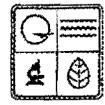


PERMIT BOOK

STATE OF MISSOURI



DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION

PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: **102014-009** Project Number: 2014-07-038
Installation Number: 113-0029

Parent Company: Toyota Motor Engineering and Manufacturing of North America, Inc.

Parent Company Address: 25 Atlantic Ave., Erlanger, KY 41018

Installation Name: Bodine Aluminum, Inc.

Installation Address: 100 Cherry Blossom Way, Troy, MO 63379

Location Information: Lincoln County, S36, T36, R7W

Application for Authority to Construct was made for:
Removal of RTO control requirement for P5 Sand Reclamation Furnaces. This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060
Construction Permits Required.

- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

OCT 10 2014

EFFECTIVE DATE

Kyral Moore

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within two years from the effective date of this permit. The permittee shall notify the Air Pollution Control Program if construction or modification is not started within two years after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You shall notify the Department's Air Pollution Control Program of the anticipated date of start up of these air contaminant sources. The information shall be made available within 30 days of actual startup. Also, you shall notify the Department of Natural Resources' St. Louis Regional Office within 15 days after the actual start up of these air contaminant sources.

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, MO 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant sources(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Missouri Department of Natural Resources, Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102-0176, attention: Construction Permit Unit.

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Permit No.	
Project No.	2014-07-038

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060(12)(A)10. "Conditions required by permitting authority."

Bodine Aluminum, Inc.
Lincoln County, S36, T36, R7W

1. **Superseding Condition**
The conditions of this permit supersede Special Conditions 2.A, 2.D, and 2.E found in Construction Permit 062014-002 issued by the Air Pollution Control Program.
2. **Emission Limitations**
 - A. Bodine Aluminum, Inc. shall emit less than 250.0 tons of VOCs in any consecutive 12-month period from the entire installation as listed in Table 1.
 - B. Bodine Aluminum, Inc. shall emit less than 25.0 tons of combined HAP in any consecutive 12-month period from the entire installation as listed in Table 1.
 - C. Bodine Aluminum, Inc. shall emit less than 10.0 tons of each individual HAP in any consecutive 12-month period from the entire installation as listed in Table 1.

Table 1: Emission units subject to the emission limitations of Special Conditions 2.A, 2.B, and 2.C.

Emission Unit	Description
C01	Plantwide Natural Gas Combustion
M1	Plantwide Machining Stations
O2	Cylinder Head Casting
O5	Cylinder Head Core Molding
OA7	Cylinder Head Heat Treatment Furnaces – Process Emissions
P05	Sand Reclamation Furnace
P09	Sand Dryer - Process Emissions
P11	Resin Coating
P30	High Pressure Die Casting
P35	Diesel Emergency Generator

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Permit No.	
Project No.	2014-07-038

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- D. Bodine Aluminum, Inc. shall emit individual HAP from P5 Sand Reclamation Furnaces in amounts less than those indicated in Table 2.

Table 2: Individual HAP Emission Limits for P5 Sand Reclamation Furnaces

Pollutant	Limit (tons per consecutive 12-month period)
Benzene (71-43-2)	2.0
Cresols (1319-77-3)	1.0
Phenol (108-95-2)	0.1
Styrene (100-42-5)	1.0
Acetaldehyde (75-07-0)	9.0
Formaldehyde (50-00-0)	2.0

- E. Attachments A and B or equivalent forms, such as electronic forms, approved by the Air Pollution Control Program shall be used to demonstrate compliance with Special Conditions 2.A, 2.B, 2.C and 2.D.
3. Control Device Requirement – Dust Collectors
- A. Bodine Aluminum, Inc. shall control emissions from the P05 Sand Reclamation Furnaces and P11 Resin Coating using dust collectors as specified in the permit application.
 - B. The dust collectors shall be operated and maintained in accordance with the manufacturer's specifications. The dust collectors shall be equipped with a gauge or meter, which indicates the pressure drop across the control device. These gauges or meters shall be located such that Department of Natural Resources' employees may easily observe them.
 - C. Replacement filters for the dust collectors shall be kept on hand at all times. The filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).
 - D. Bodine Aluminum, Inc. shall monitor and record the operating pressure drop across the dust collectors at least once every 24 hours. The operating pressure drop shall be maintained within the design conditions specified by the manufacturer's performance warranty.
 - E. Bodine Aluminum, Inc. shall maintain a copy of the dust collector manufacturer's performance warranty on site.

