitations. There are no known state regulations which limit CO emissions from the casting lines.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Carbon Dioxide (CO) BACT for the Casting Line 1 - 8 as follows:

The combined carbon dioxide (CO) emissions from the Casting Line 1 - 4 shall be controlled by a mold vent off gas ignition and the emissions shall not exceed 6.0 pounds per ton of iron and 594 pounds per hour for both pouring/mold cooling and shakeout operations, for both stacks S01 and S04.

The combined carbon dioxide (CO) emissions from the Casting Line 5 - 8 shall be controlled by a mold vent off gas ignition and the emissions shall not exceed 6.0 pounds per ton of iron and 606 pounds per hour for both pouring/mold cooling and shakeout operations, for both stacks S15 and S16.

**Carbon Monoxide (CO) BACT – Cupolas P30 and P33**

*Step 1: Identify Potential Control Technologies*

Emissions of carbon monoxide (CO) are generally controlled by oxidation. Combustion control technologies include

(a) Alternative casting production methods

(b) Incineration

(1) Recuperative thermal oxidation;

(c) Catalytic oxidation;

(d) Flares;

(e) Advance Oxidation;

(f) Mold vent off gas ignition; and

(g) No control.

*Step 2: Eliminate Technically Infeasible Options*

**Alternative casting production methods**
CO emissions from the cupolas are generated by the combustion of coke and operation of the natural gas-fired incinerator which controls the CO emissions from the cupola. ThyssenKrupp Waupaca, Inc. conducted extensive investigation of alternative production methods with a potential to reduce emissions of these pollutants. To date, no alternative production methods are available to the foundry industry which would provide predictable reductions in CO emissions.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of alternative casting production methods is not a technically feasible option for the reduction of CO in cupola P30 and P33 at this source.

**Incineration**
Add-on incineration control equipment has been applied to operations generating high concentrations of CO in the flue gas such as foundry cupolas. In these cases, incineration equipment is used to raise the exhaust gas temperature to the combustion temperature of CO. An incineration system could conceivably operate if located after the baghouse control system has removed dust in the exhaust gases. This system could consist of either a recuperative, regenerative, or catalytic design. A recuperative design has been evaluated for recent ThyssenKrupp Waupaca BACT determinations for projects in Wisconsin, Indiana, and Tennessee. The recuperative incinerator design is expected to be less sensitive to the residual contaminants leaving the baghouse system than regenerative or catalytic designs.

(1) Recuperative Thermal Oxidizer

The Recuperative Thermal Oxidizer is comprised of the combustion chamber and heat exchanger. After leaving the combustion chamber, the exhaust gas enters a heat exchanger where it transfers heat to the waste gas through conduction. The waste gas is thus preheated.

Considerable fuel savings can be achieved by using the exhaust gas to preheat the incoming waste gas, combustion air, or both via a heat exchanger. These heat exchangers can recover up to 70% of the energy (enthalpy) in the product gas. Most heat exchangers are not designed to withstand high temperatures, so that most of the energy needed to reach ignition is supplied by the combustion of fuel in the combustion chamber and only moderate preheat temperatures are sought in practice.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a recuperative thermal oxidizer is a technically feasible option for the cupola P30 and P33 at this source.

**Catalytic Oxidizers**

Catalytic oxidation is also a widely used control technology to control pollutants where the waste gas is passed through a flame area and then through a catalyst bed for complete combustion of the waste in the gas. This technology is typically applied for destruction of organic vapors, nevertheless it is considered as a technology for controlling CO emissions. A catalyst is an element or compound that speeds up a reaction at lower temperatures compared to thermal oxidation without undergoing change itself. Catalytic oxidizers operate at 650°F to 1000°F and approximately require 1.5 to 2.0 $ft^3$ of catalyst per 1000 standard $ft^3$ per gas flow rate.

Application of catalytic oxidation to control CO emissions from the casting line operation poses a major problem which is the failure of the catalyst. Emissions from casting line operation contain significant amount of particulates and iron oxides. These particulates and iron oxides can poison the catalyst resulting in the failure of catalytic oxidation.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of catalytic oxidation is not a technically feasible option for the reduction of CO in cupola P30 and P33 at this source.

**Flares**
A flare is feasible when the flue gas concentration of the combustible gas such as CO is high enough to sustain combustion without the support of an auxiliary fuel like natural gas. Unlike incineration, the gas is burned with no heat recovery and direct venting to the atmosphere. In this case, the CO concentrations from the casting lines are too low to sustain combustion. Use of a flare is not a technically feasible option.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of flares is not a technically feasible option for the reduction of CO in cupola P30 and P33 at this source.

**Advanced oxidation**
This method treats the water used in the green sand cooling and mulling operations by the addition of ozone. While the primary benefit of AO is a reduction in bond consumption and lower raw material costs, a secondary benefit is a potential reduction in VOC emissions. With a reduction in VOC, there is also likely to be a reduction in CO emissions, though this has not been confirmed. CO emissions vary from foundry to foundry, and with the many variables of the casting process including casting size and shape, mold sand size and composition and core to metal ratio. The variability of CO emission and unpredictability for the reduction of CO emission was shown during an AO testing program at Plant 5. IDEM confirmed the variability and unpredictability of the benefits of AO in its 2003 BACT Analysis for Dalton Foundry: Due to the unpredictability of the emission reduction benefits of AO, it is considered to be a technically infeasible option.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of advanced oxidation is not a technically feasible option for the reduction of CO in cupola P30 and P33 at this source.

**Mold vent off gas ignition**
After the molten iron is poured into the sand molds, the mold vent off gas spontaneously ignites, reducing the CO generated during this operation. This practice is an organic HAP control requirement in the final MACT rule for iron and steel foundries. Mold vent off-gas ignition already occurs on the casting lines at Plant 5.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of mold vent off gas ignition is a technically feasible option for the reduction of CO in cupola P30 and P33 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

(1) Mold Vent-Off Gas Ignition (50 % CO Reduction)

(2) Recuperative thermal oxidation (98 to 99 % CO Reduction)

Incineration is considered the most effective control alternative for the cupolas. The two cupolas at Plant 5 are already equipped with incineration systems to control their CO emissions.

Uncontrolled emissions from the cupola are relatively high, so air quality regulations already require incineration of these emissions. Add-on control equipment such as incineration is viable alternative for controlling CO emissions from the cupola where the high inlet CO concentrations are burned as fuel.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed CO BACT determination along with the existing CO BACT determinations for cupolas. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for CO from Cupolas P30 and P33**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Phase 1 and 2 Cupolas** | **Increased from 150-200** | **0.4 lbs/ton and 80 lbs/hr** | **Incineration** |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | CUPOLA - 90 tph | 90 | 0.4 lbs/ton | Oxidizer |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | CUPOLA | n/a | 1.46 lbs/hr | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT FLEXKLEENS | n/a | 45.79 lbs/hr | None |
| MI-0370 | GREDE FOUNDRIES, INC. - IRON MOUNTAIN DIVISION | 25-Nov-04 | CUPOLA - 20 tph | 20 | 1.05 lbs/ton 21 lbs/hr | Thermal Oxidizer |
| MI-0369 | FRITZ ENTERPRISES | 18-Oct-04 | IRON CUPOLA - 25 tph | 25 | 1.45 lbs/hr | Afterburner |

(a) To determine if there are any new CO emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for CO emissions from an iron cupola was by the Wisconsin Department of Natural Resources for the ThyssenKrupp Waupaca, Inc. Plant 1, MACT/Upgrade Project, Permit #04-RV-184, in Waupaca, WI in 2006. The limitation for that project was similar to the 0.40 lbs/ton limit proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants

(NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but these regulations have no CO emission limitations.

The large amount of CO generated by iron cupolas has resulted in the adoption of state regulations which require incineration of these emissions. Condition D.1.6 of the Plant 5 Title V operation permit requires the existing cupolas to comply with the IDEM rule for the control of CO. Pursuant to 326 IAC 9-1-2 (Carbon Monoxide Emission Limits), the CO emissions from the cupolas must be controlled by the recuperative incinerator/heat recovery systems, which shall maintain a minimum temperature of 1,300 °F for a minimum retention time of 0.3 seconds.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has approved the proposed Carbon Dioxide (CO) BACT for the cupola P30 and P33 as follows:

The carbon dioxide (CO) emissions from the cupola P30 and P33 shall be controlled by an incineration system and the CO emissions shall not exceed 0.4 pounds per ton of iron and 80 pounds per hour.

**Volatile Organic Compounds (VOCs) BACT - Casting Line 1 - 8**

*Step 1: Identify Potential Control Technologies*

There are two categories of controls for volatile organic compounds (VOCs); destruction processes and reclamation processes. Destruction technologies reduce the VOC concentration by high temperature oxidation into carbon dioxide and water vapor. Reclamation is the capture of VOCs for reuse or disposal. There are also commercially available combinations of reclamation and destruction technologies.

(a) Alternative casting production methods

(b) Thermal Oxidizers

(c) Catalytic oxidation;

(d) Flares;

(e) Advance Oxidation;

(f) Mold vent off gas ignition; and

(g) No control.

*Step 2: Eliminate Technically Infeasible Options*

**Alternative casting production methods**
Casting line VOC emissions are generated by the pouring/mold cooling and shakeout operations when molten iron contacts the mold and core materials, burning the organic constituents. These organic constituents are an essential part of the casting process and are required to maintain casting quality. During the 1990's, the Wisconsin Department of Natural Resources established requirements for organic HAP under Chapter NR 445, Wis. Adm. Code. ThyssenKrupp Waupaca, Inc. conducted extensive investigation of alternative production methods with a potential to reduce emissions of these pollutants. To date, no alternative casting

reduction methods have come available to the foundry industry which would provide predictable reductions in VOC emissions.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of alternative casting production methods is not a technically feasible option for the reduction of VOC in Casting Line 1 - 8 at this source.

**Thermal Oxidizers**

A thermal oxidizer controls VOC emissions by using incineration equipment to raise the exhaust gas temperature to the combustion temperature of VOC. A thermal oxidizer can be recuperative or regenerative. A regenerative thermal oxidizer uses a direct contact heat exchanger consisting of a bed of porous ceramic packing or other structured, high heat capacity media. A recuperative thermal incinerator controls VOC in gas stream pre-heated by exiting flue gas from the same system in a heat exchanger or recuperator. For the casting lines operations, baghouses would be required to pre-clean the exhaust gases in advance of the incineration control equipment. Although add-on controls such as thermal oxidizers are not used in practice on other green sand systems, thermal oxidizers are considered technically feasible to control VOC emissions from casting lines operations at foundries. A recuperative design is expected to be less sensitive to the residual contaminants leaving the baghouse system than the regenerative design. ThyssenKrupp Waupaca, Inc. conducted an assessment of the cost effectiveness of the use of a recuperative thermal oxidizer for the pouring, cooling and shakeout operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a recuperative thermal oxidizer is a technically feasible option for the casting lines 1 - 8 at this source.

