

AIR EMISSION PERMIT NO. 16900012- 004

IS ISSUED TO

Badger Foundry Co

BADGER FOUNDRY CO

1058 East Mark Street
Winona, Winona County, MN 55987

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date	Issuance Date	Permit Number
Total Facility Operating Permit	06/15/1995	06/25/1998	16900012-001
Major Amendment	07/02/2001	05/20/2002	16900012-002
Major Amendment	12/31/2005	01/03/2005	16900012-003
Administrative Amendment	05/08/2006	None	None, see reason below
Major Amendment	08/02/2006	See below	16900012-004

This permit supersedes permit 16900012-003 and authorizes the Permittee to the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal; Pt 70/Major for NSR

Major Amendment Issue Date: September 16, 2009

Major Amendment Expiration Date: Upon Re-Issuance of a Part 70 (Title V) Permit *

All Title I Conditions do not expire.

*The Permittee can continue to operate this facility after the expiration date of this permit per the provision under Minn. R. 7007.0450, subp. 3 (Title V Re-issuance application received on December 30, 2002).

Don Smith, P.E., Manager
Air Quality Permits Section
Industrial Division

For Paul Eger
Commissioner
Minnesota Pollution Control Agency

TDD (for hearing and speech impaired only): (651) 282-5332

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TABLE OF CONTENTS

Notice to the Permittee

Permit Shield

Facility Description

Permit Action (PER 004)

Table A: Limits and Other Requirements

Table B: Submittals

Appendices: Attached and Referenced in Table A

NOTICE TO THE PERMITTEE:

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	651-296-6300
Outside Metro Area	1-800-657-3864
TTY	651-282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

PERMIT SHIELD:

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

FACILITY DESCRIPTION:

Badger Foundry (Badger) is a gray iron foundry with a scrubber and afterburner controlled cupola. The facility currently melts about 15,000 tons per year (tpy), which presents about 20 percent of the maximum possible capacity. Badger installed an induction furnace and magnesium treatment area with the previous permit action in order to make ductile iron. Badger uses primary green sand molds and Phenolic urethane cores. In general, the major emissions from foundries are Particulate Matter (PM) and Volatile Organic Chemicals (VOC). PM is generated from virtually all of the operations at a foundry. VOCs are generated when the molten metal comes in contact with the green sand molds and the cores and when mold and core sand is mixed with binders. The PM emissions from the blasting cabinets that clean the castings are controlled by baghouses. PM emissions from sand handling are controlled by the moisture content of the sand. The PM from the shake-out and the mold sand muller are controlled by wet rotocyclones. The VOC emissions are uncontrolled at Badger.

PERMIT ACTION (PER 004):

PER 004 is a major amendment. The Permittee had originally applied for an administrative amendment to extend deadlines listed in the compliance schedule of previous permit action (PER 003). The compliance schedule at Badger is essential to reduce Particulate Matter smaller than 10 microns (PM₁₀) emission at the facility to get into compliance with the state and National Ambient Air Quality Standards therefore, the Permittee requested to delay the installation of the baghouse (CE 012), the completion to fully enclosed of the coke and limestone piles (FS 001 and FS 002), and any other supporting projects related to CE 012. The deadline to complete the work on CE 012 was June 25, 2004, and June 25, 2007, for FS 001 and FS 002. However, the deadlines extension required a major amendment instead of administrative amendment. In October 2007, a letter had been sent to Badger to decline the administrative amendment. Badger had then re-applied for a major amendment. The permit was then placed on hold due to enforcement and compliance issues. PER 004 is now opened to make updates to the permit.

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co
 Permit Number: 16900012 - 004

Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.

Subject Item: Total Facility

What to do	Why to do it
A. EMISSION LIMITS	hdr
HAP-Single: less than or equal to 9.50 tons/year using 12-month Rolling Sum	To avoid major source classification under 40 CFR Section 63.2
HAPs - Total: less than or equal to 24.5 tons/year using 12-month Rolling Sum . Total HAPs includes both particulate (metal) HAPs and gaseous HAPs.	To avoid major source classification under 40 CFR Section 63.2
B. OPERATIONAL LIMITS	hdr
Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020.
Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).	Minn. R. 7007.0800, subp. 9(A)
Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not federally enforceable.	Minn. R. 7030.0010 - 7030.0080
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
C. POLLUTION CONTROL EQUIPMENT REQUIREMENTS	hdr
Operation and Maintenance (O & M) Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.	Minn. R. 7011.0020
If the Permittee observes any pollution control equipment operating outside of the operational parameters specified in this permit, the Permittee shall take corrective action as soon as possible to return the operation of the pollution control equipment to within the specified parameters.	Minn. R. 7007.0800, subp. 14; Minn. R. 7007.0800, subp. 16(J)
D. TESTING REQUIREMENTS	hdr
Performance Test: Conduct all performance tests in accordance with Minn. R. ch. 7017, unless otherwise noted in Tables A, B, or C.	Minn. R. ch. 7017
Performance Test Notifications and Submittals: Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-Test Meeting: due 7 day before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy or CD: due 105 day after each Performance Test. The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2
Operating and/or production limits may be placed on emission units based on operating conditions during compliance testing. Limits set as a result of a compliance test (conducted before or after permit issuance) apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025.	Minn. R. 7017.2025
E. MONITORING REQUIREMENTS	hdr

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

<p>Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>F. RECORDKEEPING</p>	<p>hdr</p>
<p>Total Facility Monthly HAP Emissions Record keeping: by the 30th day of each month calculate and record for the previous month the total facility:</p> <p>1) Single HAP emission rate, in tons per month, by summing the monthly single HAP emission rate for each HAP from EU 001, EU 003, EU064, EU 007 through EU 014 and EU 054 through EU 056, determined as specified below under "F. RECORDKEEPING" in this (Total Facility) Subject Item;</p> <p>2) Total HAP emission rate, in tons per month, by summing all monthly Single HAP emission rates calculated in item 1 of this requirement.</p> <p>Record all emissions data at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>Total Facility 12-month Rolling Sum HAP Emissions Record keeping: by the 30th day of each month calculate and record for the total facility:</p> <p>1) the Single HAP emission rate for each HAP in tons per 12-month period, by summing the total facility monthly Single HAP emissions (calculated in item 1 of the previous requirement) for each HAP, during the previous 12-month period;</p> <p>2) the Total HAP emission rate in tons per 12-month period, by summing all values calculated in item 1 of this requirement, for the previous 12-month period.</p> <p>Record all emissions data at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>Selection of Emission Factors for Emissions Calculations: If the Permittee conducts performance testing on an emission unit, the test-based emission factor for that emission unit shall be used in place of any other factor, upon the Permittee's receipt of written agency approval of the test results. If a test-based factor is not available, the Permittee shall use an emission factor from the Agency's Iron Foundry Emission Calculation Guidance. If the Permittee uses a factor in Attachments 1 or 2, and the source of the factor issues a revised factor, the Permittee shall use the revised factor unless a test-based factor is available as described above.</p> <p>If data from a MSDS or manufacturer's specification for a raw material used in emission calculations is expressed in a range, the Permittee shall use the highest value given in the range.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>SV 001 and EU 056 Monthly HAP Emission Calculations: By the 30th day of each month:</p> <p>1) determine SV 001 benzene, total xylenes, phenol, toluene, arsenic, and manganese emissions (ton/mo), by multiplying tons of metal melted during the previous month (determined under SV 001) by the corresponding EPA emission factor. When available, use the SV 001 manganese emission factor determined by performance testing instead of the EPA emission factor;</p> <p>2) determine EU 056 manganese emissions (ton/mo), by multiplying tons of metal melted during the previous month (determined under EU 056) by the current EPA manganese emission factor.</p> <p>If emission factors for other SV 001 and EU 056 HAPs become available during the permit term, calculate emission rates (in ton/mo) for these additional HAPs by multiplying monthly metal melted by the corresponding emission factor.</p> <p>Record all emission data, including the emission factor used, at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co
 Permit Number: 16900012 - 004