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Permit No.	
Project No.	2014-07-038

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- F. Bodine Aluminum, Inc. shall maintain an operating and maintenance log for the dust collectors which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

- 4. Control Device Requirement – Regenerative Thermal Oxidizer (RTO)
 - A. Bodine Aluminum, Inc. shall control emissions from P11 Resin Coating using an RTO at all times P11 is in operation. The RTO shall be operated and maintained in accordance with the manufacturer's specifications.

 - B. Bodine Aluminum, Inc. shall retain a copy of the RTO manufacturer's specifications onsite.

 - C. The operating temperature of the RTO shall be continuously monitored and recorded during operation. The monitoring equipment shall be located such that Department of Natural Resources' personnel may easily observe them.

 - D. The operating temperature of the RTO shall be maintained on a rolling three-hour average, excluding periods of startup/shutdown, at no more than 50°F below the average temperature of the RTO recorded during the most recent Air Pollution Control Program approved stack test.

 - E. Bodine Aluminum, Inc. shall maintain an operating and maintenance log for the RTO which shall include the following:
 - 1) Incidents of malfunction, with impact on emissions, duration of event, probable cause, and corrective actions; and
 - 2) Maintenance activities, with inspection schedule, repair actions, and replacements, etc.

- 5. Record Keeping and Reporting Requirements
 - A. Bodine Aluminum, Inc. shall maintain all records required by this permit for not less than five years and shall make them available immediately to any Missouri Department of Natural Resources' personnel upon request. These records shall include SDS for all materials used.

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Permit No.	
Project No.	2014-07-038

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- B. Bodine Aluminum, Inc. shall report to the Air Pollution Control Program's Compliance/Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 10 days after the end of the month during which any record required by this permit show an exceedance of a limitation imposed by this permit.
6. Performance Testing
- A. Bodine Aluminum, Inc. shall conduct performance testing on one of the Sand Reclamation Furnace stack ST-7 (Sand Reclamation Furnace #1) or ST-23 (Sand Reclamation Furnace #2) to verify the following emission factors:
 - 1) 0.6 pounds VOC per ton sand reclaimed
 - 2) 0.5128 pounds total PM₁₀/PM_{2.5} per ton sand reclaimed
 - 3) 0.3419 pounds total PM₁₀/PM_{2.5} per ton sand reclaimed
 - 4) 0.6 pounds HAP per ton sand reclaimed
 - 5) 0.02 pounds Acetaldehyde per ton sand reclaimed
 - 6) 0.009 pounds Benzene per ton sand reclaimed
 - 7) 0.0266 pounds Cresol per ton sand reclaimed
 - 8) 0.0087 pounds Ethylbenzene per ton sand reclaimed
 - 9) 0.0184 pounds Formaldehyde per ton sand reclaimed
 - 10) 0.0104 pounds Naphthalene per ton sand reclaimed
 - 11) 0.4635 pounds Phenol per ton sand reclaimed
 - 12) 0.0088 pounds Styrene per ton sand reclaimed
 - 13) 0.0084 pounds Toluene per ton sand reclaimed
 - 14) 0.0262 pounds Xylene per ton sand reclaimed
 - B. Bodine Aluminum, Inc. shall employ the following test methods during the performance test:
 - 1) VOC – Method 25a
 - 2) HAPs – Method 18
 - 3) Total Particulates – Method 201A and Method 202
 - 4) Bodine Aluminum, Inc. may use other test methods upon Air Pollution Control Program approval.
 - C. The performance testing required by Special Conditions 6.A and 6.B shall be performed within 60 days after P05 Sand Reclamation Furnaces discontinue the use of the RTO and shall be conducted in accordance with the Stack Test Procedures outlined in Special Condition 6.D.