**Catalytic Oxidizers**

A catalytic oxidizer is an add-on control device to control VOC emissions by using a bed of catalyst that facilitates the oxidation of combustible gases. The catalyst increases the reaction rate and allows the conversion of VOC at lower temperature than a thermal incinerator. Typical problems encountered when using a catalytic incinerator is that the contaminants in the exhaust stream can poison or foul the catalyst bed. Given the nature of foundry operations, this is a serious problem.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a catalytic oxidizer is not a technically feasible option for the Casting Lines 1 - 8 at this source.

**Flare**

A flare is not technically feasible because the exhaust stream concentration must be high enough to sustain combustion, requiring a VOC inlet concentration of greater than 13,000 ppm, which is not feasible with the foundry's Casting line operations. They require a high heating value waste gas (in excess of 300 BTU/scf) or supplemental fuel. Flares will not be considered as BACT for this operation, and no additional analysis will be conducted.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a flare is not a technically feasible option for the Casting Lines 1 - 8 at this source.

**Advanced Oxidation**

Advanced oxidation is an approach for reducing VOC emissions at the mold line by reducing the VOC emissions generated by the green sand molds. An advanced oxidation system works by treating the water used in the sand mixing, mulling, and the cooling operations with the goal of

reducing VOC emissions when oxidants react with the green sand. Advanced oxidation systems have been installed at several foundries and these foundries (following sand system stabilization) have reported reductions in VOCs ranging from 20 to 75 percent. The amount of reduction is dependent upon several factors, including core loading, coal/clay composition, and binder systems.

While IDEM identified AO as a VOC alternative, the tests conducted at Plant 5 did not confirm that AO reduces VOC emissions. The AO system treats the water used in the green sand cooling and mulling operations. The primary benefit of AO is a reduction in bond consumption, lowering raw material costs. A secondary, unpredictable benefits, is a reduction in VOC emissions. Some foundries have modified their mold sand preparation systems to use AO. Examples include ThyssenKrupp Waupaca, Inc Plant 4, Grede Foundries, Inc. in Wisconsin, Dalton Foundry INTAT Precision, Inc., and ThyssenKrupp Waupaca Pant 5 in Indiana. While there are potential emission reduction benefits due to the use of AO, these are not predictable with any precision. VOC emissions vary from foundry to foundry, and with many variables involved in the casting process including casting size and shape, mold sand size and composition and core to metal ratio to name a few.

The variability of VOC emission and unpredictability for the reduction of VOC emission is shown by the testing program at Plant 5. In some instances VOC emissions prior to the use of AO were lower than emissions measured during tests after installation of AO.

IDEM confirmed the variability and unpredictability of the benefits of AO in its 2003 BACT Analysis for Dalton Foundry:

*"Dalton Foundry has submitted information demonstrating that VOC reductions from the use of advance oxidation system are highly variable and difficult to predict. As a result, IDEM included language in the permit that allows the VOC limit on Herman 3 cooling process to be adjusted up or down after the initial stack test results have been reviewed and approved by IDEM".*

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Advanced Oxidation is not a technically feasible option for the Casting Lines 1 - 8 at this source.

**Mold Vent-Off Gas Ignition**

After the molten iron is poured into the sand molds, the mold vent off gas spontaneously ignites, reducing the VOC generated during this operation. Mold vent-off gas ignition is a requirement in the final MACT rule for iron and steel foundries. Mold vent off-gas ignition already occurs at the Plant 5. Therefore, this option is technically feasible and will be considered part of the BACT requirement for this line.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of mold vent off gas ignition is a technically feasible option for the reduction of VOC in the casting lines 1 - 8 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

Based on the technical feasibility analysis in Step 2, the remaining control technologies may be ranked as follows for controlling VOC emissions from the casting lines operations.

(1) Recuperative thermal oxidation (98 to 99 % VOC Reduction)

(2) Mold Vent-Off Gas Ignition (50 % VOC Reduction)

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed VOC BACT determination along with the existing VOC BACT determinations for casting lines. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc. Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for VOC from Casting Lines**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Casting Lines 1 to 8 (pouring, Cooling and shakeout)** | **Increased to 200** | **1.4 lbs/ton and 140 lbs/hr** | **Mold Vent-Off Gas Ignition** |
| No. 123-26008-00019 | ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN | 17-Apr-09 | Pouring/cooling/ shakeout - 35 tph | 35 | 1.9 lbs/ton and 112 lbs/hr | Mold Vent-Off Gas Ignition |
| MI-0385 | ASAMA COLDWATER MANUFACTURING, INC. | 4-Aug-08 | MELTING AND POURING | 16.5 | 5.28 lbs/hr | None |
| MI-0385 | ASAMA COLDWATER MANUFACTURING, INC. | 4-Aug-08 | MOLD MACHINE AND SAND HANDLING | 16.5 | 4 lbs/hr | None |
| MI-0385 | ASAMA COLDWATER MANUFACTURING, INC. | 4-Aug-08 | Automated mold cooling conveyor system and shakeout lines | 16.5 | 15.49 lbs/hr (20 ppm) | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT FLEXKLEENS | n/a | 9.56 lbs/hr | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT MOLDING LINE | n/a | 21.25 lbs/hr | None |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | IMPACT THERMAL OXIDIZER | n/a | 1.47 lbs/hr | None |
| No. 085-18009-00003 | Dalton Corporation, Warsaw, IN | 9-Dec-03 | Herman 3 Pouring Station and Castings Cooling Process | 28 | 5.41 lbs/hr | Sonoperoxone ® system or an equivalent system, sand system optimization, low VOC core resin binder materials, and automatic mold vent-off gas ignition. |

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| No. 085-18009-00003 | Dalton Corporation, Warsaw, IN | 9-Dec-03 | Herman 3 Pouring Station and Castings Cooling Process (cooling) | 28 | 0.36 lbs/ton | Sonoperoxone ® system or an equivalent system, sand system optimization, low VOC core resin binder materials, and automatic mold vent-off gas ignition. |
| No. 085-18009-00003 | Dalton Corporation, Warsaw, IN | 9-Dec-03 | Herman 3 Pouring Station and Castings Cooling Process (pouring) | 28 | 0.163 lbs/ton | Sonoperoxone ® system or an equivalent system, sand system optimization, low VOC core resin binder materials, and automatic mold vent-off gas ignition. |
| No. 139-22701-00011 | INTAT Precision, Inc., Rushville, IN | N/A | Pouring, cooling, shakeout and bad heat shakeout - 15 tph | 15 | 1.3 lbs/ton and 19.5 lbs/hr | AO system |

INTAT Precision, Inc in Rushville, Indiana, requires a lower amount of organic sea coal in its molding sand compared to the molding sand used to produce grey iron, such as Phase 1. This is based on natural surface finish of ductile iron as compared to grey iron. Lower organic material concentrations in the molding sand provide less combustible matter to generate the VOC emissions. ThyssenKrupp Waupaca uses longer cooling lines than at INTAT. Longer cooling times allows more time for contact between the hot iron and combustible matter in the molds. There may be other differences in raw materials and production variables between INTAT and TKW that accounts for differences in VOC test results and emission limitations.

The proposed VOC limitation for INTAT is 1.3 lbs/ton. However, it is not clear if this is attainable. Tests at INTAT in 2005 showed emissions of 2.3 lbs/ton, well above their permit limit of 0.8 lbs/ton, as well as all the tests at TKW Plant 5.

Dalton Foundry manufactures grey iron, but uses a cope and drag method where each casting has it own horizontal mold. At TKW, the molds are continuous, vertical and stack adjacent to each other providing more contact between the hot castings and the organic constituents of the mold. The sand to metal ratio at Dalton would be higher than that of TKW. Capturing emissions from a horizontal flask molding system may be more difficult than the vertical molding operation at TKW. A reduction in capture efficiency would reduce the quantity of measurable VOC emissions. There may be other differences in the raw materials and production variables between Dalton and TKW that accounts for the difference in VOC test results and emissions limitations. In 2003, the approved BACT determination for Dalton was 0.1627 lb/ton of iron for pouring, 0.36 lbs/ton of iron for cooling, 0.115 lbs/ton of iron and sand for shakeout and 0.115 lbs/ton of iron and sand for sand handling. The equivalent emission limitation for all operations based only on iron throughput is 1.42 lbs/ton of VOC per ton of iron. (This factor is based on annual VOC emissions and iron production approved by IDEM for Herman 3 Mold Line). Compliance tests in 2005 showed Dalton could not comply with the limit for the cooling operation. New tests are required every 2.5 years after issuance of the Title V permit this year.

Both INTAT and Dalton have permit conditions that allow the VOC limitations to be increased if compliance tests are higher than specified in the permit.

The proposed BACT determination for TKW is based on several stack tests conducted under varying production conditions from October 2006 to November 2007. The proposed BACT limitation for TKW is supported by more test results than those for either INTAT or Dalton.

**VOC Top-Down BACT Analysis for the casting lines 1 - 8.**

The following table summarizes the economic, environmental, and energy impacts of the feasible control options for the pouring/mold cooling and shakeout operations.

| VOC Top - Down BACT Analysis for the Casting Lines | | | | | | | |
|---|---|---|---|---|---|---|---|
| Control Option | Potential Emissions (tons/yr) | Emissions Reduction (tons/yr) | Overall Control Efficiency (%) | Economic Impacts | | | Annual Nat. Gas and Electrical Requirements |
| | | | | Total Annual Cost ($/year) | Average Cost Effectiveness ($/ton) | Incremental Cost Effectiveness ($/ton)[a] | |
| Incineration | 1,226.40 | 1,185.0 | 96.6 | $76,251,081 | $64,347 | $64,347 | 60,162 mw-hrs/yr |
| No control | 1,226.40 | 0 | 0 | 0 | 0 | 0 | 0 |

The cost for incinerating the VOC emissions is based on using a single recuperative incineration system sized for the combined flow from S01, S04, S15 and S16. These are the stacks which exhaust the sources of VOC - pouring/mold cooling and shakeout. High air flows are needed to capture and convey the particulate matter generator by the operations using these stacks. The high air flows force the need for a very large incinerator so it is not surprising the estimated total annual costs are so high. If we generated cost estimates for each stack, the equipment costs would likely be higher, but the energy costs similar.

The cost for the recuperative incinerator is about $231,000 per year. Most of the cost is due to the amount of natural gas required to raise the exhaust gas up to the incineration temperature of 1400 F and

electricity to overcome the pressure drop of the incinerator and 70% efficient heat exchanger (i.e. 19 inches wc). We chose a recuperative type incinerator to avoid plugging from particulate.
The regenerative type can be changed to a more efficient heat exchanger the problem is that, the natural gas cost would be lower. Changing the heat exchanger efficiency from 70 to 95% reduces the annualized cost to $15 million per year and the VOC cost effectiveness to $13,000 per ton. However, theoretically there are potential problems with plugging of the heat exchanger surfaces.

To evaluate the use of recuperative incineration control system to control VOC emissions from the casting lines, order-of-magnitude cost estimates were developed. These were based on methods recommended in the USEPA reference, *OAQPS Control Cost Manual*.

The VOC emissions from the casting lines are generated by pouring/mold cooling and shakeout operations which exhaust through baghouses and then Stacks S01, S04, S15 and S16. These stacks have a combined flow rate of 1,966,000acfm at 100 °F. At 200 tons per hour of total production and proposed emission factor of 1.4lbs/ton of iron, total VOC emissions will be 280lbs/hr with an estimated average stack concentration of 22 ppm.