<p>EU 003 Pouring and Cooling Green Sand Mold HAP Emissions Calculations. By the 30th day of each month:</p> <p>1) record Premix usage during the previous month (lb/mo) based on monthly usage; 2) calculate and record emissions (lb/mo) of Acrolein, Benzene, Formaldehyde, Hydrogen Cyanide, M-Xylene, Naphthalene, O-Xylene, Phenol, Toluene, Total Aromatic Amines, and Total C2 to C5 Aldehydes by multiplying the corresponding emission factor in Attachment 1 by the monthly premix usage.</p> <p>If emission factors determined by facility performance testing are available, the permittee shall use the test-based factors in lieu of published factors. If no test-based factors are available, the permittee shall use the factor in Attachment 1 or a more-current factor if available. Record all emissions data, including the emission factor used, at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>EU 003 Pouring and Cooling Purchased Core HAP Emissions Calculations. By the 30th day of each month for the previous month:</p> <p>1) record the type and usage (lb/mo) of each purchased core type, based on monthly usage; 2) determine monthly usage (lb/mo) of each resin by multiplying monthly usage of each purchased core type by resin weight per core weight (obtained from supplier of each core type), and summing all values for the same resin; 3) calculate monthly emissions (lb/mo) of Acrolein, Benzene, Formaldehyde, Hydrogen Cyanide, M-Xylene, Naphthalene, O-Xylene, Phenol, Toluene, Total Aromatic Amines, and Total C2 to C5 Aldehydes by multiplying corresponding HAP emission factor in Attachment 1 by monthly resin usage.</p> <p>If the Permittee conducts EU 003 HAP emissions testing, use test-based factors instead. The Permittee shall use revised emission factors when available. Record all emissions data, including emission factor used and core resin wt., at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>EU 003 Pouring and Cooling Phenolic Urethane Resins Core HAP Emissions Calculations. By the 30th day of each month:</p> <p>1) record total resin usage for the previous month (lb/mo) based on monthly usage; 2) determine the previous month emissions (lb/mo) of each of the following HAPs: Acrolein, Benzene, Formaldehyde, Hydrogen Cyanide, M-Xylene, Naphthalene, O-Xylene, Phenol, Toluene, Total Aromatic Amines, and Total C2 to C5 Aldehydes, by multiplying the corresponding emission factor in Attachment 1, by the total monthly resin usage.</p> <p>The Permittee shall use revised emission factors as they become available. However, if the Permittee conducts HAP emissions testing on EU 003, emission factors based on testing shall be used instead of the factor in Attachment 1. If the Permittee changes binder systems, use the appropriate emission factor in Attachment 1. Record all emissions data, including the emission factor used, at the time of calculation.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>EU 007, 008, 054, 055, and 064 Mixing Resin and Catalyst in Sand HAP Emissions Calculations. By the 30th day of each month:</p> <p>1) record the identity and weight (lb/mo) of each type of resin and each catalyst (binder system) used during the previous month, based on monthly usage; 2) determine and record the weight percentage of each HAP in the binder system used during the previous month, based on MSDS or manufacturer specification; 3) calculate and record previous month individual HAP emissions (lb/mo) by summing emissions of each HAP from each resin and catalyst used based on: a) monthly resin and catalyst usage; b) weight % for each HAPs in each catalyst and resin; c) The Permittee shall use the appropriate table in Attachment 2 to determine the percent of each HAP released during mixing.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co
 Permit Number: 16900012 - 004

<p>EU 009 through EU 014 Core Dip/Wash HAP Emissions Calculations. By the 30th day of each month:</p> <p>1) record the identity and weight (lb/mo) of each type of core dip/wash used during the previous month based on monthly usage;</p> <p>2) determine and record the weight percent of each HAP in the core dip/wash used during the previous month, based on MSDS or manufacturer specifications</p> <p>3) calculate and record the amount of each HAP emitted during the previous month (lb/mo) by multiplying the weight of each core dip/wash used by the weight percent of each HAP, and summing all monthly values for each HAP.</p>	<p>Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5</p>
<p>Record keeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007. 1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350 subp. 2), including records of the emissions resulting from those changes.</p>	<p>Minn. R. 7007. 0800, subp. 5(B)</p>
<p>Record keeping: Retain all records at the stationary source for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A).</p>	<p>Minn. R. 7007.0800, subp. 5(C)</p>
<p>G. REPORTING</p>	<p>hdr</p>
<p>Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3.</p> <p>At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.</p>	<p>Minn. R. 7019.1000, subp. 1</p>
<p>Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2.</p> <p>At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.</p>	<p>Minn. R. 7019.1000, subp. 2</p>
<p>Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description:</p> <ol style="list-style-type: none"> 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation. 	<p>Minn. R. 7019.1000, subp. 1</p>
<p>Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.</p>	<p>Minn. R. 7019.1000, subp. 1</p>
<p>Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.</p>	<p>Minn. R. 7007.1150 through Minn. R. 7007.1500</p>
<p>Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H).</p>	<p>Minn. R. 7007.1400, subp. 1(H)</p>
<p>Emissions Inventory Report: due on or before April 1 of each calendar year following permit issuance. To be submitted on a form approved by the Commissioner.</p>	<p>Minn. R. 7019.3000 through Minn. R. 7019.3010</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

<p>Emission Fees: due 60 days after receipt of an MPCA bill.</p>	<p>Minn. R. 7002.0005 through Minn. R. 7002.0095</p>
<p>The following condition is applicable to the operation of fabric filter CE 012.</p> <p>Parameters Used in Modeling: The parameters used in the modeling performed to demonstrate compliance with the Ambient Air Quality Standards for PM-10 are listed in Appendix III of this permit. If the Permittee intends to change any of these parameters, the Permittee must submit the revised parameters to the Commissioner and receive written approval before making any changes. The revised parameter information submittal must include, but is not limited to: the locations, heights and diameters of the stacks; locations and dimensions of nearby buildings; velocity and temperatures of the gases emitted; and the emission rates.</p>	<p>Minn. R. 7009.0020; Minn. R. 7007.0800, subp. 2</p>
<p>CONTINUED:</p> <p>The plume dispersion characteristics due to the parameter revisions must equal or exceed the dispersion characteristics modeled for this permit, and the Permittee shall demonstrate this in the proposal.</p> <p>If the information does not demonstrate equivalent or better dispersion characteristics, or if a conclusion cannot readily be made about the dispersion, the Permittee must remodel.</p> <p>For changes that do not involve an increase in an emission rate and that do not require a permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before making the change to any parameter.</p> <p>For changes involving increases in emission rates and that require a minor permit amendment, the proposal must be submitted as soon as practicable, but no less than 60 days before making the change to any parameter.</p>	<p>Minn. R. 7009.0020; Minn. R. 7007.0800, subp. 2</p>
<p>Stack / Vent Requirements: All stacks and vents at the facility (except vents listed in Appendix III of the permit) shall be vented vertically with neither rain caps nor other obstructions.</p>	<p>Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: GP 001 Core Dip Tanks

What to do	Why to do it
The Permittee has completed equipments installation and modifications required for operation and compliance with BACT in this permit action (PER 004).	Title I Condition: requirement to implement process determined as BACT under 40 CFR Section 52.21
Total Organic Compounds: less than or equal to 5 percent by weight in the core dipping mixture (after BACT is implemented).	Title I Condition: 40 CFR Section 52.21 BACT limit
Core dipping mixture (after BACT is implemented) Material Usage: less than or equal to 2132000 lbs/year using 12-month Rolling Sum	Title I Condition: 40 CFR Section 52.21 BACT limit
Record keeping (following the implementation of BACT): by the 30th day of each month, record the weight of core dipping mixture used during the previous month (lb/mo), and calculate and record the weight of core dipping mixture used during the previous 12-month period (lb/12-month period). The records shall also specify the VOC content (in weight percent) of each core dipping mixture used at the facility.	Title I Condition: recordkeeping for pollutant subject to a 40 CFR Section 52.21 BACT limit; Minn. R. 7007.0800, subp. 5
Total Organic Material Content: Total organic material contents in the Core Dipping mixture materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier for each material used. If a material content range is given on the MSDS, the highest number in the range shall be used in all compliance calculations. Other alternative methods approved by the MPCA may be used to determine the total organic material contents. The Commissioner reserves the right to require the Permittee to determine the total organic material contents of any material, according to EPA or ASTM reference methods. If an EPA or ASTM reference method is used for material content determination, the data obtained shall supersede the MSDS.	Minn. R. 7007.0800, subp. 4 and 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: GP 002 Omega-Kloster Line