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Permit No.	
Project No.	2014-07-038

SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- D. Bodine Aluminum, Inc. shall document the production rate in tons of sand reclaimed per hour of the Sand Reclamation Furnace being tested. The production rate and hourly emission rate shall be used to calculate an emission factor in pounds pollutant per ton of sand reclaimed.
- E. A completed Proposed Test Plan Form (enclosed) shall be submitted to the Air Pollution Control Program 45 days prior to the proposed test date so that the Air Pollution Control Program may arrange a pretest meeting, if necessary, and assure that the test date is acceptable for an observer to be present. The Proposed Test Plan may serve the purpose of notification and must be approved by the Director prior to conducting the required emission testing.
- F. Two copies of a written report of the performance test results shall be submitted to the Director within 30 days of completion of any required testing. The report shall include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required U.S. EPA Method for at least one sample run.
- G. The test report is to fully account for all operational and emission parameters addressed both in the permit conditions as well as in any other applicable state or federal rules or regulations.
- H. Upon Air Pollution Control Program Approval of the stack test emission factors, Bodine Aluminum, Inc. shall replace the P05 Sand Reclamation Furnaces emission factors in Attachments A and B with the stack test emission factors.
- I. If performance testing indicates a $PM_{10}/PM_{2.5}$ emission factor higher than Special Condition 6.A.2, Bodine Aluminum, Inc. shall inform the Air Pollution Control Program's Permit Section within 30 days of receipt of the stack test report.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (6) REVIEW

Project Number: 2014-07-038
Installation ID Number: 113-0029
Permit Number:

Bodine Aluminum, Inc.
100 Cherry Blossom Way
Troy, MO 63379

Complete: August 19, 2014

Parent Company:
Toyota Motor Engineering and Manufacturing of North America, Inc.
25 Atlantic Ave.
Erlanger, KY 41018

Lincoln County, S36, T36, R7W

REVIEW SUMMARY

- Bodine Aluminum, Inc. has applied for authority to remove the requirement to use an RTO to control emissions from P05 Sand Reclamation Furnaces.
- An increase in HAP emissions is expected from the removal of the RTO. Bodine Aluminum, Inc. is required to conduct performance testing to determine the new HAP emission rate from P05 Sand Reclamation Furnaces. Bodine Aluminum, Inc. has accepted HAP emission limits to remain a minor HAP source and to avoid modeling.
- 40 CFR Part 60, Subpart CCCC – *Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Modification is Commenced After June 1, 2001* does not apply to P05 Sand Reclamation Furnaces. The Sand Reclamation Furnaces are not incinerators per the definition of *foundry sand thermal reclamation units* at §60.2265.
- This permit is for the removal of an RTO from P05 Sand Reclamation Furnaces. P05 is still required to use dust collectors per Special Condition 3. P11 is still required to use the RTO per Special Condition 4.
- This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of VOC are above de minimis levels.
- This installation is located in Lincoln County, an attainment area for all criteria pollutants.
- This installation is not on the List of Named Installations found in 10 CSR 10-6.020(3)(B), Table 2. The installation's major source level is 250 tons per year and fugitive emissions are not counted toward major source applicability.

- Ambient air quality modeling was not performed for this review. No model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions. The installation has accepted HAP emission limits to avoid HAP modeling.
- Emissions testing is required for this project. Bodine Aluminum, Inc. is required by Special Condition 6 to test one of the Sand Reclamation Furnaces. As the two furnaces are identical in design and operation, the tested emission rates for one furnaces may be used for both.
- Bodine Aluminum, Inc. shall include the modification of control requirements for P05 Sand Reclamation Furnaces in their Part 70 Operating Permit renewal application required to be submitted by May 18, 2015.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Bodine Aluminum, Inc. is an aluminum die casting installation located in Lincoln County. They are a wholly owned division of Toyota Motor Engineering and Manufacturing North America, Inc. They have operated an aluminum casting facility in Troy, Missouri since 1992. Bodine Aluminum, Inc. produces engine components to support Toyota's North American vehicle manufacturing operations. In order to reach its present production capacity, they have had two plant expansions since the original construction in 1992. Processes at the installation include, aluminum casting, heat treating, core molding, and sand reclamation.

Bodine Aluminum, Inc. currently operates under Part 70 Operating Permit OP2012-122 which expires November 18, 2015. A Part 70 operating permit renewal application is required by no later than May 18, 2015. Bodine Aluminum, Inc. shall include the modification of control requirements for P05 Sand Reclamation Furnaces in their Part 70 operating permit renewal application.