Regardless of the cost estimate for an incineration control system, its technical feasibility for this application must also be considered in the BACT determination. VOC concentrations from the modified operations while operating at full capacity are expected to be 22 ppm. These concentrations are much lower than other processes which use incineration to control their VOC emissions such as printing presses with an inlet concentration of 1,000 ppm. Secondly, the inlet gases will contain a complex mixture of solid and condensable particulates, VOC and CO. This may require pre-cleaning to avoid problems with incinerator operation. Lastly, the cost effectiveness is based on the maximum allowable VOC emissions while actual emissions are expected to vary. The lack of long term VOC emissions data for casting lines makes it difficult to quantify the benefits of add-on control equipment.

The estimated cost effectiveness for incineration is $64,347per ton VOC controlled. This cost effectiveness is considered excessive so the use of incineration is considered economically infeasible.

Mold vent-off gas ignition is the remaining control alternative for the casting lines. This control method is already used by the casting lines at Plant 5 so its benefit is included in the emission estimates.

(a) To determine if there are any new VOC emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for VOC emissions from pouring/mold cooling and shakeout operations was by IDEM for the ThyssenKrupp Waupaca, Inc. Plant 5, PSD/Significant Source Mod. No. 123-26008-0019, in Tell City, IN in 2009. The limitation for the proposed project is more stringent than the limit in the permit.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries.

There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE. These regulations require that:

> *"for one or more automated conveyor and pallet cooling lines that use a sand mold system or automated shakeout lines that use a sand mold system at a new iron and steel foundry, you must not discharge emissions of VOHAP through a conveyance to the atmosphere that exceed a flow-weighted average of 20 ppmv."*

This limitation is based on the use of an incineration or carbon adsorption system. The VOC emissions are expected to contain both HAP and non-HAP constituents. The BACT analysis presented here does evaluate the feasibility of using incineration for controlling the VOC emissions from the pouring/mold cooling and shakeout operations.

There are no known state regulations which limit VOC emissions specifically from the casting lines. Some state regulations have generic control requirements for larger sources of VOC. Under 326 IAC 8-6-2 (Emission limits; exemptions), IDEM requires any operation with emissions of 100 tons per year from liquid solvent use to control emissions by 85%. Under NR 424, Wis. Adm. Code, the Wisconsin DNR requires any source of VOC greater than 3 lbs/hr or 15 lbs/day to control emissions by 85%, or if shown to be infeasible, by latest available control techniques. However, there is no instance of these regulations being used to require the use of add-on control equipment for VOC emissions from casting lines.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Volatile Organic Compounds (VOCs) BACT for the casting lines P01-P08 as follows:

The combined volatile organic compounds (VOCs) emissions from the casting lines P01-P04 shall be controlled by a mold vent off gas ignition and the combined VOC emissions shall not exceed 1.4 pounds per ton of iron and 138.60 pounds per hour for both stacks S01 and S04.

The combined volatile organic compounds (VOCs) emissions from the casting lines P05-P08 shall be controlled by a mold vent off gas ignition and the combined VOC emissions shall not exceed 1.4 pounds per ton of iron and 141.4 pounds per hour for both stacks S15 and S16.

**Volatile Organic Compounds (VOCs) BACT - Cupolas P30 and P33**

*Step 1: Identify Potential Control Technologies*

There are two categories of controls for volatile organic compounds (VOCs); destruction processes and reclamation processes. Destruction technologies reduce the VOC concentration by high temperature oxidation into carbon dioxide and water vapor. Reclamation is the capture of VOCs for reuse or disposal. There are also commercially available combinations of reclamation and destruction technologies.

(a) Thermal Oxidizers

(b) Catalytic oxidation;

(c) Flares;

(d) Advance Oxidation;

(e) Mold vent off gas ignition; and

(f) No control.

*Step 2: Eliminate Technically Infeasible Options*

**Thermal Oxidizers**

A thermal oxidizer controls VOC emissions by using incineration equipment to raise the exhaust gas temperature to the combustion temperature of VOC. A thermal oxidizer can be recuperative or regenerative. A regenerative thermal oxidizer uses a direct contact heat exchanger consisting of a bed of porous ceramic packing or other structured, high heat capacity media. A recuperative thermal incinerator controls VOC in gas stream pre-heated by exiting flue gas from the same system in a heat exchanger or recuperator. For the casting lines operations, baghouses would be required to pre-clean the exhaust gases in advance of the incineration control equipment. Although add-on controls such as thermal oxidizers are not used in practice on other green sand systems, thermal oxidizers are considered technically feasible to control VOC emissions from casting lines operations at foundries. A recuperative design is expected to be less sensitive to the residual contaminants leaving the baghouse system than the regenerative design. ThyssenKrupp Waupaca, Inc. conducted an assessment of the cost effectiveness of the use of a recuperative thermal oxidizer for the pouring, cooling and shakeout operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a recuperative thermal oxidizer is a technically feasible option for the cupolas P30 and P33 at this source.

**Catalytic Oxidizers**

A catalytic oxidizer is an add-on control device to control VOC emissions by using a bed of catalyst that facilitates the oxidation of combustible gases. The catalyst increases the reaction rate and allows the conversion of VOC at lower temperature than a thermal incinerator. Typical problems encountered when using a catalytic incinerator is that the contaminants in the exhaust stream can poison or foul the catalyst bed. Given the nature of foundry operations, this is a serious problem.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a catalytic oxidizer is not a technically feasible option for the cupolas P30 and P33 at this source.

**Flare**

A flare is not technically feasible because the exhaust stream concentration must be high enough to sustain combustion, requiring a VOC inlet concentration of greater than 13,000 ppm, which is not feasible with the foundry's Casting line operations. They require a high heating value waste gas (in excess of 300 BTU/scf) or supplemental fuel. Flares will not be considered as BACT for this operation, and no additional analysis will be conducted.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a flare is not a technically feasible option for the cupolas P30 and P33 at this source.

**Advanced Oxidation**

Advanced oxidation is an approach for reducing VOC emissions at the mold line by reducing the VOC emissions generated by the green sand molds. An advanced oxidation system works by treating the water used in the sand mixing, mulling, and the cooling operations with the goal of reducing VOC emissions when oxidants react with the green sand. Advanced oxidation systems have been installed at several foundries and these foundries (following sand system stabilization) have reported reductions in VOCs ranging from 20 to 75 percent. The amount of reduction is

dependent upon several factors, including core loading, coal/clay composition, and binder systems.

While IDEM identified AO as a VOC alterative, the tests conducted at Plant 5 did not confirm that AO reduces VOC emissions. The AO system treats the water used in the green sand cooling and mulling operations. The primary benefit of AO is a reduction in bond consumption, lowering raw material costs. A secondary, unpredictable benefits, is a reduction in VOC emissions. Some foundries have modified their mold sand preparation systems to use AO. Examples include ThyssenKrupp Waupaca, Inc Plant 4, Grede Foundries, Inc in Wisconsin, Dalton Foundry INTAT Precision, Inc., and ThyssenKrupp Waupaca Pant 5 in Indiana. While there are potential emission reduction benefits due to the use of AO, these are not predictable with any precision. VOC emissions vary from foundry to foundry, and with many variables involved in the casting process including casting size and shape, mold sand size and composition and core to metal ratio to name a few.

The variability of VOC emission and unpredictability for the reduction of VOC emission is shown by the testing program at Plant 5. In some instances VOC emissions prior to the use of AO were lower than emissions measured during tests after installation of AO.

IDEM confirmed the variability and unpredictability of the benefits of AO in its 2003 BACT Analysis for Dalton Foundry:

*"Dalton Foundry has submitted information demonstrating that VOC reductions from the use of advance oxidation system are highly variable and difficult to predict. As a result, IDEM included language in the permit that allows the VOC limit on Herman 3 cooling process to be adjusted up or down after the initial stack test results have been reviewed and approved by IDEM".*

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Advanced Oxidation is not a technically feasible option for the cupolas P30 and P33 at this source.

**Mold Vent-Off Gas Ignition**

After the molten iron is poured into the sand molds, the mold vent off gas spontaneously ignites, reducing the VOC generated during this operation. Mold vent-off gas ignition is a requirement in the final MACT rule for iron and steel foundries. Mold vent off-gas ignition already occurs at the Plant 5. Therefore, this option is technically feasible and will be considered part of the BACT requirement for this line.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of mold vent off gas ignition is a technically feasible option for the reduction of VOC in the cupolas P30 and P33 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

Based on the technical feasibility analysis in Step 2, the remaining control technologies may be ranked as follows for controlling VOC emissions from the Casting lines operations.

(1) Recuperative thermal oxidation (98 to 99 % VOC Reduction)

(2) Mold Vent-Off Gas Ignition (50% VOC Reduction)

Incineration is considered the most effective control alternative for the cupolas. The two cupolas at Plant 5 are already equipped with incineration systems to control their VOC emissions.

Uncontrolled CO emissions from the cupola are relatively high, so air quality regulations already require incineration of these emissions. Incineration will also remove the VOC emissions. Add-on control equipment such as incineration is a viable alternative for controlling VOC emissions from the cupola where the simultaneous high inlet CO concentrations are burned as fuel.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed VOC BACT determination along with the existing VOC BACT determinations for cupolas. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for VOC from Cupolas P30 and P33**

| BACT ID or Permit # | Facility | Issued Date | Process Description | Rating (TPH) | Limitation | Control Method |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. Plant 5, Tell City, IN** | **Proposed** | **Phase 1 and 2 Cupolas** | **Increased to 200** | **0.02 lbs/ton and 4.0 lbs/hr** | **Incineration** |
| WI-0238 | THYSSEN KRUPP PLANT #1 | 28-Nov-06 | CUPOLA - 90 tph | 90 | 0.02 lbs/ton | Oxidizer |
| TX-0517 | MCWANE GRAY AND DUCTILE IRON FOUNDRY | 21-Dec-05 | CUPOLA | n/a | 0.99 lbs/hr | None |
| MI-0370 | GREDE FOUNDRIES, INC. - IRON MOUNTAIN DIVISION | 25-Nov-04 | CORE MAKING, ISOCURE | 73320 tpy | 4.8 lbs/hr | None |
| MI-0369 | FRITZ ENTERPRISES | 18-Oct-04 | IRON CUPOLA - 25 tph | 25 | 19.7 tpy | Afterburner |

(a) To determine if there are any new VOC emission control alternatives, a search was conducted on the USEPA RACT/BACT/LAER Clearinghouse database for control determinations made during the past 10 years for the process code 81.400 – Iron Foundry Processes.

This summary also includes recent determinations not yet reported in the Clearinghouse such as IDEM determinations for ThyssenKrupp Waupaca, Inc. Plant 5 in Tell City, INTAT Precision, Inc. in Rushville and Dalton Corporation in Warsaw.

There were no determinations which required control options besides those which are already under consideration for this application. No emission limits have been approved which were more stringent than those proposed for this application.

The most recent determination for VOC emissions from an iron cupola was by the Wisconsin Department of Natural Resources for the ThyssenKrupp Waupaca, Inc. Plant 1, MACT/Upgrade Project, Permit #04-RV-184, in Waupaca, WI in 2006. The limitation for that project was similar to the 0.02 lbs/ton limit being proposed for this project at Plant 5.