Associated Items: EU 054 Chemical Set Core: Omega

EU 055 Chemical Set Core / Mold : Kloster

What to do	Why to do it
<p>Volatile Organic Compounds: less than or equal to 39 tons/year using 12-month Rolling Sum calculated monthly.</p>	<p>Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21</p>
<p>Material Content: VOC contents in materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier for each material used. If a material content range is given on the MSDS, the highest number in the range shall be used in all compliance calculations. Other alternative methods approved by the MPCA may be used to determine the VOC contents. The Commissioner reserves the right to require the Permittee to determine the VOC contents of any material, according to EPA or ASTM reference methods. If an EPA or ASTM reference method is used for material content determination, the data obtained shall supersede the MSDS.</p>	<p>Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 4 and 5</p>
<p>GP 002 VOC Emissions Record Keeping - Once each month:</p> <ol style="list-style-type: none"> 1) record the weight (lb/month) of each catalyst used in EU 054 and EU 055 during the previous month; 2) record the VOC content of each resin and the percent resin in the catalyst/resin recipe, if the content or recipe has changed since the previous month. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>GP 002 Sand-and-Resin-Mixing Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record the following for the previous month:</p> <ol style="list-style-type: none"> 1) determine usage (lb/mo) of each catalyst by totaling the monthly usage of each catalyst during the previous month; 2) calculate resin usage (lb/mo) based on the weight percent resin in the catalyst/resin recipe; 3) multiply the monthly usage of each resin and catalyst by the corresponding VOC weight percent and sum all results; 4) multiply the sum by .50 (emission factor) and divide by 2000 to determine GP 002 sand-and-resin-mixing VOC emissions (ton/mo); 5) if a different binder system is used, the Permittee shall use the applicable emission factor in Attachment 2, and record the factor in all monthly VOC emissions calculation. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>GP 002 Pouring-and-Cooling Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record total GP 002 pouring-and-cooling VOC emissions by multiplying the previous monthly resin usage (as determined above) by the emission factor for Total Hydrocarbons in Attachment 1.</p> <p>Record the emission factor used at the time of calculation.</p>	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>TOTAL GP 002 monthly and 12-month rolling sum VOC emissions Record Keeping:</p> <p>By the 30th day of each month calculate and record:</p> <ol style="list-style-type: none"> 1) the monthly TOTAL GP 002 VOC emissions by summing the monthly GP 002 sand-and-resin-mixing VOC emissions, and the monthly GP 002 pouring-and-cooling VOC emissions for the previous month; 2) the 12-month rolling sum TOTAL GP 002 VOC emissions by summing the monthly TOTAL GP 002 VOC emissions (determined above in item 1 of this requirement) for the previous 12-month period. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: GP 004 Grinding and Cleaning Operations

- Associated Items:**
- CE 004 Baghouse Collector
 - CE 010 Baghouse Collector
 - CE 011 Baghouse Collector
 - EU 025 Multiple Hand Grinding Stations (SC/LC)
 - EU 044 Shot Blaster - 1 Wheel
 - EU 045 Shot Blaster - 2 Wheel
 - EU 046 Shot Blaster - 4 Wheel
 - EU 058 Shot Blaster - 3 wheel
 - SV 012 Baghouse Stack for 1 & 2 Wheel Shot Blasters
 - SV 013 Baghouse Stack for 4 Wheel Shot Blaster
 - SV 020 Baghouse Stack for No-Bake Sand

What to do	Why to do it
<p>The Permittee is allowed to install additional grinding and cleaning equipment (grinding stations, shot blasters and tumble blasters) in GP 004 at any time during the life of this permit providing:</p> <p>1) there is no increase in melting capacity (no additional melting equipment is installed); 2) emissions from new shot blasters and tumble blasters must be contained in a total enclosure with 100% capture efficiency; 3) emissions from new grinding equipment must be captured by a certified hood with 80% capture efficiency; 4) emissions captured from new equipment shall be vented to a baghouse with 99% collection efficiency.</p> <p>The Permittee shall maintain on-site a process flow diagram showing all GP 004 stack/vents, emission units, and control equipment. The diagram shall be updated no later than 15 days after any emission unit is added to GP 004.</p>	<p>Minn. R. 7007.0800, subp. 11</p>
<p>The Permittee may relocate any emission units listed in the Associated Items of GP 004 providing emissions from the emission unit are controlled by any of the control equipment listed in the Associated Items in GP 004. The exhaust from any of the listed control equipment in the Associated Items in GP 004 may be re-routed through any of the stack/vents listed in the Associated Items in GP 004.</p> <p>The Permittee shall maintain on-site a process flow diagram showing all GP 004 Associated Items stack/vents, emission units, and control equipment. The diagram shall be updated no later than 15 days after relocating any emission unit or rerouting any control equipment through another stack/vent.</p>	<p>Minn. R. 7007.0800, subp. 11</p>
<p>Initial Hood Certification and Evaluation: The control device hood shall conform to the requirements listed in Minn. R. 7011.0070, subp. 1 and the Permittee shall certify this as specified in Minn. R. 7011.0072, subps. 2 and 3. The Permittee shall maintain a copy of the evaluation and certification on site.</p>	<p>Minn. R. 7007.0800, subps. 4, 5, and 14</p>
<p>Annual Hood Evaluation: The Permittee shall measure and record at least once every 12 months the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method as required by Minn. R. 7011.0072, subp. 4. The Permittee shall maintain a copy of the annual evaluation on site.</p>	<p>Minn. R. 7007.0800, subps. 4, 5, and 14</p>
<p>Grinding and cleaning equipment at foundries is subject to frequent replacement because of wear. Grinding and cleaning emissions are directly proportional to the tons of metal melted. Therefore, the permittee has been granted the operational flexibility above with the caveat that the permittee does not increase the maximum melting capacity of the foundry.</p>	<p>NOTE:</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: GP 006 Opacity and PM Limit-Applies to each SV

- Associated Items:** SV 002 Melt Charge Yard Door
 SV 011 facility vent
 SV 012 Baghouse Stack for 1 & 2 Wheel Shot Blasters
 SV 013 Baghouse Stack for 4 Wheel Shot Blaster
 SV 020 Baghouse Stack for No-Bake Sand
 SV 023 Baghouse Stack for Pouring, Cooling, Shakeout and Muller

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity . This limit applies individually to each stack/vent listed in the Associated Items in GP 006.	Minn. R. 7011.0715, subp. 1(B)
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to reduce emissions to less than or equal to either the amount allowed by Minn. R. 7011.0730 or the concentration allowed by Minn. R. 7011.0735.	Minn. R. 7011.0715, subp. 1(A)
After installation and operation of CE 012 (vented to SV 023), the stack/vent configuration will be as follows: SV 002 - Melt Charge Yard Door, No Control Equipment SV 012 - See monitoring requirements under CE 004 SV 013 - See monitoring requirements under CE 010 SV 020 - See monitoring requirements under CE 011 SV 023 - See monitoring requirements under CE 012 and testing requirements that apply only to this stack vent under SV 023.	NOTE:

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: GP 007 No-bake sand reclaim system