The following New Source Review permits have been issued to Bodine Aluminum, Inc. by the Air Pollution Control Program:

Table 3: Permit History

Permit Number	Description
0591-003	Original permit for the installation of the plant
0593-008	Installation of a natural gas oven to dry recycled aluminum prior to melting
1193-006	Addition of six machining centers and a washing station to produce engine brackets
0194-014	Addition of a shot blaster to rework surface areas
0995-005	Increase production by 1,825 tons of poured aluminum
0196-019	Addition of new building and increased production
0996-011	Addition of natural gas fired die heating oven, 2 MMBtu/hr
1299-009 & 1299-009A	Addition of casting machines

112004-005	Replace casting and machine equipment
032006-004	New casting line
112008-006	Modify product mix
032012-006 & 032012-006A	Increase coolant to 5,000 gal/yr, reduce sand production to 58,500 tpy, install DC-10 furnace, startup four idle high pressure die casting machines
062014-002	Install casting machines, core machines, and a natural gas-fired heat treat furnace

PROJECT DESCRIPTION

While attempting to conduct the performance testing required by Construction Permit 032012-006A, the Missouri Air Pollution Control Program discovered a bypass in the ductwork from P05 Sand Reclamation Furnaces to the RTO. The bypass was not allowed under Construction Permit 032012-006A. Bodine Aluminum, Inc. has submitted this request to remove the RTO from P05 Sand Reclamation Furnace to achieve compliance with their applicable requirements. The removal of the RTO is considered a modification of P05 Sand Reclamation Furnaces; therefore, project emissions were evaluated as the increase in emissions from baseline actual emissions (BAE).

Table 4: Project Emissions Calculations

Emission Unit	Pollutant		
	PM ₁₀	PM _{2.5}	VOC
P05 PTE	7.91	7.91	68.02
P05 BAE (2005 – 2006)	3.13	3.13	2.43
Project PTE	4.78	4.78	65.59

EMISSIONS/CONTROLS EVALUATION

The particulate emission factors evaluated by this project are from Toyota design data conducted by a similar Japanese installation many years ago. As it is unclear if the test methods and procedures used in the Japanese testing are consistent with US EPA test methods and procedures, the installation is required to verify their emission rates by Special Condition 6. P05 Sand Reclamation Furnaces are required to operate Dust Collectors by Special Condition 3. The Dust Collectors were assumed to achieve a control efficiency of 95 percent in emissions calculations. As the stack testing required by Special Condition 6 will occur after the Dust Collectors, no additional control efficiency should be applied to the stack tested emission rates. If the stack tested particulate emission rates are higher than estimated, de minimis limits or modeling may be required.

The HAP emission factors evaluated by this project are from Method 18 stack testing conducted by Bodine Aluminum, Inc. in December of 2013 on the RTO. At the time of the testing both P05 Sand Reclamation Furnaces and P11 Resin Coating were required to use the RTO. As there was no way to separate P11 emissions from P05 emissions, it was conservatively assumed that all of the emissions were from P05. As this project is for the removal of the RTO, the outlet concentrations were scaled up based upon an average VOC destruction efficiency of 93.663 percent during the test. This destruction efficiency was deemed appropriate as all of the HAPs being emitted are also VOC. As all of the HAPs are VOC, the combined HAP emission factor and VOC emission factor were determined to be the sum of all the individual HAP emission factors. The installation is required to conduct stack testing to verify the estimated emission factors

by Special Condition 6. As there are no modeling requirements for VOC and the installation has accepted HAP limits to avoid HAP modeling, no modification of this permit is necessary if stack tested emission rates are higher than estimated; however, the installation is required to use the emission factors from the verification stack test in Attachments A and B to demonstrate compliance with their VOC and HAP emission limits. The installation may remove their HAP SMAL limits (see Table 2) at any time provided they submit HAP modeling demonstrating compliance with Missouri's RALs.

Emissions from the combustion of natural gas in P05 Sand Reclamation Furnaces were not calculated separately as combustion and process emissions exit through the same stack. The emission factors for verification in Special Condition 6.A account for the combination of both combustion and process emissions. Also, no modifications have been made to the natural gas burners associated with P05 Sand Reclamation Furnaces due to the removal of RTO control.

The following table provides an emissions summary for this project. Existing potential emissions were taken from Construction Permit 062014-002. Existing actual emissions were taken from the installation's 2013 EIQ. Potential emissions of the application represent the potential of the modified Sand Reclamation Furnaces at 58,500 tons per year of sand reclamation (Special Condition 3.A of Construction Permit 062014-002).