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits.

There are currently no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE but not for VOCs.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Volatile Organic Compounds (VOCs) BACT for the cupolas P30 and P33 as follows:

The volatile organic compounds (VOCs) emissions from the cupolas P30 and P33 shall be controlled by incineration or "an incinerator" and the VOC emissions shall not exceed 0.02 pounds per ton of iron and 4.0 pounds per hour.

**Particulate Matter (PM) BACT – P34 - Desulfurization ladle**

*Step 1: Identify Potential Control Technologies*

The emissions of particulate matter (PM) and the particulate matter with an aerodynamic diameter less than or equal to ten (10) micrometers ($PM_{10}$) are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Wet Scrubber;

(3) Electrostatic Precipitators (ESP);

(4) Fabric Filter Dust Collectors (Baghouses); and

(5) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs), wet scrubber system and cartridge collectors (CC) for controlling particulate matter emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses. Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment. This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(b) **Wet Scrubber**

A wet scrubber is an air pollution control device that removes particulates from waste gas streams primarily through the impaction, diffusion, interception and/or absorption of the pollutant onto droplets of liquid. The liquid containing the pollutant is then collected for disposal. There are numerous types of wet scrubbers that remove particulates. Collection efficiencies for wet scrubbers vary with the particle size distribution of the waste gas stream. In general, collection efficiency decreases as the particulates size decreases. Collection efficiencies also vary with scrubber type. Collection efficiencies range from greater than 99% for venturi scrubbers to 40-60% (or lower) for simple spray towers. Wet scrubbers are smaller and more compact than baghouses or ESPs. They have lower capital costs and comparable operation and maintenance (O&M) costs. Wet scrubbers are particularly useful in the removal of particulates with the following characteristics:

(1) Sticky and/or hygroscopic materials (materials that readily absorb water);

(2) Combustible, corrosive and explosive materials;

(3) Particles that are difficult to remove in their dry form;

(4) Particulates M in the presence of soluble gases; and

(5) Particulates M in waste gas streams with high moisture content.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a wet scrubber is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(c) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(d) **Fabric Filtration:**

A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere. The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%. The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting. Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated. Important process variables include particle characteristics, gas characteristics, and fabric properties. The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system. The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning. Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface. These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(d) **Cartridge Collectors (CC)**

While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and 99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cartridge collector is not a technically feasible option for the P34 - Desulfurization Ladle at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of PM resulting from operation of a P34 - Desulfurization Ladle.

(1) Fabric Filtration (99% - 99.9% PM Reduction)

(2) Electrostatic Precipitator (99% - 99.9% PM Reduction)

(3) Wet Scrubber (99% PM Reduction)

(4) Cyclones (80% PM Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the Fabric Filtration as BACT for the P34 - Desulfurization Ladle.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

There are no listings in the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), which contained stack limitations or concentration limits for PM emissions from P-34 Iron Desulfurization operations.

(a) **Proposed BACT Limit**:
The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for particulate matter from the P34 - Desulfurization Ladle:

(1) A fabric filter baghouse.

(2) The PM emissions shall not exceed an outlet concentration of 0.005 grains per dry standard cubic foot for PM emission and 0.64 pounds per hour:

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE. PM limitations were established as surrogates for the control of metal HAP. These limits vary depending on the type of operation and whether the operation is at a new or existing foundry. These limits range from 0.001 to 0.010 gr/dscf which are as follows:

(a) Existing Electric Furnace - 0.005 gr/dscf
(b) Existing Cupola - 0.006 gr/dscf
(c) Existing Pouring Station - 0.010 gr/dscf
(d) New Electric Furnace - 0.001 gr/dscf
(e) New Cupola - 0.002 gr/dscf
(d) New Pouring Station - 0.002 gr/dscf

The proposed operations are not subject to the MACT regulations. If they were subject to these rules, these operations would be subject to requirements for “existing” sources. The existing source PM limitations range from 0.005 to 0.010 gr/dscf, while those for new sources range from 0.001 to 0.002 gr/dscf.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Particulate matter (PM) BACT for the P34 - Desulfurization Ladle as follows:

The particulate matter (PM) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the PM emissions shall not exceed an outlet concentration of 0.005 grains per dry standard cubic foot for PM and 0.64 pounds per hour.

**Particulate Matter (PM) BACT – P35 - Ductile Iron Treatment Station #1 and #2**

*Step 1: Identify Potential Control Technologies*

The emissions of particulate matter (PM) and the particulate matter with an aerodynamic diameter less than or equal to ten (10) micrometers ($PM_{10}$) are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Wet Scrubber;

(3) Electrostatic Precipitators (ESP);

(4) Fabric Filter Dust Collectors (Baghouses); and

(5) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs), cartridge collectors (CC) and wet scrubbers system for controlling particulate matter emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses. Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment. This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(b) **Wet Scrubber**

A wet scrubber is an air pollution control device that removes particulates from waste gas streams primarily through the impaction, diffusion, interception and/or absorption of the pollutant onto droplets of liquid. The liquid containing the pollutant is then collected for disposal. There are numerous types of wet scrubbers that remove particulates. Collection efficiencies for wet scrubbers vary with the particle size distribution of the waste gas stream. In general, collection efficiency decreases as the particulates size decreases. Collection efficiencies also vary with scrubber type. Collection efficiencies range from greater than 99% for venturi scrubbers to 40-60% (or lower) for simple spray towers. Wet scrubbers are smaller and more compact than baghouses or ESPs. They have lower capital costs and comparable operation and maintenance (O&M) costs. Wet scrubbers are particularly useful in the removal of particulates with the following characteristics:

(1) Sticky and/or hygroscopic materials (materials that readily absorb water);

(2) Combustible, corrosive and explosive materials;

(3) Particles that are difficult to remove in their dry form;

(4) Particulates M in the presence of soluble gases; and

(5) Particulates M in waste gas streams with high moisture content.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a wet scrubber is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(c) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(d) **Fabric Filtration:**

A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere.

The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%.

The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting.

Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated.

Important process variables include particle characteristics, gas characteristics, and fabric properties. The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system. The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning.

Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface.

These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(e) **Cartridge Collectors (CC)**

While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and

99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a Cartridge Collector is not a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of PM and $PM_{10}$ resulting from operation of a P35 - Ductile Iron Treatment Stations #1 and #2.

(1) Fabric Filtration (99% - 99.9% PM Reduction)

(2) Electrostatic Precipitator (99% - 99.9% PM Reduction)

(3) Wet Scrubber (99% PM Reduction)

(4) Cyclones (80% PM Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the fabric filtration baghouse as BACT for the P35 - Ductile Iron Treatment Stations #1 and #2.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

There are no listings in the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), which contained stack limitations or concentration limits for PM emissions from P-34 Iron Desulfurization operations.

(a) **Proposed BACT Limit**:

The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for particulate matter from P35 - Ductile Iron Treatment Stations #1 and #2:

(1) A fabric filter baghouse.

(2) The PM emission limit shall not exceed an outlet concentration of 0.005 grains per dry standard cubic foot for PM emission and 4.7 pounds per hour:

(b) **New Source Performance Standards and NESHAPS**

BACT must be no less stringent than the level of control required by any applicable New Source Performance Standard (NSPS) and National Emissions Standard for Hazardous Air Pollutants (NESHAP) or state regulatory standards applicable to the emission units included in the permits. There currently is no NSPS for iron foundries. There is a NESHAPS for steel and iron foundries under 40 CFR Part 60 Subpart EEEEE. PM limitations were established as surrogates for the control of metal HAP. These limits vary depending on the type of operation and whether the operation is at a new or existing foundry. These limits range from 0.001 to 0.010 gr/dscf which are as follows:

(a) Existing Electric Furnace - 0.005 gr/dscf
(b) Existing Cupola - 0.006 gr/dscf
(c) Existing Pouring Station - 0.010 gr/dscf
(d) New Electric Furnace - 0.001 gr/dscf
(e) New Cupola - 0.002 gr/dscf

(f) New Pouring Station - 0.002 gr/dscf

The proposed operations are not subject to the MACT regulations. If they were subject to these rules, these operations were be subject to requirements for "existing" sources. The existing source PM limitations range from 0.005 to 0.010 gr/dscf, while those for new sources range from 0.001 to 0.002 gr/dscf.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Particulate matter (PM) BACT for the P35 - Ductile Iron Treatment Stations #1 and #2 as follows:

The Particulate matter (PM) emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the PM emissions shall not exceed an outlet of concentration 0.005 grains per dry standard cubic foot for PM and 4.7 pounds per hour.

**Lead (Pb) BACT – P34 - Desulfurization ladle**

*Step 1: Identify Potential Control Technologies*

The emissions of lead are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Electrostatic Precipitators (ESP);

(3) Fabric Filter Dust Collectors (Baghouses); and

(4) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs) and cartridge collectors for controlling lead emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses.

Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment. This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(b) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(c) **Fabric Filtration:**
A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere.

The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%.

The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting.

Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated. Important process variables include particle characteristics, gas characteristics, and fabric properties.

The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system. The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning. Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface. These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(d) **Cartridge Collectors (CC)**
While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and 99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a Cartridge collector is not a technically feasible option for the P34 - Desulfurization Ladle at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of Lead (Pb) resulting from operation of a P34 - Desulfurization Ladle.

(1) Fabric Filtration (99% - 99.9% Pb Reduction)

(2) Electrostatic Precipitator (99% - 99.9% Pb Reduction)

(3) Cyclones (80% Pb Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the Fabric Filtration as BACT for the P34 - Desulfurization Ladle.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

There are no listings in the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), which contained stack limitations or concentration limits for lead (Pb) emissions from P34- Desulfurization Ladle operation.

(a) **Proposed BACT Limit**:

The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for lead emissions from P34 - Desulfurization Ladle:

(1) A fabric filter baghouses; and

(2) The lead (Pb) emissions shall not exceed a concentration of 1,000 ppm and 0.00064 pounds per hour.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Lead (Pb) BACT for the P34 - Desulfurization Ladle as follows:

The Lead (Pb) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the Pb emissions shall not exceed 1,000 ppm and 0.00064 pounds per hour.

**Beryllium (Be) BACT – P34 - Desulfurization ladle**

*Step 1: Identify Potential Control Technologies*

The emissions of lead are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Electrostatic Precipitators (ESP);

(3) Fabric Filter Dust Collectors (Baghouses); and

(4) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs) and cartridge collectors for controlling lead emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses.

Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment.

This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(b) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(c) **Fabric Filtration:**
A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere.

The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%.

The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting.

Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated.

Important process variables include particle characteristics, gas characteristics, and fabric properties. The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system. The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning.

Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface. These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P34 - Desulfurization Ladle at this source.

(d) **Cartridge Collectors (CC)**
While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and 99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cartridge collector is not a technically feasible option for the P34 - Desulfurization Ladle at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of beryllium (Be) resulting from operation of a P34 - Desulfurization Ladle.