Associated Items: EU 061 No-Bake Vibra Mill Sand Reclaimer

EU 062 No-Bake Sand Handling System

EU 064 No-Bake Core Mixer

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011. 0735.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent	Minn. R. 7011.0715, subp. 1(B)
Particulate Matter < 10 micron: greater than or equal to 99 percent collection efficiency and 80 percent capture efficiency.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Total Particulate Matter: greater than or equal to 99 percent collection efficiency and 80% capture efficiency.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Volatile Organic Compounds: less than or equal to 39 tons/year using 12-month Rolling Sum calculated monthly.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
OPERATING CONDITIONS	hdr
Vent all emissions from EU061and EU062 through a fabric filter (CE011.)	Title I Condition: operating condition to meet above control requirements
RECORDKEEPING	hdr
<p>GP 007 VOC Emissions Record Keeping. Record the initial VOC content of each resin used, and the weight percent resin in the resin/catalyst recipe. Once each month:</p> <p>1) record the weight (lb/month) of each catalyst used in EU 064 during the previous month;</p> <p>2) record the VOC content of each resin and the percent resin in the catalyst/resin recipe, if the content or recipe has changed since the previous month.</p>	Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
<p>GP 007 Sand and Resin Mixing Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record the following for the previous month:</p> <p>1) determine usage (lb/mo) of each catalyst by totaling the monthly usage of each catalyst during the previous month;</p> <p>2) calculate resin usage (lb/mo) based on the weight percent resin in the catalyst/resin recipe;</p> <p>3) multiply the monthly usage of each resin and catalyst by the corresponding VOC weight percent and sum all results;</p> <p>4) multiply the sum by the applicable emission factor in Attachment 2 and divide by 2000 to determine GP 007 sand and resin mixing VOC emissions (ton/mo). The emission factor used shall be recorded in all monthly VOC emissions calculations.</p>	Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
<p>TOTAL GP 007 monthly and 12-month rolling sum VOC emissions Record Keeping:</p> <p>By the 30th day of each month calculate and record the 12-month rolling sum of VOC emissions by summing the monthly VOC emissions for the previous 12 months.</p>	Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: SV 001 Cupola Emission Stack

Associated Items: EU 001 Cupola

EU 049 Cupola Start Up Torches

What to do	Why to do it
Opacity: less than or equal to 20 percent opacity except that a maximum of 60 percent opacity shall be permissible for four minutes in any 60-minute period and that a maximum of 40 percent opacity shall be permissible for four additional minutes in any 60-minute period.	Minn. R. 7011.0610, subp. 1(A)(2)
Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot unless required to reduce emissions to less than or equal to either the amount allowed by Minn. R. 7011.0730 or the concentration allowed by Minn. R. 7011.0735.	Minn. R. 7011.0610, subp. 1(A)(1)
Record keeping: once each day, record the tons of metal melted in EU 001 during the previous day. By the 30th day of each month, calculate and record the tons of metal melted during the previous month.	Minn. R. 7007.0800, subp. 4 and 5
Performance Test: due before end of each 60 months starting 11/15/2000 to measure emissions of Total Particulate Matter (PM) and opacity from SV 001. If a test result shows a PM emission rate greater than 90% of the applicable PM emission limit, a performance test shall be conducted annually until a test result less than 90% of the emission limit is obtained. If a test result shows a PM emission rate greater than 60% but less than 90% of the applicable PM emission limit, a performance test shall be conducted every 36 months until a test result less than 60% of the emission limit is obtained. If a test result shows a PM emission rate less than 60% of the applicable PM rate, a performance test should be conducted every 60 months. The most recent performance test was 09/27/2005 with a test result of less than 60% of the emission limit obtained. The next performance test is due on or before 09/27/2010.	Minn. R. 7017.2020, subp. 1
<p>Performance Test Notifications and Submittals:</p> <p>Performance Test Notification (written): due 30 days before each Performance Test</p> <p>Performance Test Plan: due 30 days before each Performance Test</p> <p>Performance Test Pre-test Meeting: due 7 days before each Performance Test</p> <p>Performance Test Report: due 45 days after each Performance Test</p> <p>Performance Test Report - Microfiche* Copy: due 105 days after each Performance Test</p> <p>* Or an alternative format, such as a computer disk or CD-ROM, as allowed under Minn. R. 7017.2018.</p>	Minn. R. 7017.2030, subp. 1-4, Minn. R. 7017.2035, subp. 1-2 and Minn. R. 7017.2018

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-12

09/16/09

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: SV 012 Baghouse Stack for 1 & 2 Wheel Shot Blasters**Associated Items:** EU 023 Sand Handling System

EU 025 Multiple Hand Grinding Stations (SC/LC)

EU 044 Shot Blaster - 1 Wheel

EU 045 Shot Blaster - 2 Wheel

GP 004 Grinding and Cleaning Operations

GP 006 Opacity and PM Limit-Applies to each SV

What to do	Why to do it
The Permittee altered SV 012 so the stack is vented vertically with a stack height of 13 feet. The roof over SV 012 (1 and 2 Wheel Blaster Baghouse - CE 004) was removed and must remain removed.	Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: SV 023 Baghouse Stack for Pouring, Cooling, Shakeout and Muller

Associated Items: EU 003 Pouring/Cooling

EU 004 Mold Dump

EU 005 Casting Shakeout/ Mold Dump

EU 024 Green Sand Mold Mullor

GP 006 Opacity and PM Limit-Applies to each SV

What to do	Why to do it
Performance Test: due before 01/09/2013. The performance test is also acceptable if it is done on 01/09/2013.	Minn. R. 7017.2020, subp. 1
Performance Test Notifications and Submittals; Performance Test Notification (written): due 30 days before each Performance Test. Performance Test Plan: due 30 days before each Performance Test. Performance Test Pre-Test Meeting: due 7 day before each Performance Test. Performance Test Report: due 45 days after each Performance Test. Performance Test Report - Microfiche or CD: due 105 day after each Performance Test. The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co
 Permit Number: 16900012 - 004

Subject Item: EU 007 Chemically Set Core: 150

What to do	Why to do it
<p>Volatile Organic Compounds: less than or equal to 39 tons/year using 12-month Rolling Sum calculated monthly.</p>	<p>Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21</p>
<p>Material Content: VOC contents in materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier for each material used. If a material content range is given on the MSDS, the highest number in the range shall be used in all compliance calculations. Other alternative methods approved by the MPCA may be used to determine the VOC contents. The Commissioner reserves the right to require the Permittee to determine the VOC contents of any material, according to EPA or ASTM reference methods. If an EPA or ASTM reference method is used for material content determination, the data obtained shall supersede the MSDS.</p>	<p>Minn. R. 7007.0800, subp. 4 and 5</p>
<p>EU 007 VOC Emissions Record Keeping. Record the initial VOC content of each resin and each catalyst used, and the weight percentages of resin, catalyst, and sand in the resin/catalyst/sand recipe.</p> <p>Once each month:</p> <ol style="list-style-type: none"> 1) record the weight (lb/month) of sand used in EU 007 during the previous month; 2) record the VOC content of each resin and each catalyst; 3) record the weight percentages of resin, catalyst, and sand in the catalyst/resin/sand recipe, if the content or recipe has changed since the previous month. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>EU 007 Sand-and-Resin-Mixing Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record the following for the previous month:</p> <ol style="list-style-type: none"> 1) determine usage (lb/mo) of sand in EU 007 by totaling the monthly usage of sand during the previous month; 2) calculate resin usage (lb/mo) and catalyst usage (lb/mo) based on weight percent of each in the catalyst/resin/sand recipe; 3) multiply the monthly usage of each resin and catalyst by the corresponding VOC weight percent and sum all results; 4) multiply the sum by the applicable emission factor in Attachment 2 and divide by 2000 to determine EU 007 sand-and-resin-mixing VOC emissions (ton/mo). The Permittee shall record the emission factor used in all monthly VOC emission calculations. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>EU 007 Pouring-and-Cooling Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record total EU 007 pouring-and-cooling VOC emissions by multiplying the previous monthly resin usage (as determined above) by the emission factor for Total Hydrocarbons in Attachment 1.</p> <p>Record the emission factor used at the time of calculation.</p>	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>TOTAL EU 007 Monthly and 12-month Rolling Sum VOC Emissions Record Keeping:</p> <p>By the 30th day of each month calculate and record:</p> <ol style="list-style-type: none"> 1) the monthly TOTAL EU 007 VOC emissions by summing the monthly EU 007 sand-and-resin-mixing VOC emissions, and the monthly EU 007 pouring-and-cooling VOC emissions for the previous month; 2) the 12-month rolling sum TOTAL EU 007 VOC emissions by summing the monthly TOTAL EU 007 VOC emissions (determined above in item 1 of this requirement) for the previous 12-month period. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>The Permittee has completed installation of an air cleaning system to control emissions from EU 007 and is venting the emissions from EU 007 inside of the building 100 percent of the time. Therefore, the stack for EU 007 (SV 008) has been removed.</p>	<p>Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: EU 008 Chemically Set Core: 250

What to do	Why to do it
<p>Volatile Organic Compounds: less than or equal to 39 tons/year using 12-month Rolling Sum calculated monthly.</p>	<p>Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21</p>
<p>Material Content: VOC contents in materials shall be determined by the Material Safety Data Sheet (MSDS) provided by the supplier for each material used. If a material content range is given on the MSDS, the highest number in the range shall be used in all compliance calculations. Other alternative methods approved by the MPCA may be used to determine the VOC contents. The Commissioner reserves the right to require the Permittee to determine the VOC contents of any material, according to EPA or ASTM reference methods. If an EPA or ASTM reference method is used for material content determination, the data obtained shall supersede the MSDS.</p>	<p>Minn. R. 7007.0800, subp. 4 and 5</p>
<p>EU 008 VOC Emissions Record Keeping. Record the initial VOC content of each resin and each catalyst used, and the weight percentages of resin, catalyst, and sand in the resin/catalyst/sand recipe.</p> <p>Once each month:</p> <ol style="list-style-type: none"> 1) record the weight (lb/month) of sand used in EU 008 during the previous day; 2) record the VOC content of each resin and each catalyst; 3) record the weight percentages of resin, catalyst, and sand in the catalyst/resin/sand recipe, if the content or recipe has changed since the previous month. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>EU 008 Sand-and-Resin-Mixing Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record the following for the previous month:</p> <ol style="list-style-type: none"> 1) determine usage (lb/mo) of sand in EU 008 by totaling the monthly usage of sand during the previous month; 2) calculate resin usage (lb/mo) and catalyst usage (lb/mo) based on the weight percentages of each in the catalyst/resin/sand recipe; 3) multiply the monthly usage of each resin and catalyst by the corresponding VOC weight percentage and sum all results; 4) multiply the sum by the applicable emission factor in Attachment 2 and divide by 2000 to determine GP 007 sand-and-resin-mixing VOC emissions (ton/mo). The emission factor used shall be recorded in all monthly VOC emissions calculations. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>EU 008 Pouring-and-Cooling Monthly VOC Emissions Record Keeping:</p> <p>By the 30th day of each month, calculate and record total EU 008 pouring-and-cooling VOC emissions by multiplying the previous monthly resin usage (as determined above) by the emission factor for Total Hydrocarbons in Attachment 1.</p> <p>Record the emission factor used at the time of calculation.</p>	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>TOTAL EU 008 Monthly and 12-month Rolling Sum VOC Emissions Record Keeping:</p> <p>By the 30th day of each month calculate and record:</p> <ol style="list-style-type: none"> 1) the monthly TOTAL EU 008 VOC emissions by summing the monthly EU 008 sand-and-resin-mixing VOC emissions, and the monthly EU 007 pouring-and-cooling VOC emissions for the previous month; 2) the 12-month rolling sum TOTAL EU 008 VOC emissions by summing the monthly TOTAL EU 008 VOC emissions (determined above in item 1 of this requirement) for the previous 12-month period. 	<p>Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5</p>
<p>The Permittee has completed installation of an air cleaning system to control emissions from EU 008 and is venting the emissions from EU 008 inside of the building 100 percent of the time. Therefore, the stack for EU 008 (SV 009) has been removed.</p>	<p>Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)</p>

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-16

09/16/09

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: EU 056 Electric Induction Melting Furnace**Associated Items:** CE 011 Baghouse Collector

SV 020 Baghouse Stack for No-Bake Sand

What to do	Why to do it
Process Throughput: less than or equal to 5000 tons/year using 12-month Rolling Sum of metal melted starting from permit issuance.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Record Keeping: once each day, record the tons of metal melted in EU 056 during the previous day. By the 30th day of each month, calculate and record the tons of metal melted during the previous month and during the previous 12-month period.	Title I Condition: record keeping to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 001 Cupola Venturi Scrubber

Associated Items: EU 001 Cupola

EU 049 Cupola Start Up Torches

What to do	Why to do it
Pressure Drop: greater than or equal to 52 inches of water column or the value measured during the most recent PM performance test with MPCA approved results equal to or less than the applicable limit under SV 001.	Minn. R. 7007.0800, subp. 4
Venturi Scrubber Supply Water pressure: greater than or equal to 50 psi (gauge)	Minn. R. 7007.0800, subp. 4
Record pressure drop and water supply pressure once each day of operation. The record shall indicate the time and date of each reading. Records shall also indicate each day for which there was no operation of EU 001.	Minn. R. 7007.0800, subp 5
Recordkeeping of Corrective Actions: If the observed pressure drop and/or water supply pressure deviate from the required minimum levels stated above, the Permittee shall follow the Operation and Maintenance Plan for CE 001 and take corrective actions as soon as possible to correct the deviation. The Permittee shall keep a dated record of the deviation and the corrective actions.	Minn. R. 7007.0800, subp 5
Operation and Maintenance (O & M) of the Venturi Scrubber: The Permittee shall operate and maintain the venturi scrubber according to the control equipment manufacturer's specifications or the current O & M Plan.	Minn. R. 7007.0800, subp. 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 002 Cupola Afterburners

Associated Items: EU 001 Cupola

EU 049 Cupola Start Up Torches

What to do	Why to do it
Operation and Maintenance of the Afterburner: The Permittee shall operate and maintain the afterburner according to the control equipment manufacturer's specifications or the current O & M Plan. The afterburner shall be in operation during all periods in which a molten charge is present in the furnace.	Minn. R. 7007.0800, subp. 14
Temperature: greater than or equal to 1200 degrees F with a residence time of 0.3 seconds or greater. Temperatures below 1200 degrees F are permitted for the first 15 minutes after the start-up of the EU 001 combustion blower.	Minn. R. 7007.0800, subp. 4
Temperature: continuously monitor combustion temperature in the upper stack with a chart recorder or take manual readings once every 15 minutes during operation of EU 001.	Minn. R. 7007.0800, subp. 5
Record Keeping of Corrective Actions: If the afterburner temperature deviates from the minimum 1200 degrees Fahrenheit requirement during operation of EU 001 (except for the permitted 15 minute warm-up period), the Permittee shall follow the Operation and Maintenance Plan for the afterburner and take corrective actions as soon as possible to correct the deviation. The Permittee shall keep a dated record and description of the corrective actions taken.	Minn. R. 7007.0800, subp. 5
A continuous dual recorder has been installed which simultaneously records the upper stack afterburner temperature and the EU 001 combustion blower operation status.	Minn. R. 7007.0800, subp. 4(D)

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 003 2 - 3 % Moisture Content

- Associated Items:**
- EU 015 Green Sand Mold-Making Machines (A1)
 - EU 016 Green Sand Mold-Making Machines (A2)
 - EU 017 Green Sand Mold-Making Machines (B1)
 - EU 018 Green Sand Mold-Making Machines (B1)
 - EU 019 Green Sand Mold-Making Machine (C1)
 - EU 020 Green Sand Mold-Making Machines (C2)
 - EU 023 Sand Handling System
 - EU 024 Green Sand Mold Mullor

What to do	Why to do it
Mold Sand Moisture Content: greater than or equal to 2% by weight.	Title I condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
The Permittee shall measure the moisture content of each batch of green mold sand after mixing. The Permittee shall record the minimum (worst case) moisture content observed each day of operation and maintain the records on site for 5 years from the date of recording.	Title I condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 4; Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 004 Baghouse Collector

Associated Items: EU 023 Sand Handling System

EU 025 Multiple Hand Grinding Stations (SC/LC)

EU 044 Shot Blaster - 1 Wheel

EU 045 Shot Blaster - 2 Wheel

GP 004 Grinding and Cleaning Operations

What to do	Why to do it
Operate and maintain the fabric filter to achieve a control efficiency (100% capture efficiency X control equipment collection efficiency) for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Operate and maintain the fabric filter to achieve a control efficiency (100% capture efficiency X control equipment collection efficiency) for Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Operate and maintain the fabric filter according to the associated control equipment manufacturer's specifications (if available), except for the pressure drop specified below.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Pressure Drop: greater than or equal to 4 inches of water column and less than or equal to 7 inches of water column	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
Record the pressure drop once every 24 hours when in operation.	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:</p> <ul style="list-style-type: none"> - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. <p>Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.</p>	Minn. R. 7007.0800, subps. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 010 Baghouse Collector

Associated Items: EU 046 Shot Blaster - 4 Wheel

GP 004 Grinding and Cleaning Operations

What to do	Why to do it
Operate and maintain the fabric filter to achieve a control efficiency (100% capture efficiency X control equipment collection efficiency) for Total Particulate Matter: greater than or equal to 99 percent control efficiency	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Operate and maintain the fabric filter to achieve a control efficiency (100% capture efficiency X control equipment collection efficiency) for Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Operate and maintain the fabric filter according to the associated control equipment manufacturer's specifications (if available), except for the pressure drop specified below.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Pressure Drop: greater than or equal to 3 inches of water column and less than or equal to 6 inches of water column	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
Record the pressure drop once every 24 hours when in operation.	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:</p> <ul style="list-style-type: none"> - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. <p>Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.</p>	Minn. R. 7007.0800, subps. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 011 Baghouse Collector

Associated Items: EU 025 Multiple Hand Grinding Stations (SC/LC)

EU 056 Electric Induction Melting Furnace

EU 057 Ductile Treatment Operations

EU 058 Shot Blaster - 3 wheel

EU 061 No-Bake Vibra Mill Sand Reclaimer

EU 062 No-Bake Sand Handling System

EU 065 Scrap pre-heating for Ductile Line

GP 004 Grinding and Cleaning Operations

What to do	Why to do it
Total Particulate Matter: greater than or equal to 99 percent collection efficiency and greater than or equal to 80 percent capture efficiency.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Particulate Matter < 10 micron: greater than or equal to 99 percent collection efficiency and greater than or equal to 80 percent capture efficiency.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Operate and maintain the fabric filter in accordance with the associated control equipment manufacturer's specifications (if available), except for the pressure drop specified below.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 14
Pressure Drop: greater than or equal to 3 inches of water column and less than or equal to 7 inches of water column	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
Record the pressure drop once every 24 hours when in operation.	Title I Condition: Monitoring of control equipment used to avoid classification as a major modification under 40 CFR Section 52.21
<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:</p> <ul style="list-style-type: none"> - visible emissions are observed; - the recorded pressure drop is outside the required operating range; or - the fabric filter or any of its components are found during the inspections to need repair. <p>Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.</p>	Minn. R. 7007.0800, subs. 4, 5, and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Subject Item: CE 012 Baghouse Collector

Associated Items: EU 003 Pouring/Cooling

EU 004 Mold Dump

EU 005 Casting Shakeout/ Mold Dump

EU 024 Green Sand Mold Mullor

What to do	Why to do it
Installation of Control Equipment: The Permittee has installed and is operating CE 012 to control emissions from EU 003, EU 004, EU 005, and EU 024.	Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)
The control equipment is considered listed control equipment under Minn. R. 7011.0060 to 7011.0080. The Permittee shall operate and maintain the fabric filter at all times that any process equipment controlled by the fabric filter is operating.	Minn. R. 7011.0065, subp. 2(A)
Initial Hood Certification and Evaluation: The control device hood shall conform to the requirements listed in Minn. R. 7011.0070, subp. 1, and the Permittee shall certify this as specified in Minn. R. 7011.0072, subp. 2 and 3. The Permittee shall maintain a copy of the evaluation and certification on site.	Minn. R. 7007.0800, subpl 4, 5 and 14
Annual Hood Evaluation: The Permittee shall measure and record at least once every 12 months the fan rotation speed, fan power draw, or face velocity of each hood, or other comparable air flow indication method as required by Minn. R. 7011.0072, subp. 4. The Permittee shall maintain a copy of the annual evaluation on site.	Minn. R. 7007.0800, subpl 4, 5 and 14
Total Particulate Matter: greater than or equal to 99 percent collection efficiency and greater than or equal to 80 percent capture efficiency.	Minn. R. 7011.0065, subp. 1(A); To comply with the particulate matter limits established in Minn. R. 7011.0715
Particulate Matter < 10 micron: greater than or equal to 99 percent collection efficiency and greater than or equal to 80 percent capture efficiency.	Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)
<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:</p> <ul style="list-style-type: none"> - An excursion or exceedance of the appropriate range(s) or designated condition(s) is detected for one of the indicators of emission control performance for CE 012. The indicators shall be established in the monitoring plan submitted in accordance with 40 CFR Section 64.4. - the fabric filter (CE 012) or any of its components are found during the inspections to need repair or replacement. <p>Corrective actions shall return the indicator(s) of emission control performance to the appropriate range(s) or condition(s) and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.</p>	40 CFR 64.7(d), Minn. R. 7007.0800, subs. 4, 5, and 14
Monitoring Equipment: The Permittee shall install and maintain as necessary the monitoring equipment for measuring and recording the indicator range(s) or designated condition(s) established in the monitoring plan submitted in accordance with 40 CFR Section 64.4. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.	Minn. R. 7007.0800, subp. 4 and 40 CFR 64.7(b) and (c)
<p>The semi-annual deviations report due for the facility (specified in Table B) shall include the following:</p> <p>(i) Summary information on the number, duration and cause (including unknown cause if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;</p> <p>(ii) Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other calibration checks, if applicable).</p>	40 CFR 64.9(a)(2)
The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available on site for use by staff and MPCA staff.	Minn. R. 7007.0800, subp. 14
The Permittee shall perform an external inspection of the baghouse monthly. The Permittee shall perform an internal inspection at least annually, or at a greater frequency if the baghouse manufacturer recommends such. The inspection report shall record the date and the inspector's name. The Permittee shall also correct or repair any abnormal condition identified in the inspection as required.	Minn. R. 7007.0800, subp. 4, 5 and 14

TABLE A: LIMITS AND OTHER REQUIREMENTS

A-24

09/16/09

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

Stack Height: Emissions from CE 012 shall be vented vertically from a minimum stack height of 50 feet.

Minn. R. 7009.0020 (to not cause or contribute to a violation of the ambient air quality standards for PM-10)

TABLE B: SUBMITTALS

B-1 09/16/09

Facility Name: Badger Foundry Co
Permit Number: 16900012 - 004

Also, where required by an applicable rule or permit condition, send to the Permit Document Coordinator notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Chief Air Enforcement
Air and Radiation Branch
EPA Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

Send any application for a permit or permit amendment to:

Fiscal Services
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency
Clean Air Markets Division
1200 Pennsylvania Avenue NW (6204N)
Washington, D.C. 20460

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator
Industrial Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155-4194

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

B-2 09/16/09

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility

TABLE B: RECURRENT SUBMITTALS

B-3 09/16/09

Facility Name: Badger Foundry Co

Permit Number: 16900012 - 004

What to send	When to send	Portion of Facility Affected
Semiannual Deviations Report	due 30 days after end of each calendar half-year starting 06/25/1998 . The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.	Total Facility
Compliance Certification	due 30 days after end of each calendar year starting 06/25/1998 (for the previous calendar year). To be submitted on a form approved by the Commissioner. The report covers all deviations experienced during the calendar year.	Total Facility

APPENDIX MATERIAL

Facility Name:Badger Foundry Co

Permit Number: 16900012-004

Appendix I

Insignificant Activities and Applicable Requirements

Minn. R. 7007.1300, subpart	Activity	Applicable Requirement(s)
3(l)	Natural gas-fired boiler for the no bake heater/cooler with a rated heat input capacity of 0.42 million Btu/hr.	Minn. R. 7011.0515

Appendix X – Modeling Parameters Used for Badger Foundry Company, Winona, Winona County, Minnesota

Hardcopy Report Submittals

Ambient Air Quality Modeling Results, Site: Badger Foundry Company, 1058 East Mark Street, Winona, MN 55987, prepared by Pinnacle Engineering, April 29, 2008.

Electronic Submittals (eg compact disk or email attachments)

Compact disk titled Badger Foundry Company, Winona, MN Facility 16900012, Air Dispersion Modeling Files, prepared by Pinnacle Engineering.

Full Details

See electronic submittals for full data details.

Summary Report (this is a computer-generated “REPORT” with simple headers, simple sources, and selected parameters)

The summary report is for simple (constant) emission rates and corresponding stack/source parameters. It does not fully document details regarding model control options, emission rates with varying emission scalars, corresponding stack/source parameters, wind speed categories for wind erosion, building profile input program (BPIP) outputs, various output selections (e.g., EVENTFIL, MULTYEAR, PLOTFILE, POSTFILE, MAXIFILE), applicable “INCLUDED” file information, receptor grids, or other special features described in the following EPA modeling user guide:

AERMOD (version 07026): http://www.epa.gov/scram001/dispersion_prefrec.htm#aermod

Note: If any difference exists between summary values in this appendix vs. the hardcopy report vs. the electronic submittal modeled values, the electronic submittal modeled values prevail.

For Your Information

This PM10 modeling was conducted for state Title V [NAAQS and MAAQS] modeling purposes. The first file is for 24-hour PM10. The second file is for annual PM10.

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*** AERMOD - VERSION 07026 ***      *** NONE
***      03/10/08
***
***      14:49:50
U:\PROJECTS\DBECKER\PROJECTS\BFCAPR08\BFCp2490.aml
**This Run Includes:  10 Source(s);  11 Source Group(s); and  855 Receptor(s)
  AREA SRCIDNT EASTINGNORTHING ELEV(M)  G/SEC  #/HOURL  T/YEAR  HGT(M)  HGT(FT)  XDIM(M)  YDIM(M)
  VOLUME SRCIDNT EASTINGNORTHING ELEV(M)  G/SEC  #/HOURL  T/YEAR  HGT(M)  HGT(FT)  SYI(M)  SZI(M)
  AREACIRC SRCIDNT EASTINGNORTHING ELEV(M)  G/SEC  #/HOURL  T/YEAR  HGT(M)  HGT(FT)  RADIUS  #VERTS.
  AREAPOLY SRCIDNT EASTINGNORTHING ELEV(M)  G/SEC  #/HOURL  T/YEAR  HGT(M)  HGT(FT)  #VERTS.  SZI(M)
  POINT SRCIDNT EASTINGNORTHING ELEV(M)  G/SEC  #/HOURL  T/YEAR  HGT(M)  HGT(FT)  DIA(M)  DIA(FT)
DEG(K)  DEG(C)  DEG(F)  VS(M/S)  VS(F/M)  ACFM
-----
  POINT SV001      611143 4876816   198   0.72   5.70   24.96   26.28   86.22   0.760   2.493
347.    74.    165.    24.84 4889.76  23877
  POINT SV013      611120 4876814   198   0.02   0.12   0.53   14.05   46.10   0.660   2.165
297.    24.    75.    13.74 2704.72  9960
  POINT SV012UP    611132 4876805   198   0.05   0.36   1.58   3.96   12.99   1.260   4.134
297.    24.    75.    20.00 3937.01 52841
  POINT SV020      611205 4876849   198   0.03   0.21   0.92   19.32   63.39   1.020   3.346
297.    24.    75.    20.38 4011.81 35286
  POINT SV023      611159 4876856   198   0.20   1.61   7.05   21.34   70.01   1.710   5.610
295.    22.    71.    15.92 3133.86 77470
  VOLUME SV002V    611163 4876841   198   0.15   1.20   5.26   2.29   7.51  13.720  12.190
  AREA FS003A      611091 4876760   198   0.02   0.18   0.80   1.00   3.28  120.00  20.00
(0.9580E-05 G/S/M2, 0.2400E+04 M2)
  AREA FS003B      611255 4876698   198   0.02   0.18   0.80   1.00   3.28  120.00  20.00
(0.9580E-05 G/S/M2, 0.2400E+04 M2)
  AREA FS004      611074 4876767   199   0.00   0.01   0.05   1.00   3.28  180.00  30.00
(0.2591E-06 G/S/M2, 0.5400E+04 M2)
  AREA FS002      611283 4876773   198   0.00   0.02   0.10   1.00   3.28   20.00  20.00
(0.7190E-05 G/S/M2, 0.4000E+03 M2)
  TOTAL
  SUMP=
  SUMV=
  SUMA=
  1.21   9.60  42.04
  1.01   8.00  35.04
  0.15   1.20   5.26
  0.05   0.40   1.75

```

*** AERMOD - VERSION 07026 *** *** NONE
 *** 03/11/08

*** 10:17:18

U:\PROJECTS\DBECKER\PROJECTS\BFCAPR08\BFCpAN90.aml

**This Run Includes: 10 Source(s); 11 Source Group(s); and 855 Receptor(s)

AREA	SRCIDNT	EASTING	NORTHING	ELEV(M)	G/SEC	#/HOUR	T/YEAR	HGT(M)	HGT(FT)	XDIM(M)	YDIM(M)
VOLUME	SRCIDNT	EASTING	NORTHING	ELEV(M)	G/SEC	#/HOUR	T/YEAR	HGT(M)	HGT(FT)	SYI(M)	SZI(M)
AREACIRC	SRCIDNT	EASTING	NORTHING	ELEV(M)	G/SEC	#/HOUR	T/YEAR	HGT(M)	HGT(FT)	RADIUS	#VERTS.
AREAPOLY	SRCIDNT	EASTING	NORTHING	ELEV(M)	G/SEC	#/HOUR	T/YEAR	HGT(M)	HGT(FT)	#VERTS.	SZI(M)
POINT	SRCIDNT	EASTING	NORTHING	ELEV(M)	G/SEC	#/HOUR	T/YEAR	HGT(M)	HGT(FT)	DIA(M)	DIA(FT)
DEG(K)	DEG(C)	DEG(F)	VS(M/S)	VS(F/M)	ACFM						
POINT	SV001	611143	4876816	198	0.72	5.70	24.96	26.28	86.22	0.760	2.493
347.	74.	165.	24.84	4889.76	23877						
POINT	SV013	611120	4876814	198	0.02	0.12	0.53	14.05	46.10	0.660	2.165
297.	24.	75.	13.74	2704.72	9960						
POINT	SV012UP	611132	4876805	198	0.05	0.36	1.58	3.96	12.99	1.260	4.134
297.	24.	75.	20.00	3937.01	52841						
POINT	SV020	611205	4876849	198	0.03	0.21	0.92	19.32	63.39	1.020	3.346
297.	24.	75.	20.38	4011.81	35286						
POINT	SV023	611159	4876856	198	0.20	1.61	7.05	21.34	70.01	1.710	5.610
295.	22.	71.	15.92	3133.86	77470						
VOLUME	SV002V	611163	4876841	198	0.15	1.20	5.26	2.29	7.51	13.720	12.190
AREA	FS003A	611091	4876760	198	0.02	0.18	0.80	1.00	3.28	120.00	20.00
(0.9580E-05 G/S/M2, 0.2400E+04 M2)											
AREA	FS003B	611255	4876698	198	0.02	0.18	0.80	1.00	3.28	120.00	20.00
(0.9580E-05 G/S/M2, 0.2400E+04 M2)											
AREA	FS004	611074	4876767	199	0.00	0.01	0.05	1.00	3.28	180.00	30.00
(0.2591E-06 G/S/M2, 0.5400E+04 M2)											
AREA	FS002	611283	4876773	198	0.00	0.02	0.10	1.00	3.28	20.00	20.00
(0.7190E-05 G/S/M2, 0.4000E+03 M2)											
TOTAL					1.21	9.60	42.04				
SUMP=					1.01	8.00	35.04				
SUMV=					0.15	1.20	5.26				
SUMA=					0.05	0.40	1.75				

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 16900012-004

This technical support document is intended for all parties interested in the permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp.1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the determination to issue the permit.

1. General Information:

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 3321)
1058 East Mark Street Winona, MN 55987	1058 East Mark Street Winona, Winona County
Contact: Steven Metzenbauer Phone: (507) 452-5760	

1.2. Description of the Permit Action:

Badger Foundry is a gray and ductile iron foundry with a scrubber and afterburner controlled cupola and a baghouse collected electric induction melting furnace. The facility currently melts about 15,000 tons per year (TPY,) which represents about 20 percent of the maximum possible capacity. Major emissions at the facility are Particulate Matter (PM) and Volatile Organic Compounds (VOC). Badger has installed a baghouse collector (CE 012) to control PM and Particulate Matter smaller than 10 microns (PM₁₀) emissions. The project has involved removing/altering several stacks/vents and changing the equipment configuration for several emission units (see major permit amendment-PER 003 for details). Badger is required to complete many performance tests in order to demonstrate modeled compliance with the state and National Ambient Air Quality Standards (NAAQS) for PM₁₀. This permit action (PER 004) is a major amendment to a Part 70 permit. Badger provided the status of the compliance schedule from PER 003. A summary of the completed tasks which involves the installation of CE 012 and related requirements are listed below:

- Complete engineering to determine overall ventilation system static pressure and required horsepower.
- Contracted the rebuilt of the used blower.
- Installed concrete footing for baghouse, blower and exhaust stack.
- Fabricated and erected baghouse module support steel and service platforms.
- Installed baghouse support steel, baghouse modules, exhaust stack, and blower.
- Reinforced building steel to support roof top duct runs.
- Removed old filter bags and cages, and installed new filter bags and cages.
- Sandblasted and painted inside of the module clean air plenums.
- Disassembled, rebuilt, and reinstalled baghouse pulse system.
- Removed, rebuilt, and reinstalled module screw conveyors.
- Purchased and installed a compressed air dryer.
- Completed construction of a structure to completely enclose the Coke storage pile (FS 001) and Limestone pile (FS 002).

The following changes were made to this permit:

- Removed completed permit requirements.
- Updated to reflect current MPCA templates and standard citation formatting.
- Changed the method of data recordkeeping for Hazardous Air Pollutants (HAP) emissions at EU 003 for Green Sand Mold and Phenolic Urethane Resins Core so they are now based on monthly usage instead of physical inventory or purchase records. Similar change is applied to EU 007, EU 008, EU 009, EU 014, EU 054, EU 055, and EU 064.
- Allowed Badger to change the method of VOC emissions recordkeeping for Group 7 No-Bake Sand Reclaim System to calculate catalyst usage and keep record on a monthly basis instead of keeping records daily.
- Updated the PM performance testing frequency for the Cupola Stack (SV 001) per the MPCA performance frequency test plan and clarified the next required performance test as no later than September 27, 2010.
- Updated the warm-up period for the Direct Flame Afterburner (CE 002) from 8 minutes to 15 minutes.
- Updated Delta for existing emission units, control equipments, and stack vents.
- Included required periodic testing frequency for CE012 fabric filter.
- Included PM-10 dispersion modeling reports as attachment to the permit (see 3.2 for more details).

1.3 Description of the Activities Allowed by this Permit Action:

No changes are authorized by this permit action.

1.4. Facility Emissions:

Table 1. Total Facility Potential to Emit (PTE) Summary

	PM Tpy	PM ₁₀ tpy	SO ₂ tpy	NO _x tpy	CO tpy	VOC tpy	Single HAP tpy	All HAPs Tpy
Total Facility Limited Potential Emissions*	139.00	55.50	22.00	8.00	64.00	160.00	9.50	24.50
Total Facility Actual Emissions (2007)	52.93	30.53	0.53	2.90	40.06	62.02	HAPs not reported in emission inventory	

- Data obtained from Technical Support Document (TSD) of Permit No. 16900012-003

Table 2. Facility Classification

Classification	Major/Affected Source	Synthetic Minor	Minor
PSD	PM, PM-10, VOC		SO ₂ , NO _x , CO
Part 70 Permit Program	VOC		PM-10, SO ₂ , NO _x , CO
Part 63 NESHAP		HAPs	

2. Regulatory and/or Statutory Basis:

Table 3. Regulatory Overview of Units Affected by the Permit Amendment

Emission Unit (EU), Group (GP), Stack Vent (SV), or Fugitive Source (FS)	Applicable Regulations	Comments
Total Facility	40 CFR pt. 63	National Emission Standards for Hazardous Air Pollutants (NESHAPs): Single HAP emission limited to less than 9.5 TPY and total HAP emissions limited to less than 24.5 TPY in order to avoid Prevention of Significant Deterioration (PSD) requirements.
EU 003 – EU 005, EU 023, EU 024	Minn. R. 7011.0715	Standards of Performance for Post-1969 Industrial Process Equipment
EU 009 – EU 014	40 CFR § 52.21	PSD, Best Achievable Control Technology (BACT) limit, core dipping solution VOC content does not exceed 5% by volume.
EU 007	40 CFR § 52.21	To avoid PSD requirements with VOC limit of 39 TPY, actual VOC emission is 0.27 TPY*
EU 008	40 CFR § 52.21	To avoid PSD requirements with VOC limit of 39 TPY, actual VOC emission is 0.78 TPY*
EU 054	40 CFR § 52.21	To avoid PSD requirements with VOC limit of 39 TPY, actual VOC emission is 0.21 TPY*
EU 055	40 CFR § 52.21	To avoid PSD requirements with VOC limit of 39 TPY, actual VOC emission is 1.00 TPY*
EU 056	40 CFR § 52.21	To avoid PSD requirements with production limit of 5,000 tons melted per year to stay below 25 TPY PM threshold and 15 TPY PM-10 threshold, actual production are 0.01 TPY* for both PM and PM-10 emission.
FS 001, FS 002	Minn. R. 7009.0020	Prohibited Emissions The Permit requires construction of structures to completely enclose the coke storage piles (FS 001) and the limestone storage pile (FS 002) to ensure that emissions do not cause or contribute to a violation of the ambient air quality standards for PM-10. The permit requires completion of the structures by June 25, 2007 and it is verified as complete in this permit action.

* Data from 2007 Emission Inventory Report

3. Technical Information:

3.1 Calculations:

Emission calculations were not included with the permit application. Therefore, same emissions data from previous permits were used for this permit action.

3.2 PM-10 dispersion modeling:

PM₁₀ dispersion modeling was conducted at Badger for Title V NAAQS and Minnesota Ambient Air Quality Standards modeling purposes. Results of stack vents (SV 001, SV 002V, SV 013, SV 012UP, SV 020, SV 023) and area fugitive emission sources (FS 003A, FS 003B, FS 004, FS 002) were reviewed by the MPCA's modeling staff. A summary report was generated for both 24 hour and annual PM₁₀ (see Appendix X of the permit). In addition, Badger also provided a copy of the test report to show the facility is under the 150 µg/m³ 24-hour and 50 µg/m³ annual standards for PM₁₀ (see Attachment 2 of the TSD).

3.3 Performance testing plan for CE 012 fabric filter:

Badger had completed a performance test of the fabric filter on January 9, 2008, and the results were submitted to the MPCA for review with the proposed performance testing frequency. Based on the test results, Badger is not required to conduct a performance test for five (5) years. Please refer to Attachment 2 of the TSD for the test results.

3.4 Compliance Assurance Monitoring (CAM):

40 CFR Part 64 requires submittal of a CAM plan proposing monitoring sufficient to provide a reasonable assurance of compliance with the particulate matter emission limits applicable to emissions from SV 023 (the stack for CE 012). The monitoring design criteria are outlined in 40 CFR Section 64.3 and the submittal requirements are established in 40 CFR Section 64.4.

Badger has submitted a CAM proposal for emissions from CE 012. U.S. Environmental Protection Agency's (EPA) guidance on the development of CAM plans allows for the use of operating history for the development of appropriate parameter ranges. To allow for completion of stack testing and for establishment of appropriate indicators of emission control performance for CE 012, the permit required submittal of the CAM plan within 180 days of startup of CE 012. The permit also required the initial performance test to measure particulate matter and opacity emissions within 90 days of startup

3.5 Insignificant Activities:

Badger Foundry has one natural gas-fired boiler for the no bake heater/cooler (EU 063) with a rated heat input capacity of 0.42 million Btu/hr, which is classified as insignificant activities. This boiler is listed in Appendix 1 to the permit. There is no periodic monitoring required for EU 063.

3.6 Comments Received:

Public Notice and EPA 45 day Review Period: 6/17/2009 – 7/16/2009

Comments were not received from the public and EPA during the public notice and review period. Changes to the permit were not made as a result of the comments.

4. Conclusion:

Based on the information provided by Badger Foundry, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 16900012-004 and this technical support document, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team:

- Hien Le (permit writer)
- Fred Jenness (Peer reviewer)
- Jennifer Lovett (enforcement)
- Marc Severin (performance testing)
- Dennis Becker (dispersion modeling)

AQ No. 64, DQ No. 1173

Attachments:

1. CD-01
2. Attachment 2 – PM₁₀ Modeling results submitted by Pinnacle Engineering
3. Emission Unit Description from Delta (paper copy only)