Table 5: Emissions Summary (tons per year)

Pollutant	Regulatory <i>De Minimis</i> Levels	Existing Potential Emissions	Existing Actual Emissions (2013 EIQ)	Potential Emissions of the Application	New Installation Conditioned Potential
PM	25.0	N/D	N/A	4.78	N/A
PM ₁₀	15.0	<250.0	27.05	4.78	N/A
PM _{2.5}	10.0	N/D	26.91	4.78	N/A
SO _x	40.0	N/D	0.06	N/A	N/A
NO _x	40.0	<250.0	42.76	N/A	N/A
VOC	40.0	<250.0	100.41	65.59	<250.0
CO	100.0	N/D	5.07	N/A	N/A
GHG (CO ₂ e)	100,000	N/D	N/A	N/A	N/A
HAPs	25.0	<25.0	N/D	68.02	<25.0
Phenol	10.0	<10.0	N/D	<0.1	<10.0
Cresol	10.0	<10.0	N/D	<1.0	<10.0
Xylene	10.0	<10.0	N/D	12.09	<10.0
Acetaldehyde	10.0	<10.0	N/D	<9.0	<10.0
Naphthalene	10.0	<10.0	N/D	4.80	<10.0
Styrene	10.0	<10.0	N/D	<1.0	<10.0
Ethylbenzene	10.0	<10.0	N/D	4.02	<10.0
Toluene	10.0	<10.0	N/D	3.88	<10.0
Benzene	10.0	<10.0	N/D	<2.0	<10.0
Formaldehyde	10.0	<10.0	N/D	<2.0	<10.0

N/A = Not Applicable; N/D = Not Determined

Bodine Aluminum, Inc. has requested to retain their existing 250.0 tpy installation-wide VOC limit to remain synthetic minor for NSR permitting (see Special Condition 2.A).

Bodine Aluminum, Inc. has requested to retain their existing installation-wide 25.0 tpy HAP and 10.0 tpy individual HAP limits to remain a synthetic minor HAP source (see Special Conditions 2.B and 2.C).

This project was given SMAL limits on individual HAPs to avoid HAP modeling (see Special Condition 2.D). SMAL limits were deemed unnecessary for Xylene, Naphthalene, Ethylbenzene, and Toluene as the SMAL and the major source threshold (10 tpy) are the same and the installation has already accepted installation-wide limits to below the major source threshold. The installation may remove their HAP SMAL limits (see Table 2) at any time provided they submit HAP modeling demonstrating compliance with Missouri's RALs.

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*. Potential emissions of VOC are above de minimis levels.

APPLICABLE REQUIREMENTS

Bodine Aluminum, Inc. shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- 10 CSR 10-6.065 *Operating Permits*
- 10 CSR 10-6.110 *Submission of Emission Data, Emission Fees and Process Information*
- 10 CSR 10-6.165 *Restriction of Emission of Odors*
- 10 CSR 10-6.170 *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin*
- 10 CSR 10-6.220 *Restriction of Emission of Visible Air Contaminants*

SPECIFIC REQUIREMENTS

- 10 CSR 10-6.400 *Restriction of Emission of Particulate Matter From Industrial Processes* is not applicable to P05 Sand Reclamation Furnaces as the furnaces are required to use Dust Collectors by Special Condition 3. The Dust Collectors achieve greater than 90 percent particulate control; therefore, P05 is exempt from this regulation per 10 CSR 10-6.400(1)(B)15.
- P05 Sand Reclamation Furnaces are direct heating sources and; therefore, are not subject to 10 CSR 10-6.405 *Restriction of Particulate Matter Emissions From Fuel Burning Equipment Used for Indirect Heating*.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (6) of Missouri State Rule 10 CSR 10-6.060 *Construction Permits Required*, I recommend this permit be granted with special conditions.

Alana L. Rugen
New Source Review Unit

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated July 3, 2014, received July 18, 2014, designating Toyota Motor Engineering and Manufacturing of North America, Inc. as the owner and operator of the installation.