(1) Fabric Filtration (99% - 99.9% Be Reduction)

(2) Electrostatic Precipitator (99% - 99.9% Be Reduction)

(3) Cyclones (80% Be Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the Fabric Filtration Baghouse as BACT for the P34 - Desulfurization Ladle.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

The following table lists the proposed Be BACT determination along with the existing Be BACT determinations for P34 - Desulfurization Ladle. All data in the table is based on the information obtained from the permit application submitted by ThyssenKrupp Waupaca, Inc, Plant 5, the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), and electronic versions of permits available at the websites of other permitting agencies.

**Recent BACT Determinations for Beryllium (Be) from other facilities**

| RBLC ID/ Permit No. | Company | Date Issued | Description | Rating (TPH) | Limit | Controls |
|---|---|---|---|---|---|---|
| **Draft Permit No. 123-29490-00019 Proposed Limits** | **ThyssenKrupp Waupaca, Inc. -Plant 5, Perry, IN** | **Proposed** | **P34- Desulfurization Ladle** | **100** | **0.00001 lbs/hr (20 ppm)** | **Fabric filer baghouse** |
| T123-9234-00019 | ThyssenKrupp Waupaca, Inc. -Plant 5, Perry, IN | 6/29/2008 | Ladle preheating, charge makeup, ladle filling and iron transport (C44) | 150 | 0.00001 lbs/hr (20 ppm) | **Fabric filer baghouse** |

(a) **Proposed BACT Limit**:

The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for Beryllium emissions from P34 - Desulfurization Ladle:

(1) A fabric filter baghouse.

(2) The Beryllium (Be) emissions shall not exceed a concentration of 20 ppm and 0.00001 pounds per hour.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Beryllium (Be) BACT for the P34 - Desulfurization Ladle as follows:

The Beryllium (Be) emissions from the P34 - Desulfurization Ladle shall be controlled by a fabric filter baghouse and the Be emissions shall not exceed 20 ppm and 0.00001 pounds per hour.

**Lead (Pb) BACT – P35 - Ductile Iron Treatment Station #1 and #2**

*Step 1: Identify Potential Control Technologies*

The emissions of lead are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Electrostatic Precipitators (ESP);

(3) Fabric Filter Dust Collectors (Baghouses); and

(4) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs) and cartridge collectors for controlling lead emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses. Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment. This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(b) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(c) **Fabric Filtration:**
A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere.

The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%.

The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting.

Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated. Important process variables include particle characteristics, gas characteristics, and fabric properties. The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system.

The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning. Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface. These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(d) **Cartridge Collectors (CC)**

While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and 99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cartridge collector is not a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of Pb resulting from operation of a P35 - Ductile Iron Treatment Stations #1 and #2.

(1) Fabric Filtration (99% - 99.9% Pb Reduction)

(2) Electrostatic Precipitator (99% - 99.9% Pb Reduction)

(3) Cyclones (80% Pb Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the Fabric Filtration baghouse as BACT for the P35 - Ductile Iron Treatment Stations #1 and #2.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

There are no listings in the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), which contained stack limitations or concentration limits for lead (Pb) emissions from P35- Iron Inoculation operations.

(a) **Proposed BACT Limit**:

The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for lead emissions from the P35 - Ductile Iron Treatment Stations #1 and #2:

(1) A fabric filter baghouses.

(2) The lead (Pb) emissions shall not exceed a concentration of 1,000 ppm and 0.0047 pounds per hour.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established lead (Pb) BACT for the P35 - Ductile Iron Treatment Stations #1 and #2 as follows:

The lead (Pb) emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the lead emissions shall not exceed 1,000 ppm and 0.0047 pounds per hour.

**Beryllium (Be) BACT – P35 - Ductile Iron Treatment Station #1 and #2**

*Step 1: Identify Potential Control Technologies*

The emissions of beryllium are generally controlled by the following add-on control equipment designed to capture the emissions prior to the time they are exhausted to the atmosphere:

(1) Cyclones;

(2) Electrostatic Precipitators (ESP);

(3) Fabric Filter Dust Collectors (Baghouses); and

(4) Cartridge Collectors.

The choice of which technology is most appropriate for a specific application depends upon several factors, including particle size to be collected, particle loading, stack gas flow rate, stack gas physical characteristics (e.g., temperature, moisture content, presence of reactive materials), and desired collection efficiency.

*Step 2: Eliminate Technically Infeasible Options*

The RACT/BACT/LAER (RBLC) Clearinghouse and review of other New Source Review (NSR) permits reveal that similar foundry sources use Cyclone, fabric filtration baghouses, electrostatic precipitators (ESPs) and cartridge collectors (CC) for controlling beryllium emissions.

(a) **Cyclones:**
Cyclones are simple mechanical devices commonly used to remove relatively large particles from gas streams. In industrial applications, cyclones are often used as precleaners for the more sophisticated air pollution control equipment such as ESPs or baghouses.

Cyclones are less efficient than wet scrubbers, baghouses, or ESPs. Cyclones used as pre-cleaners are often designed to remove more than 80% of the particles that are greater than 20 microns in diameter. Smaller particles that escape the cyclone can then be collected by more efficient control equipment.

This control technology may be more commonly used in industrial sites that generate a considerable amount of particulate matter, such as lumber companies, feed mills, cement plants, and smelters.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cyclone is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(b) **Electrostatic Precipitators:**
An electrostatic precipitator (ESP) is a particle control device that uses electrical forces to move the particles out of the flowing gas stream and onto collector plates. The particles are given an electrical charge by forcing them to pass through a corona, a region in which gaseous ions flow. The electrical field that forces the charged particles to the walls comes from electrodes maintained at high voltage in the center of the flow lane.

Once the particles are collected on the plates, they must be removed from the plates without re-entraining them into the gas stream. This is usually accomplished by knocking them loose from the plates, allowing the collected layer of particles to slide down into a hopper from which they are evacuated. Some precipitators remove the particles by intermittent or continuous washing with water. ESP control efficiencies can range from 99% to 99.9%.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of an Electrostatic Precipitator is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(c) **Fabric Filtration:**
A fabric filter unit consists of one or more isolated compartments containing rows of fabric bags in the form of round, flat, or shaped tubes, or pleated cartridges. Particle laden gas passes up (usually) along the surface of the bags then radially through the fabric. Particles are retained on the upstream face of the bags, and the cleaned gas stream is vented to the atmosphere.

The filter is operated cyclically, alternating between relatively long periods of filtering and short periods of cleaning. During cleaning, dust that has accumulated on the bags is removed from the fabric surface and deposited in a hopper for subsequent disposal. Fabric filters collect particles with sizes ranging from submicron to several hundred microns in diameter at efficiencies generally in excess of 99 or 99.9%.

The layer of dust, or dust cake, collected on the fabric is primarily responsible for such high efficiency. The cake is a barrier with tortuous pores that trap particles as they travel through the cake. Gas temperatures up to about 500°F, with surges to about 550°F, can be accommodated routinely in some configurations. Most of the energy used to operate the system appears as pressure drop across the bags and associated hardware and ducting.

Typical values of system pressure drop range from about 1 to 20 inches of water. Fabric filters are used where high efficiency particle collection is required. Limitations are imposed by gas characteristics (temperature and corrosivity) and particle characteristics (primarily stickiness) that affect the fabric or its operation and that cannot be economically accommodated. Important process variables include particle characteristics, gas characteristics, and fabric properties.

The most important design parameter is the air- or gas-to-cloth ratio (the amount of gas in $ft^3$/min that penetrates one $ft^2$ of fabric) and the usual operating parameter of interest is pressure drop across the filter system. The major operating feature of fabric filters that distinguishes them from other gas filters is the ability to renew the filtering surface periodically by cleaning. Common furnace filters, high efficiency particulate air (HEPA) filters, high efficiency air filters (HEAFs), and automotive induction air filters are examples of filters that must be discarded after a significant layer of dust accumulates on the surface. These filters are typically made of matted fibers, mounted in supporting frames, and used where dust concentrations are relatively low. Fabric filters are usually made of woven or (more commonly) needle-punched felts sewn to the desired shape, mounted in a plenum with special hardware, and used across a wide range of dust concentrations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a fabric filter is a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

(d) **Cartridge Collectors (CC)**

While traditional baghouses rely on the dust cake for particle filtration, Cartridge Collectors rely on the filter media. Cartridge Collectors are more compact than baghouses, and allow easier replacement of the filters. They are preferred over baghouses when there is limited space and frequent replacement of the filters is cost effective. Due to the close spaces between filters, Cartridge Collectors are best used for capturing dry, free flowing, non-sticky dust in a low-humidity environment. Cartridge Collectors are typically used for low flow rates of less than 10,000 cfm and low dust loading applications. Typical new equipment design efficiencies are between 99.99 and 99.999+%. Due to their limitations, there are no know applications of Cartridge Collectors on foundry operations.

Based on the information reviewed for this BACT determination, IDEM, OAQ has determined that the use of a cartridge collector is not a technically feasible option for the P35 - Ductile Iron Treatment Stations #1 and #2 at this source.

*Step 3: Rank the Remaining Control Technologies by Control Effectiveness*

The above control technologies have been identified for control of Be resulting from operation of a P34 - Desulfurization Ladle.

(1) Fabric Filtration (99% - 99.9% Be Reduction)

(2) Electrostatic Precipitator (99% - 99.9% Be Reduction)

(3) Cyclones (80% Be Reduction)

Both the Electrostatic Precipitator and the Fabric Filtration have the same control efficiencies, 99% - 99.9%. The source has selected the Fabric Filtration as BACT for the P35 - Ductile Iron Treatment Stations #1 and #2.

*Step 4: Evaluate the Most Effective Controls and Document the Results*

There are no listings in the U.S. EPA RACT/BACT/LAER Clearinghouse (RBLC), which contained stack limitations or concentration limits for Beryllium (Be) emissions from P35- Iron Inoculation operations.

(a) **Proposed BACT Limit**:

The following has been proposed as BACT by ThyssenKrupp Waupaca, Inc Plant 5 for beryllium from the P35 - Ductile Iron Treatment Stations #1 and #2:

(1) A fabric filter baghouses.

(2) The Beryllium (Be) emissions shall not exceed a concentration of 20 ppm and 0.00009 pounds per hour.

*Step 5: Select BACT*

Pursuant to 326 IAC 2-2-3 (Prevention of Significant Deterioration (PSD), IDEM, OAQ has established Beryllium (Be) BACT for the P35 - Ductile Iron Treatment Stations #1 and #2 as follows:

The Beryllium (Be) emissions from the P35 - Ductile Iron Treatment Stations #1 and #2 shall be controlled by a fabric filter baghouse and the Be emissions shall not exceed 20 ppm and 0.00009 pounds per hour.

# Air Quality Analysis

## ThyssenKrupp Waupaca, Inc, Plant 5

## Tell City, Indiana (Perry County)

**Tracking and Plant ID: 123-29497-00019**

## Proposed Project

ThyssenKrupp Waupaca, Inc (TKW) submitted a PSD application on July 22, 2010, for a major modification.

Wingra Engineering, S.C. prepared the permit application for TKW. This technical support document provides the air quality analysis review of the submitted modeling by Wingra Engineering, S.C.

## Analysis Summary

Based on the potential emissions after controls, the projected emissions of lead, beryllium and PM10 are unchanged, so no NAAQS analysis is required. The projected emissions of $NO_2$, $SO_2$, and CO have exceeded their PSD significant emission rate. The preliminary modeling shows that the 1-hour highest concentrations of $NO_2$ and $SO_2$ exceed their significant impact levels (SILs). Refined modeling is required. The NAAQS modeling results show that the concentrations of $SO_2$ and $NO_2$ are lower than the new 1-hour standards. This projected modification will not cause an adverse impact to air quality.

## Air Quality Impact Objectives

The purpose of the air quality impact analysis in the permit application is to accomplish the following objectives. Each objective is individually addressed in this document outlined below.

A. Establish which pollutants require an air quality analysis based on PSD significant emission rates.

B. Provide analyses of actual stack heights with respect to Good Engineering Practice (GEP), the meteorological data used, a description of the model used in the analysis, and the receptor grid utilized for the analyses.

C. Determine the significant impact level, the area impacted by the modified sources.

D. Determine the impact of the sources of proposed modification, all other sources inside the significant impact area and other distant sources that may impact this significant impact area.

E. Perform a qualitative analysis of the source's impact on general growth, soils, vegetation and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park.

F. Summarize the Air Quality Analysis.

## Section A - Pollutants Analyzed for Air Quality Impact

**Applicability**

The PSD requirements, 326 IAC 2-2, apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1 and in the Code of Federal Regulations (CFR) 52.21(b) (23) (i).

**Proposed Project Emissions**

The projected emissions of $PM_{10,}$ beryllium and lead are not changed, so no NAAQS analysis is required. The projected emissions of $NO_2$, $SO_2$, and CO are changed. The projected emission changes and significant emission rates are summarized below in Table 1.

**TABLE 1**
**Significant Emission Rates for PSD**

| POLLUTANT | SOURCE EMISSION RATE (Facility totals in tons/year) | SIGNIFICANT EMISSION RATE (tons/year) | PRELIMINARY AQ ANALYSIS REQUIRED |
|---|---|---|---|
| $SO_2$ | 42.9 | 40 | Yes |
| $NO_2$ | 79.3 | 40 | Yes |
| CO | 1226.8 | 100 | Yes |

## Section B – Good Engineering Practice (GEP), Met Data, Model Used, Receptor Grid and Terrain

**Stack Height Compliance with Good Engineering Practice (GEP)**

**Applicability**

Stacks should comply with GEP requirements established in 326 IAC 1-7-4. If stacks are lower than GEP, excessive ambient concentrations due to aerodynamic downwash may occur. Dispersion modeling credit for stacks taller than 65 meters (213 feet) are limited to GEP for the purpose of establishing emission limitations. The GEP stack height takes into account the distance and dimensions of nearby structures, which would affect the downwind wake of the stack. The downwind wake is considered to extend five times the lesser of the structure's height or width. A GEP stack height is determined for each nearby structure by the following formula:

$$Hg = H + 1.5L$$

Where: Hg is the GEP stack height
H is the structure height
L is the structure's lesser dimension (height or width)

**New Stacks**

Since some stack heights for ThyssenKrupp Waupaca, Inc (TKW) are below GEP stack height, the effect of aerodynamic downwash will be accounted for in the air quality analysis for the project.

**Meteorological Data**

The meteorological data used in AERMOD consisted of 1988 through 1992 surface data from the South Bend, Indiana and upper air measurements taken at Peoria, Illinois. The meteorological data was downloaded from Lakes Environmental and preprocessed using AERMET.

**Model Description**

Wingra Engineering, S.C. and OAQ both used AERMOD version 09292 to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the U.S. EPA approved model, as listed in the 40 Code of Federal Regulations Part 51, Appendix W "Guideline on Air Quality Models".

**Receptor Grid**

OAQ modeling used the same receptor grids generated by Wingra Engineering, S.C.

For preliminary modeling, a Cartesian coordinate grid was used.

- 25 meter intervals along the facility's fence line,
- 100 meter spacing from 0 to 5,000 meters from the facility fence line,

For NAAQS modeling, a polar coordinate grid was used.

- Distance between rings – 250 meters,
- Angle between radiators – 10 degrees.
- 25 meter intervals along the facility's fence line.

**Treatment of Terrain**

Receptor terrain elevation inputs were interpolated from DEM (Digital Elevation Model) data obtained from the USGS. DEM terrain data was preprocessed using AERMAP.

## Section C - Significant Impact Level/Area (SIA) and Background Air Quality Levels

A significant impact analysis was conducted to determine if the source would exceed the PSD significant impact levels (concentrations). If the source's concentrations exceeded these levels, an air quality analysis is required. Refined modeling for $SO_2$ and $NO_2$ was required because the results did exceed significant impact levels. Significant impact levels are defined by the following time periods in Table 2 below with all maximum-modeled concentrations from the worst case operating scenarios.

**TABLE 2**

**Significant Impact Analysis**

| **POLLUTANT** | **TIME AVERAGING PERIOD** | **MAXIMUM MODELED IMPACTS** (ug/m$^3$) | **SIGNIFICANT IMPACT LEVEL** (ug/m$^3$) | **REFINED AQ ANALYSIS REQUIRED** |
|---|---|---|---|---|
| $NO_2$ | 1 hour* | 20.56 | 7.56 | Yes |
| $NO_2$ | Annual* | 0.50 | 1 | No |
| $SO_2$ | 1 hour* | 10.35 | 7.80 | Yes |
| $SO_2$ | 3 hour* | 7.40 | 25 | No |
| $SO_2$ | 24 hour* | 4.00 | 5 | No |
| $SO_2$ | Annual* | 0.26 | 1 | No |
| CO | 1 hour* | 112.09 | 2000 | No |
| CO | 8 hour* | 53.32 | 500 | No |

*First highest values per EPA NSR manual October 1990.

Table 2 shows that 1 hour highest predicated $NO_2$ and $SO_2$ concentrations exceeded their SILs.

## Pre-construction Monitoring Analysis

### Applicability

The PSD rule, 326 IAC 2-2-4, requires an air quality analysis of the new source or the major modification to determine if the pre-construction monitoring threshold is triggered. In most cases, monitoring data taken from a similar geographic location can satisfy this requirement if the pre-construction monitoring threshold has been exceeded. Also, post construction monitoring could be required if the air quality in that area could be adversely impacted by applicant's emissions.

### Modeling Results

The modeling results were compared to the PSD pre-construction monitoring thresholds. The results are shown in the table below.

**TABLE 3**

**Pre-construction Monitoring Analysis**

| POLLUTANT | TIME AVERAGING PERIOD | MAXIMUM MODELED IMPACTS (ug/m$^3$) | DEMINIMIS LEVEL (ug/m3) | ABOVE DE MINIMIS LEVEL |
|---|---|---|---|---|
| $NO_2$ | Annual* | 0.5 | 14 | No |
| CO | 8 hour* | 53.32 | 575 | No |
| $SO_2$ | 24 hour* | 4.0 | 13 | No |

*****First highest values per EPA NSR manual October 1990. Maximum modeled impacts are from ThyssenKrupp Waupaca, Inc only.

The pollutants' maximum model impacts did not exceed their preconstruction monitoring threshold level. No preconstruction monitoring is required.

## Background Concentrations

### Applicability

EPA's "Ambient Monitoring Guidelines for Prevention of Significant Deterioration" (EPA-450/4-87-007) Section 2.4.1 is cited for approval of the monitoring sites for this area.

### Background Monitors

Background data was taken from the closest monitoring stations from ThyssenKrupp Waupaca, Inc. The closest $NO_2$ station is located in Evansville, Vanderburgh County. The closest $SO_2$ monitoring stations are located in Warrick County.

For $SO_2$ 1-hour background concentrations, the 3 year average third highest monitoring value (99 percentile) was used. For $NO_2$ 1-hour background concentrations, the 3 year average 8$^{th}$ highest monitoring value (98 percentile) was used.

**TABLE 4**

**Existing Monitoring Data Used For Background Concentrations ***

| Pollutant | Monitoring Site | Averaging Period | Concentration (ug/m3) |
|---|---|---|---|
| $NO_2$ | 18-163-0012 | 1 hour | 91.68 |
| $SO_2$ | 18-173-0002 | 1 hour | 84.0 |

*OAQ used the most conservative values for the air quality analysis. It is standard policy to use the latest 3 years of data.

## Section D - NAAQS and PSD Increment

**NAAQS Compliance Analysis and Results**

OAQ supplied emission inventories of all point sources within a 50-kilometer radius of ThyssenKrupp Waupaca, Inc. The NAAQS inventories are generated from Indiana Emission Inventory System (EMITS) in accordance with 326 IAC 2-6. The PSD increment inventories include sources that affect the increment and are compiled from permits issued by IDEM.

NAAQS modeling for the appropriate time-averaging periods for $NO_2$ and $SO_2$ was conducted and compared to the respective NAAQS limit. OAQ modeling results are shown in Table 5. All maximum-modeled concentrations were compared to the respective NAAQS limit. All maximum-modeled concentrations during the five years were below the NAAQS limits and further modeling was not required.

The modeling results are listed in the below Table 5.

**TABLE 5**
**NAAQS Analysis**

| Pollutant | Year | Time-Averaging Period | Maximum Concentration ug/m3 | Background Concentration ug/m3 | Total ug/m3 | NAAQS Limit ug/m3 | NAAQS Violation |
|---|---|---|---|---|---|---|---|
| $NO_2$ | 91 | 1 hour | 77.01 | 66.77 | 143.78 | 189 | NO |
| $SO_2$ | 88 | 1 hour | 71.50 | 84 | 155.50 | 195 | NO |

**Analysis and Results of Source Impact on the PSD Increment**

**Applicability**

Maximum allowable increases (PSD increments) are established by 326 IAC 2-2. This rule also limits a source to no more than 80 percent of the available PSD increment to allow for future growth. There are no increment values for the new $SO_2$ and $NO_2$ 1-hour standard. No increment analysis is required.

## Part E – Qualitative Analysis

**Additional Impact Analysis**

All PSD permit applicants must prepare an additional impact analysis for each pollutant subject to regulation under the Act. This analysis assesses the impacts on growth, soils and vegetation, endangered species and visibility caused by any increase in emissions of any regulated pollutant from the source. The ThyssenKrupp Waupaca, Inc modeling submittal provided an additional impact analysis performed by Wingra Engineering, S.C.

**Economic Growth**

The purpose of the growth analysis is to quantify project associated growth and estimate the air quality impacts from this growth either quantitatively or qualitatively

The proposed cupola project will increase the facility production capacity. As a result, there will be an increase in actual production. Since this plant had complete Phase I and II modification on 1996 and 1998 and this project will result in a significant smaller increase in production compared to the previous modification. It is expected that this project will not cause significant increase in work force and need for housing.

**Soils and Vegetation Analysis**

A list of soil types present in the general area was determined. Soil types include the following: Loamy Glacial Till, Moderate Thick Loess over Weathered Loamy Glacial Till and Discontinuous Loess over Weathered Sandstone and Shale; Discontinuous Loess over Weathered Limestone and Shale;

Due to the agricultural nature of the land, crops in the Perry County area consist mainly of corn, sorghum, wheat, soybeans, and oats (2002 Agricultural Census for Perry County). The maximum modeled concentrations for ThyssenKrupp Waupaca, Inc are well below the threshold limits necessary to have adverse impacts on the surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail, and milkweed (Flora of Indiana – Charles Deem). Livestock in Perry County consist mainly of hogs, cattle, and sheep (2002 Agricultural Census for Perry County) and will not be adversely impacted from the facility. Trees in the area are mainly hardwoods. These are hardy trees and no significant adverse impacts are expected due to modeled concentrations.

**Federal and State Endangered Species Analysis**

Federal and state endangered or threatened species are listed by the U.S. Fish and Wildlife Service; Division of Endangered Species for Indiana, and includes 5 amphibians, 27 birds, 10 fishes, 7 mammals, 15 mollusks, and 15 reptiles. Of the federal and state endangered species on the list, 1 amphibian, 5 reptiles, 14 mollusks, 5 fish, 9 birds, 3 insects and 4 mammals have habitat within Perry County. The mollusks, mussel bed, amphibians and certain species of birds and mammals are found along rivers and lakes while the other species of birds and mammals are found in forested areas. The facility is not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the industrial, farming, and residential activities in the area.

Federal and state endangered or threatened plants are listed by the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana. They list 17 state significant species of plants. At this time no federally endangered plant species are found in Perry County. The endangered plants do not thrive in industrialized and residential areas. The facility is not expected to adversely affect any plant on the endangered species list.

**Visibility Analysis**

The VISCREEN model is designed as a screening model to determine the visual impact parameters from a single source plume. It is used basically to determine whether or not a plume is visible as an object itself. The visibility impairment analysis considers the impacts that occur within the impact area of the source as defined by the user distances. The user distances are determined by the nearest interstate or airport. EPA has defined these locations in guidance to the state.

VISCREEN is first used in the Level-1 screening mode. Level-1 screening is designed to provide a conservative estimate of plume visual impacts so the results are worse than those estimated calculated with more realistic assumptions.

The model inputs for the Level 1 analysis are as follows:

- Particulates – 0 lbs/hr (Table 2 of permit application)
- $NO_x$ (as $NO_2$) – 18.0 lbs/hr (Table 2 of permit application)
- Background Visual Range - 189.0 km (Table V.1-6, FLAG 2009)
- Source-Observer Distance - 92.0 km (Figure 1 of permit application)
- Min. Source-Class I Distance: 92.0 km (Figure 1 of permit application)

The results of the VISCREEN Level 1 analysis show that the TKW Plant 5 project will not exceed the visibility screening criteria either inside or outside Mammoth Cave National Park.

**Additional Analysis Conclusions**

Finally, the results of the additional impact analysis conclude the operation of the facility will have no significant impact on economic growth, soils, vegetation or visibility in the immediate vicinity or on any Class I area.

## Part F - Summary of Air Quality Analysis

Wingra Engineering, S.C prepared the modeling portion of the PSD application. Perry County is designated as attainment for all criteria pollutants. $NO_2$, $SO_2$, and CO emission rates associated with the proposed facility exceeded the respective significant emission rates. Modeling results taken from the latest version of the AERMOD model showed $SO_2$ and $NO_2$ impacts on the 1-hour concentrations were predicted to be greater than the significant impact levels. The maximum modeled impacts of $SO_2$, $NO_2$ and CO are all lower than their deminimis monitoring levels, No preconstruction monitoring is required. The NAAQS modeling for $NO_2$ and $SO_2$ shows no violations of the air quality standards. The nearest Class I area is Mammoth Cave National Park in Kentucky over 113 kilometers away from the source. An additional impact analysis was required and showed that the operation of the proposed facility will have no significant impact.

| | | |
|---|---|---|
| **Stack** | | **S01, S04, S15, S16** |
| **Process** | | **Lines 1 - 8** |
| **Description** | | **P/MC/S** |
| | | |
| | | |
| **ASSUMPTIONS** | | |
| Flow Rate (ACFM) | | 1966000 |
| Process Flue Gas Temperature = T inlet (F) | | 100 |
| Flow Rate (SCFM) | | 1853657 |
| Heat Exchanger Efficiency (%) | | 70 |
| Incinerator Combustion Temperature (F) | | 1400 |
| Heat Exchanger Outlet Temp = T outlet (F) | | 490 |
| Energy Contribution from CO and VOC (BTU/min) | | 198407 |
| Incinerator Pressure Drop ("wc) | | 4 |
| Heat Exchanger Pressure Drop ("wc) | | 15 |
| Total Incineration System Pressure Drop ("wc) | | 19 |
| Operating Shifts per Year | | 1095 |
| Labor Cost ($ per hour) | | $50 |
| Heat Capacity @ Combustion Temperature (BTU/scf F) | | 0.0193 |
| Operating Hours per Year | | 8760 |
| Natural Gas Cost ($/Therm) | | $0.90 |
| Electrical Cost ($/kw-hr) | | $0.07 |
| Fan and Motor Efficiency (%) | | 60 |
| Equipment Life (Years) | | 10 |
| Interest Rate (%) | | 10 |
| Capital Recovery Factor for 10 Year Period | | 0.1627 |
| Capital Recovery Factor for 5 Year Period | | 0.2638 |
| Historical Vatavuk Air Pollution Control Index for 1988 | | 96.3 |
| Historical Vatavuk Air Pollution Control Index for 1994 | | 120.5 |
| Consumer Price Index for 1994 | | 148.2 |
| Consumer Price Index for 2010 | | 217.60 |
| | | |
| **DIRECT COSTS FOR EQUIPMENT AND INSTALLATION** | | |
| Purchased Equipment Costs | | |
| Equipment Cost (Adjusted USEPA 1988 Incinerator Cost) | | $671,108 |
| Subtotal | (A) | $671,108 |
| Instrumentation | (0.10A) | |
| Sales Tax (Not applicable in Wisconsin) | | |
| Freight | (0.05A) | |
| Subtotal | (0.15A) | $100,666 |
| Purchased Equipment Costs | (1.15A=B) | $771,774 |
| Direct Installation Costs | | |
| Foundation & Supports | (0.08B) | |
| Handling & Erection | (0.14B) | |
| Electrical | (0.04B) | |
| Piping | (0.02B) | |
| Insulation for Ductwork | (0.01B) | |
| Painting | (0.01B) | |
| Subtotal | (0.30B) | $231,532 |
| Site Preparation | | $0 |
| Buildings | | $0 |
| | | |
| **INDIRECT COSTS FOR EQUIPMENT AND INSTALLATION** | | |
| Engineering | (0.10B) | |
| Construction & Field Expenses | (0.05B) | |
| Contractor Fees | (0.10B) | |
| Start-up | (0.02B) | |
| Performance Tests | (0.01B) | |
| Contingencies | (0.03B) | |

| | | |
|---|---|---|
| **Stack** | | **S01, S04, S15, S16** |
| **Process** | | **Lines 1 - 8** |
| **Description** | | **P/MC/S** |
| | | |
| TOTAL INDIRECT COSTS | (0.31B) | $239,250 |
| | | |
| **TOTAL CAPITAL INVESTMENT, TCI** | (1.61B) | $1,242,557 |
| | | |
| **DIRECT OPERATING COSTS** | | |
| Operating Labor | | |
| Operator (0.5 hrs/shift)(shifts/yr)($/hr) | | $27,375 |
| Supervisor (15% x operating labor) | | $4,106 |
| Maintenance Labor and Materials | | |
| Labor (0.5 hrs/shift x shifts/yr x $/hr) | | $27,375 |
| Material (Same as labor) | | $27,375 |
| Subtotal (Direct Cost O & M) | | $86,231 |
| Utilities | | |
| Fuel [(1.1)(Flow Rate)(Heat Capacity) | | |
| x (T outlet - T inlet) | | |
| - Process Flue Gas VOC Energy Contribution] | | |
| x (60 min/hr)(operating hours/yr) | | |
| x (Therm/100,000BTU)(Fuel Cost) | | $71,662,336 |
| | | |
| **Fuel usage (cf6/yr) =** | | 7,962 |
| | | |
| Electricity for Incinerator = (1.17xE-04)(Flow Rate)(Delta P) | | |
| x (hrs/yr)(Electrical Cost) | | |
| / (Fan-Motor Efficiency) | | $4,211,335 |
| | | |
| **Electrical usage (mw-hrs/yr) =** | | 60,162 |
| | | |
| TOTAL DIRECT OPERATING COSTS | | $75,959,902 |
| | | |
| **INDIRECT OPERATING COSTS INCLUDING TCI** | | |
| Overhead (60% x Direct Cost O & M) | | $51,739 |
| Adminstrative (2% x TCI) | | $24,851 |
| Insurance (1% x TCI) | | $12,426 |
| Capital Recovery (Recovery Factor x TCI) | | $202,164 |
| TOTAL INDIRECT OPERATING COSTS INCLUDING TCI | | $291,179 |
| | | |
| **TOTAL ANNUALIZED COST (2010 $ per year)** | | **$76,251,081** |
| | | |
| Carbon Monoxide Capture Efficiency (%) | | 97.6 |
| Carbon Monoxide Destruction Efficiency (%) | | 99.0 |
| Carbon Monoxide Combined Capture and Destruction Efficiency (%) | | 96.6 |
| Process Production Rate (tph) | | 200.0 |
| CO Emission Factor (lbs/ton) | | 6.0 |
| Uncontrolled Carbon Monoxide Emissions (lbs/hr) | | 1200.0 |
| Uncontrolled Carbon Monoxide Emissions (TPY) | | 5256.0 |
| Uncontrolled Carbon Monoxide Emissions (ppm) | | 148.4 |
| Controlled Emissions (lbs/hr) | | 40.5 |
| Controlled Emissions (TPY) | | 177.4 |
| Emissions Removed (TPY) | | 5078.6 |
| **Estimated Cost Effectiveness ($/ton of CO Removed)** | | **$15,014** |
| VOC Capture Efficiency (%) | | 97.6 |
| VOC Destruction Efficiency (%) | | 99.0 |
| VOC Combined Capture and Destruction Efficiency (%) | | 96.6 |
| Process Production Rate (tph) | | 200.0 |
| VOC Emission Factor (lbs/ton) | | 1.40 |

| | | |
|---|---|---|
| **Stack** | | **S01, S04, S15, S16** |
| **Process** | | **Lines 1 - 8** |
| **Description** | | **P/MC/S** |
| | | |
| Uncontrolled VOC Emissions (lbs/hr) | | 280.0 |
| Uncontrolled VOC Emissions (TPY) | | 1226.4 |
| Uncontrolled VOC Emissions (ppm) | | 11.3 |
| Controlled Emissions (lbs/hr) | | 9.45 |
| Controlled Emissions (TPY) | | 41.4 |
| Emissions Removed (TPY) | | 1185.0 |
| **Estimated Cost Effectiveness ($/ton of VOC Removed)** | | **$64,347** |

**REFERENCES:**

U.S. Environmental Protection Agency, OAQPS Control Cost Manual,
Chapter 3, Research Triangle Park, NC, December 1995.

W. Vatavuk, Estimating Costs of Air Pollution Control,
Lewis Publishers, Chelsea, MI, 1990.

Capture and destruction efficiencies taken from discussions with vendors documented in 8/17/92 and 9/25/92 letters to Wis. Dept. of Natural Resources on WF Plant 1 expansion project.

Current energy and labor costs from ThyssenKrupp Waupaca, Inc.

| | | |
|---|---|---|
| Natural Gas Cost ($ per therm) | 2007 | $0.86 |
| | 2008 | $1.08 |
| | 2009 | $1.08 |
| | 2010 | $0.59 |
| | Average | $0.90 |

This spreadsheet was developed by Wingra Engineering, S.C.

| Stack | Process | Control Alternative | Potential Emissions (tpy) | Emissions Reduction (tpy) | Control Efficiency (%) | Economic Impacts | | Environmental Impacts | Energy Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Annualized Cost ($/yr) | Cost Effectiveness ($/ton) | Toxics Residues Air Quality | Fuel Usage (cf6/yr) | Electrical Usage (mw-hrs/yr) |
| S01, S04, S15, S16 | Lines 1 - 8 | Incineration | 177.4 | 5,078.6 | 96.6% | $76,251,081 | $15,014 | a, b, c, d | 7,962 | 60,162 |
| | | No Control | 5,256.0 | 0 | 0 | 0 | 0 | a, b | 0 | 0 |

a - This control option generates no unacceptable residues or wastes.
b - This control options does not affect facility compliance with National Ambient Air Quality Standards.
c - This control option will also control CO emissions from the casting lines, but will generate GHG, NOx, CO and VOC emissions from natural gas combustion.
d - Natural gas emissions: GHG (tpy) = 477,749 NOx (tpy) = 557 CO (tpy) = 334 VOC (tpy) = 22

## VOC Top down BACT Analysis

| Stack | Process | Control Alternative | Potential Emissions (tpy) | Emissions Reduction (tpy) | Control Efficiency (%) | Economic Impacts | | Environmental Impacts | Energy Impacts | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Annualized Cost ($/yr) | Cost Effectiveness ($/ton) | Toxics Residues Air Quality | Fuel Usage (cf6/yr) | Electrical Usage (mw-hrs/yr) |
| S01, S04, S15, S16 | Lines 1 - 8 | Incineration | 41.4 | 1,185.0 | 96.6% | $76,251,081 | $64,347 | a, b, c, d | 7,962 | 60,162 |
| | | No Control | 1,226.4 | 0 | 0 | 0 | 0 | b, d | 0 | 0 |

a - This control option generates no unacceptable residues or wastes.
b - This control options does not affect facility compliance with National Ambient Air Quality Standards.
c - This control option will also control VOC emissions from the casting lines, but will generate GHG, NOx, CO and VOC emissions from natural gas combustion.
d - Natural gas emissions: GHG (tpy) = 477,749 NOx (tpy) = 557 CO (tpy) = 334 VOC (tpy) = 22

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*
**Governor**

*Thomas W. Easterly*
**Commissioner**

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
**www.idem.IN.gov**

January 31, 2011

Mr. Bryant Esch
ThyssenKrupp Waupaca, Inc
P.O. Box 249
Waupaca, WI 54981

Re: Public Notice
ThyssenKrupp Waupaca, Inc
Permit Level: Significant Source Modification & Significant Permit Modification
Permit Number: 123-29490-00019 & 123-29497-00019

Dear Mr. Esch:

Enclosed is a copy of your draft: Significant Source Modification & Significant Permit Modification, Technical Support Document, emission calculations, and the Public Notice which will be printed in your local newspaper.

The Office of Air Quality (OAQ) has submitted the draft permit package to the Tell City – Perry County Public Library, 1217 Tell Street in Tell City, IN. As a reminder, you are obligated by 326 IAC 2-1.1-6(c) to place a copy of the complete permit application at this library no later than ten (10) days after submittal of the application or additional information to our department. We highly recommend that even if you have already placed these materials at the library, that you confirm with the library that these materials are available for review and request that the library keep the materials available for review during the entire permitting process.

You will not be responsible for collecting any comments, nor are you responsible for having the notice published in the newspaper. The OAQ has requested that the Perry County News in Tell City, IN publish this notice no later than February 3, 2011.

Please review the enclosed documents carefully. This is your opportunity to comment on the draft permit and notify the OAQ of any corrections that are needed before the final decision. Questions or comments about the enclosed documents should be directed to Josiah Balogun, Indiana Department of Environmental Management, Office of Air Quality, 100 N. Senate Avenue, Indianapolis, Indiana, 46204 or call (800) 451-6027, and ask for extension 4-5257 or dial (317) 234-5257.

Sincerely,

Michelle Denney
Permits Branch
Office of Air Quality

Enclosures
PN Applicant Cover letter. dot 3/27/08

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**ATTENTION: PUBLIC NOTICES, LEGAL ADVERTISING**

January 31, 2011

Perry County News
537 Main St
P.O. Box 309
Tell City, IN 47586

Enclosed, please find one Indiana Department of Environmental Management Notice of Public Comment for ThyssenKrupp Waupaca, Inc – Plant 5, Perry County, Indiana.

Since our agency must comply with requirements which call for a Notice of Public Comment, we request that you print this notice one time, no later than February 3, 2011.

Please send a notarized form, clippings showing the date of publication, and the billing to the Indiana Department of Environmental Management, Accounting, Room N1345, 100 North Senate Avenue, Indianapolis, Indiana, 46204.

We are required by the Auditor's Office to request that you place the Federal ID Number on all claims. If you have any conflicts, questions, or problems with the publishing of this notice or if you do not receive complete public notice information for this notice, please call Michelle Denney at 800-451-6027 and ask for extension 3-6867 or dial 317-233-6867.

Sincerely,

Michelle Denney
Permit Branch
Office of Air Quality

cc: OAQ Billing, Licensing and Training Section
Permit Level: SSM & SPM
Permit Number: 123-29490-00019 & 123-29497-00019

Enclosure
PN Newspaper.dot 3/27/08

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
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Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
**www.idem.IN.gov**

January 31, 2011

To: Tell City – Perry County Public Library

From: Matthew Stuckey, Branch Chief
Permits Branch
Office of Air Quality

Subject: **Important Information to Display Regarding a Public Notice for an Air Permit**

**Applicant Name: ThyssenKrupp Waupaca, Inc – Plant 5**
**Permit Number: 123-29490-00019 & 123-29497-00019**

Enclosed is a copy of important information to make available to the public. This proposed project is regarding a source that may have the potential to significantly impact air quality. Librarians are encouraged to educate the public to make them aware of the availability of this information. The following information is enclosed for public reference at your library:

- Notice of a 30-day Period for Public Comment
- Request to publish the Notice of 30-day Period for Public Comment
- Draft Permit and Technical Support Document

You will not be responsible for collecting any comments from the citizens. Please refer all questions and request for the copies of any pertinent information to the person named below.

Members of your community could be very concerned in how these projects might affect them and their families. **Please make this information readily available until you receive a copy of the final package.**

If you have any questions concerning this public review process, please contact Joanne Smiddie-Brush, OAQ Permits Administration Section at 1-800-451-6027, extension 3-0185. Questions pertaining to the permit itself should be directed to the contact listed on the notice.

Enclosures
PN Library.dot 03/27/08

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
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## Notice of Public Comment

**January 31, 2010**
**ThyssenKrupp Waupaca, Inc – Plant 5**
**123-29490-00019 & 123-29497-00019**

Dear Concerned Citizen(s):

You have been identified as someone who could potentially be affected by this proposed air permit. The Indiana Department of Environmental Management, in our ongoing efforts to better communicate with concerned citizens, invites your comment on the draft permit.

Enclosed is a Notice of Public Comment, which has been placed in the Legal Advertising section of your local newspaper. The application and supporting documentation for this proposed permit have been placed at the library indicated in the Notice. These documents more fully describe the project, the applicable air pollution control requirements and how the applicant will comply with these requirements.

If you would like to comment on this draft permit, please contact the person named in the enclosed Public Notice. Thank you for your interest in the Indiana's Air Permitting Program.

**Please Note:** *If you feel you have received this Notice in error, or would like to be removed from the Air Permits mailing list, please contact Patricia Pear with the Air Permits Administration Section at 1-800-451-6027, ext. 3-6875 or via e-mail at PPEAR@IDEM.IN.GOV. If you have recently moved and this Notice has been forwarded to you, please notify us of your new address and if you wish to remain on the mailing list. Mail that is returned to IDEM by the Post Office with a forwarding address in a different county will be removed from our list unless otherwise requested.*

Enclosure
PN AAA Cover.dot 3/27/08

# Mail Code 61-53

| | | | | |
|---|---|---|---|---|
| IDEM Staff | MIDENNEY 1/31/2011<br>ThyssenKrupp Waupaca, Inc. 123-29490-00019 & 123-29497-00019 (draft) | | | AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING |
| Name and address of Sender | ▶ | Indiana Department of Environmental Management<br>Office of Air Quality – Permits Branch<br>100 N. Senate<br>Indianapolis, IN 46204 | Type of Mail:<br>**CERTIFICATE OF MAILING ONLY** | |

| Line | Article Number | Name, Address, Street and Post Office Address | Postage | Handing Charges | Act. Value (If Registered) | Insured Value | Due Send if COD | R.R. Fee | S.D. Fee | S.H. Fee | Rest. Del. Fee<br>Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Bryant Esch ThyssenKrupp Waupaca, Inc. PO Box 249 Waupaca WI 54981 (Source CAATS) | | | | | | | | | |
| 2 | | Bruce E Tesch Plant Mgr ThyssenKrupp Waupaca, Inc. 9856 State Hwy 66 Tell City IN 47586 *(RO CAATS)* | | | | | | | | | |
| 3 | | Perry County Health Department Courthouse Annex Cannelton IN 47520-1251 *(Health Department)* | | | | | | | | | |
| 4 | | Mr. Wendell Hibdon Plumbers & Steam Fitters Union, Local 136 2300 St. Joe Industrial Park Dr Evansville IN 47720 *(Affected Party)* | | | | | | | | | |
| 5 | | Mr. Ron Hendrich Schwab Corporation 4630 E St Rd 66 Cannelton IN 47520 *(Affected Party)* | | | | | | | | | |
| 6 | | Mr. Bobby Carson P.O. Box 7 Mammoth Cave KY 42259 *(Affected Party)* | | | | | | | | | |
| 7 | | Mrs. Tina M. Kunkler-Laake News Publishing Company 537 Main Street PO Box 309 Tell City IN 47586 *(Affected Party)* | | | | | | | | | |
| 8 | | Tell City - City Council and Mayors Office PO Box 515 Tell City IN 47586 *(Local Official)* | | | | | | | | | |
| 9 | | Perry County Commissioners Court House, 2219 Payne Street Tell City IN 47586 *(Local Official)* | | | | | | | | | |
| 10 | | Tell City Perry County Public Library 2328 Tell Street Tell City IN 47586-1717 *(Library)* | | | | | | | | | |
| 11 | | Lisa McCoy 1162 E St. Rd 14 Silver Lake IN 46982 *(Affected Party)* | | | | | | | | | |
| 12 | | Mr. John Blair 800 Adams Ave Evansville IN 47713 *(Affected Party)* | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 15 | | | | | | | | | | | |

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