Attachment A – VOC Compliance Worksheet

Bodine Aluminum, Inc.
 Lincoln County, S36, T36, R7W
 Project Number: 2014-07-038
 Installation ID Number: 113-0029
 Permit Number: _____

This sheet covers the period from _____ to _____.
 (month, year) (month, year)

Emission Source	Description	Monthly Usage	VOC Emission Factor	Monthly VOC Emissions ¹ (tons)
C01	Plantwide Natural Gas Combustion	MMscf	5.5 lb/MMscf	
M1	Plantwide Machining Stations	gal	1.8 lb/gal	
O2	Cylinder Head Casting	tons metal	3.75 lb/ton ²	
O5	Cylinder Head Core Molding	tons sand	1.326 lb/ton ²	
OA7	Cylinder Head Heat Treat Furnaces	tons metal	0.88 lb/ton ³	
P05	Sand Reclamation Furnace	tons sand	2.32 lb/ton ⁵	
P09	Sand Dryer	tons sand	0.002 lb/ton ⁵	
P11	Resin Coating	tons sand	0.109 lb/ton ⁵	
P30	High Pressure Die Casting	tons metal	1.15 lb/ton ⁵	
P35	Emergency Generator	1,000 gal	11.5 lb/1,000 gal	
Installation Monthly VOC Emissions⁶ (tons):				
Installation 12-Month Rolling Total VOC Emissions⁷ (tons):				

¹Monthly VOC Emissions (tons) = Monthly Usage x VOC Emission Factor x 0.0005 (ton/lb).

²The VOC Emission Factors for O2 and O5 already accounts for the scrubber, no additional control efficiency shall be used. After the stack testing required by Construction Permit 062014-002 is complete, the VOC Emission Factors for O2 and O5 shall be the approved stack tested emission factor. As the stack testing will occur at the scrubber outlet, no additional control efficiency shall be used.

³After the stack testing required by Construction Permit 062014-002 is complete, the VOC Emission Factor for OA7 shall be the approved stack tested emission factor.

⁴The VOC Emission Factor for P05 is based on in-house RTO inlet stack testing performed by the installation in September of 2012. After the stack testing required by Special Condition 6 is complete, the VOC Emission Factor for P05 shall be the approved stack tested emission factor.

⁵The VOC Emission Factors for P09, P11, and P30 are from Project 2011-03-044 and may be replaced by approved stack tested emission factors. As the VOC Emission Factor for P11 already accounts for the RTO, no additional control efficiency shall be used.

⁶Installation Monthly VOC Emissions (tons) = the sum of each emission source's Monthly VOC Emissions (tons).

⁷Installation 12-Month Rolling Total VOC Emissions (tons) = the sum of the most recent 12 months' Installation Monthly VOC Emissions (tons). **Installation 12-Month Rolling Total VOC Emissions less than 250.0 tons indicates compliance with Special Condition 2.A.**

Attachment B – HAP Compliance Worksheet

Project 2014-07-038

Emission Source	Emission Factor Units	Emission Factors											
		Acetaldehyde (75-07-0)	Benzene (71-43-2)	Cresol (1319-77-3)	Ethylbenzene (100-41-4)	Formaldehyde (50-00-0)	Hexane (110-54-3)	Naphthalene (91-20-3)	Phenol (108-95-2)	Styrene (100-42-5)	Toluene (108-88-3)	Xylene (1330-20-7)	HAP
C01	lb/MMscf	/	0.0021	/	/	0.075	1.8	/	/	/	0.0034	/	1.8885
O2 ²	lb/ton metal	0.0212	0.0264	0.0076	/	0.0191	/	/	0.0014	/	/	/	0.0757
O5 ²	lb/ton sand	0.0212	0.0264	0.0076	/	0.0191	/	/	0.0014	/	/	/	0.0757
P05 ³	lb/ton sand	0.3156	0.0915	0.4198	0.1373	0.0489	/	0.1641	0.4635	0.1389	0.1326	0.4134	2.3256
P11 ⁴	lb/ton sand	0.02	0.0058	0.0266	0.0087	0.0031	/	0.0104	0.0857	0.0088	0.0084	0.00262	0.1801
Emission Source	Monthly Usage	Monthly Emissions ¹ (tons)											
C01	MMscf												
O2	tons metal												
O5	tons sand												
P05	tons sand												
P11	tons sand												
Installation Monthly Emissions⁵ (tons):													
Installation 12-Month Rolling Total Emissions⁶ (tons):													
P05 12-Month Rolling Total Emissions⁷ (tons):													

¹Monthly Emissions (tons) = Monthly Usage x Emission Factor x 0.0005 (ton/lb).

²The Emission Factors for O2 and O5 already account for the scrubber, no additional control efficiency shall be used. After the stack testing required by Construction Permit 062014-002 is complete, the Emission Factors for O2 and O5 shall be the approved stack tested emission factors. As the stack testing will occur at the scrubber outlet, no additional control efficiency shall be used.

³The Emission Factors for P05 are based on in-house RTO outlet stack testing performed by the installation in December of 2013 back-calculating to an uncontrolled value. After the stack testing required by Special Condition 6 is complete, the Emission Factors for P05 shall be the approved stack tested emission factor.

⁴The Emission Factors for P11 are from Project 2011-03-044 and may be replaced by approved stack tested emission factors. As the Emission Factors for P11 already account for the RTO, no additional control efficiency shall be used.

⁵Installation Monthly Emissions (tons) = the sum of each emission source's Monthly Emissions (tons).

⁶Installation 12-Month Rolling Total Emissions (tons) = the sum of the most recent 12 months' Installation Monthly Emissions (tons). **Installation 12-Month Rolling Total Emissions less than 10.0 tons for each individual HAP indicates compliance with Special Condition 2.C. Installation 12-Month Rolling Total HAP Emissions less than 25.0 tons indicates compliance with Special Condition 2.B.**

⁷P05 12-Month Rolling Total Emissions (tons) = the sum of the most recent 12 months' P05 Monthly Emissions (tons). **P05 12-Month Rolling Total Emissions less than 9.0 tons Acetaldehyde, 2.0 tons Benzene, 1.0 tons Cresols, 2.0 tons Formaldehyde, 0.1 tons Phenol, and 1.0 tons Styrene indicates compliance with Special Condition 2.D.**

APPENDIX A

Abbreviations and Acronyms

%percent	m/s meters per second
°Fdegrees Fahrenheit	Mgal 1,000 gallons
acfmactual cubic feet per minute	MW megawatt
BACT Best Available Control Technology	MHDR maximum hourly design rate
BMPs Best Management Practices	MMBtu Million British thermal units
Btu British thermal unit	MMCF million cubic feet
CAM Compliance Assurance Monitoring	NAAQS ... National Ambient Air Quality Standards
CAS Chemical Abstracts Service	NESHAPs National Emissions Standards for Hazardous Air Pollutants
CEMS Continuous Emission Monitor System	NO_x nitrogen oxides
CFR Code of Federal Regulations	NSPS New Source Performance Standards
CO carbon monoxide	NSR New Source Review
CO₂ carbon dioxide	PM particulate matter
CO_{2e} carbon dioxide equivalent	PM_{2.5} particulate matter less than 2.5 microns in aerodynamic diameter
COMS Continuous Opacity Monitoring System	PM₁₀ particulate matter less than 10 microns in aerodynamic diameter
CSR Code of State Regulations	ppm parts per million
dscf dry standard cubic feet	PSD Prevention of Significant Deterioration
EQ Emission Inventory Questionnaire	PTE potential to emit
EP Emission Point	RACT Reasonable Available Control Technology
EPA Environmental Protection Agency	RAL Risk Assessment Level
EU Emission Unit	SCC Source Classification Code
fps feet per second	scfm standard cubic feet per minute
ft feet	SDS Safety Data Sheet
GACT Generally Available Control Technology	SIC Standard Industrial Classification
GHG Greenhouse Gas	SIP State Implementation Plan
gpm gallons per minute	SMAL Screening Model Action Levels
gr grains	SO_x sulfur oxides
GWP Global Warming Potential	SO₂ sulfur dioxide
HAP Hazardous Air Pollutant	tph tons per hour
hr hour	tpy tons per year
hp horsepower	VMT vehicle miles traveled
lb pound	VOC Volatile Organic Compound
lbs/hr pounds per hour	
MACT Maximum Achievable Control Technology	
µg/m³micrograms per cubic meter	

Mr. Glen Kelley
General Manager of Manufacturing
Bodine Aluminum, Inc.
100 Cherry Blossom Way
Troy, MO 63379

RE: New Source Review Permit - Project Number: 2014-07-038

Dear Mr. Kelley:

Enclosed with this letter is your permit to construct. Please study it carefully and refer to Appendix A for a list of common abbreviations and acronyms used in the permit. Also, note the special conditions on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files. Operation in accordance with these conditions, your new source review permit application, and submittal of a Part 70 operating permit renewal application are necessary for continued compliance. The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please do not hesitate to contact Alana Rugen, at the Department of Natural Resources' Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or at (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Susan Heckenkamp
New Source Review Unit Chief

SH:arl

Enclosures

c: St. Louis Regional Office
PAMS File: 2014-07-038

Permit Number: