

**CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT**

**Amcast Automotive - Richmond
1561 Northwest 11th Street
Richmond, Indiana 47374**

is hereby authorized to construct

- a) One (1) 4.8 MMBtu/hr natural gas fired jet melter (melting furnace), exhausting to stack S28;
- b) Two (2) 6.0 MMBtu/hr natural gas fired air make up units, identified as F29 and F30;

and to operate the existing equipment listed in the Page 2 of this permit.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-177-7118-00050	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

Existing equipment, previously permitted under CP 177-2454, issued June 17, 1992:

- (a) Two (2) 6.27 MMBtu/hr natural gas fired jet melters, exhausting to roof vents S1 and S2, respectively.
- (b) Two (2) 4.8 MMBtu/hr natural gas fired jet melters, exhausting to stacks S3 and S4, respectively.
- (c) One (1) 1.6 MMBtu/hr natural gas fired aging furnace, exhausting to stack S5.
- (d) One (1) 0.6 MMBtu/hr natural gas fired die furnace, exhausting to vent S9.
- (e) One (1) 0.4 MMBtu/hr natural gas fired die furnace, exhausting to vent S10.
- (f) Five (5) 3.0 MMBtu/hr natural gas fired air make-up units, identified as F15 through F19.
- (g) Two (2) 0.3 MMBtu/hr natural gas fired ladle heaters, identified as F25 and F26.
- (h) Three paint booths, identified as F54, F55, and F56, each applying only water-based coatings, exhausting into the building through dry filters.
- (i) Three (3) natural gas fired space heaters rated at 0.2 MMBtu/hr, 0.25 MMBtu/hr, and 0.16 MMBtu/hr, identified as S22, S23, and S24, respectively.
- (j) Two (2) natural gas fired dock heaters rated at 0.01 MMBtu/hr each.
- (k) Three (3) shot blast booths, with the exhaust circulated through a baghouse dust collector and back into the booths.
- (l) Three (3) caustic tanks.

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).
2. That this permit to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.
4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:
 - (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
 - (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
 - (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
 - (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-1-7.1(Fees).
 - (e) Pursuant to 326 IAC 2-1-4, the Permittee shall apply for an operation permit renewal at least ninety (90) days prior to the expiration date established in the validation letter. The operation permit issued shall contain as a minimum the conditions in the Operation Conditions section of this permit.
7. That when the facility is constructed and placed into operation the following operation conditions

shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
2. That the permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:
 - (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
 - (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.
 - (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):
 - (a) In the event that ownership of this aluminum die-casting operation is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.
 - (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
 - (c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:
 - (a) Violation of any conditions of this permit.
 - (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
 - (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections

of this permit shall not require revocation of this permit.

- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

Malfunction Condition

7. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):
- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
 - (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
 - (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
 - (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Opacity Limitations

8. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:
- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
 - (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.
9. That pursuant to 326 IAC 6-3 (Process Operations), the baghouse shall be in operation at all times when abrasive blasting process is in operation, and shall not exceed the allowable particulate matter (PM) emission rate of 1.78 pounds per hour.

Baghouse Operating Condition

10. That the baghouse shall be operated at all times when an abrasive blasting unit is in operation.

- (a) The Permittee shall take readings of the total static pressure drop across the baghouses, at least once per week. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouses shall be maintained within the range of 1 and 3 inches of water. The Preventive Maintenance Plan for these baghouses shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.
- (b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.
- (c) The gauge employed to take the pressure drop across the baghouses or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.
- (d) An inspection shall be performed each calendar quarter of the all the baghouses. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.
- (e) In the event that a bag's failure has been observed:
 - (i) The affected compartments will be shut down immediately until the failed units have been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Fugitive Dust Emissions

11. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

Open Burning

12. That the permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

MALFUNCTION REPORT

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT**

FAX NUMBER - 317 233-5967

**This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6
and to qualify for the exemption under 326 IAC 1-6-4.**

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ? _____, 100 LBS/HR VOC ? _____, 100 LBS/HR SULFUR DIOXIDE ? _____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ? _____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY: _____ PHONE NO. () _____

LOCATION: (CITY AND COUNTY) _____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____

DATE/TIME MALFUNCTION STARTED: ____/____/19____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE ____/____/19____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS: _____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT: _____
INTERIM CONTROL MEASURES: (IF APPLICABLE) _____

MALFUNCTION REPORTED BY:

TITLE: _____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____ DATE: _____ TIME: _____

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 “Malfunction” definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name: Amcast Automotive - Richmond
Source Location: 1561 Northwest 11th Street, Richmond, Indiana 47374
County: Wayne
Construction Permit No.: CP-177-7118-00050
SIC Code: 3363
Permit Reviewer: V. Cordell

The Office of Air Management (OAM) has reviewed an application from Amcast Automotive - Richmond relating to the construction and operation of the following equipment for aluminum die-casting:

- 1) One (1) 4.8 MMBtu/hr natural gas fired jet melter (melting furnace), exhausting to stack S28;
- 2) Two (2) 6.0 MMBtu/hr natural gas fired air make up units, identified as F29 and F30.

Information was also received relating to the operation of existing aluminum die-casting equipment, previously permitted under the company name Amcast Industrial Corporation, Meta Mold Division. To clarify discrepancies between the original permit and the actual equipment at the source, this permit will supersede CP 177-2454 issued June 17, 1992. The existing equipment to be operated includes the following:

- (a) Two (2) 6.27 MMBtu/hr natural gas fired jet melters, exhausting to roof vents S1 and S2, respectively.
- (b) Two (2) 4.8 MMBtu/hr natural gas fired jet melters, exhausting to stacks S3 and S4, respectively.
- (c) One (1) 1.6 MMBtu/hr natural gas fired aging furnace, exhausting to stack S5.
- (d) One (1) 0.6 MMBtu/hr natural gas fired die furnace, exhausting to vent S9.
- (e) One (1) 0.4 MMBtu/hr natural gas fired die furnace, exhausting to vent S10.
- (f) Five (5) 3.0 MMBtu/hr natural gas fired air make-up units, identified as F15 through F19.
- (g) Two (2) 0.3 MMBtu/hr natural gas fired ladle heaters, identified as F25 and F26.
- (h) Three paint booths, identified as F54, F55, and F56, each applying only water-based coatings, exhausting into the building through dry filters.
- (i) Three (3) natural gas fired space heaters rated at 0.2 MMBtu/hr, 0.25 MMBtu/hr, and 0.16 MMBtu/hr, identified as S22, S23, and S24, respectively.
- (j) Two (2) natural gas fired dock heaters rated at 0.01 MMBtu/hr each.
- (k) Three (3) shot blast booths, with the exhaust circulated through a baghouse dust collector

and back into the booths.

- (l) Three (3) caustic tanks.

The overall maximum potential throughput for the entire source is restricted by the pouring line to 9,519 pounds of aluminum per hour.

Air Pollution Control Justification as Integral Part of the Process

The company has submitted the following justification such that the baghouses be considered as an integral part of the shot blast units:

The plastic blasting media is collected for reuse for economic reasons.

The OAM has evaluated the justification and agreed that the baghouses will be considered as an integral part of the shot blast units. Therefore, the permitting level will be determined using the potential emissions after the baghouses. Operating conditions will be specified in the proposed permit that these baghouses shall operate at all times when the shot blast process is in operation.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
S1	jet melter S1	42	2	3,500	600
S2	jet melter S2	42	2	3,500	600
S3	jet melter S3	44	4	35,000	300
S4	jet melter S4	44	4	35,000	300
S5	aging furnace	42	0.42	1,000	400
S6	caustic tanks	40	2	3,000	85
S7	caustic tank	42	0.83	3,000	85
S9	n.g. die furnace	38	0.33	N/A - vent	250
S10	n.g. die furnace	40	0.42	N/A - vent	250
S28	jet melter S28	44	4	35,000	300

Enforcement Issue

IDEM is aware that jet melter S28 has been constructed and operated prior to receipt of the proper permit; and that Amcast has apparently been operating the previously existing equipment without a validation letter. IDEM is reviewing these matters and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on November 8, 1996, with additional information received on March 14 and June 17, 1997.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (7 pages).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	58.7	32.4
Particulate Matter (PM10)	----	32.4
Sulfur Dioxide (SO ₂)	----	0.2
Volatile Organic Compounds (VOC)	----	1.3
Carbon Monoxide (CO)	----	5.4
Nitrogen Oxides (NO _x)	----	25.3
Single Hazardous Air Pollutant (HAP)	----	0.1
Combination of HAPs	----	0.1

- (a) Allowable emissions are determined for the abrasive blasting and casting processes from the applicability of rule 326 IAC 6-3. See attached spreadsheets for detailed calculations.
- (b) For the casting process, the potential emissions are less than the allowable emissions, therefore, the potential emissions are used for the permitting determination.
- (c) The control on the abrasive blasting booth has been determined to be integral, therefore, potential emissions after control are used for the abrasive blasting process. These emissions are less than the allowable emissions, therefore, the allowable emissions are used for the permitting determination for the abrasive blasting.
- (d) Allowable emissions (as defined in the Indiana Rule) of NO_x and PM are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Wayne County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Wayne County has also been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Note: Wayne County was classified as non-attainment for SO₂ when this source was originally permitted in 1992, but was reclassified as attainment/maintenance in January 1997.

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	99.6
PM10	99.6
SO ₂	0.2
VOC	1.4
CO	5.1
NO _x	25.6

- (a) This existing source is **not** a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not in one of the 28 listed source categories.
- (b) These emissions are from the 1992 permit, CP 177-2454, and the 1992 permit application.

Note: The potential and allowable emissions on page 3 of the TSD are lower than the existing source emissions. This is primarily because the 1992 calculations included PM emissions from dry trimming of the “risers”, which are actually trimmed using a wet cutting process, and because the 1992 review did not take into consideration the restriction to the overall process rate by the pouring line.

Proposed Modification

PTE from the proposed modification (addition of jet melter #5 and two air make up units)(based on 8,760 hours of operation per year at rated capacity, with no emission control or production limit):

Pollutant	PM (ton/yr)	PM10 (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Proposed Modification	8.4	8.4	0.0	0.4	1.5	7.4
PSD Threshold Level	250	250	250	250	250	250

This modification to an existing minor stationary source is not major because the emission increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons/year.

This status is based on all the air approvals issued to the source.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to this facility.

State Rule Applicability

326 IAC 6-3 (Process Operations)

Pursuant to 326 IAC 6-3 (Process Operations), the baghouse shall be in operation at all times when abrasive blasting process is in operation, and shall not exceed the allowable particulate matter (PM) emission rate of 1.78 pounds per hour.

- (a) The Permittee shall take readings of the total static pressure drop across the baghouses, at least once per week. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouses shall be maintained within the range of 1 and 3 inches of water. The Preventive Maintenance Plan for these baghouses shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of this range for any one reading.
- (b) The instrument used for determining the pressure shall be subject to approval by IDEM, OAM, and shall be calibrated at least once every six (6) months.
- (c) The gauge employed to take the pressure drop across the baghouses or any part of the facility shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within $\pm 2\%$ of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.
- (d) An inspection shall be performed each calendar quarter of the all the baghouses. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.
- (e) In the event that a bag's failure has been observed:
 - (i) The affected compartments will be shut down immediately until the failed units have been replaced.
 - (ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

326 IAC 6-4 (Fugitive Dust Emissions)

Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the permittee shall be in violation of 326 IAC 6-

4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

326 IAC 5-1-2 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

- (a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.
- (b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

Note: Visible emission notations of exhaust to the atmosphere from the baghouse are NOT required because the exhaust is directed back to the blasting booth, rather than outdoors.

326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6 (Open Burning)

Pursuant to 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6 (Open Burning), the permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

326 IAC 1-6-2 (Records; Notice of Malfunction)

Pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

326 IAC 1-6-3 (Preventive Maintenance Plans)

Pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

- (a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.
- (b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

- (c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 189 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) This source, including all existing facilities and the modification, will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.
- (b) See attached spreadsheets for detailed air toxic calculations.

Conclusion

The construction of one (1) jet melter and two (2) air make up units will be subject to the conditions of the attached proposed **Construction Permit No. CP-177-7118-00050**.

Appendix A: Emission Calculations
Allowable Particulate Matter Emissions
Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, IN 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: V. Cordell
Date: 7/15/97

Pursuant to 326 IAC 6-3 (Process Operations), allowable emissions of particulate matter from the shot blasting, melting, and trimming operations are limited by:

$$E = 4.10 P^{0.67}$$

where: E = rate of emissions in lbs/hr and

P = process weight rate in tons/hr, up to 60,000 lbs/hr.

Shot Blasting

$$E = 4.10 (573.5 \text{ lbs/hr} / 2,000 \text{ lbs/ton})^{0.67} = 1.78 \text{ lbs/hr.}$$

$$\text{Allowable PM} = 1.78 \text{ lbs/hr} \times 8760 \text{ hrs/yr} \times 1 \text{ ton}/2000 \text{ lb} = \mathbf{7.7 \text{ tons/yr.}}$$

Melting

For each jet melter:

$$E = 4.10 (2 \text{ tons/hr})^{0.67} = \mathbf{6.52 \text{ lbs/hr, per melter.}}$$

Total allowable PM for all 5 jet melters:

$$E = 4.10 (9,519 \text{ lbs/hr} / 2,000 \text{ lbs/ton})^{0.67} = 11.66 \text{ lbs/hr.}$$

$$\text{Allowable PM} = 11.66 \text{ lbs/hr} \times 8760 \text{ hrs/yr} \times 1 \text{ ton}/2000 \text{ lb} = \mathbf{51.0 \text{ tons/yr.}}$$

Appendix A: Emission Calculations
Potential Particulate Matter and Hazardous Air Pollutant Emissions

Company Name: Amcast Automotive - Richmond
 Address City IN Zip: Richmond, IN 47374
 CP: 177-7118
 Plt ID: 177-00050
 Reviewer: V. Cordell
 Date: 7/15/97

Melting

The potential PM emissions from the aluminum melting were calculated using the emission factor provided in the melter manufacturer's performance guarantee, included with the 1992 permit application. This emission factor is 0.86 pounds of PM per ton of aluminum melted.

The overall maximum potential throughput for the entire source is restricted by the pouring line to 9,519 lbs/hr of aluminum. The maximum throughput per melter is 4,000 lbs/hr of aluminum.

PM EMISSIONS

Maximum potential PM emission from each melter, including melter #5 alone (current modification):

hourly: $2 \text{ tons/hr} \times 0.86 \text{ lbs PM/ton} = 1.72 \text{ lbs PM/hr}$.

yearly: $1.72 \text{ lbs PM/hr} \times 8760 \text{ hrs/yr} \times 1 \text{ ton}/2000 \text{ lbs} = 7.5 \text{ tons/yr}$

Maximum potential PM emissions from the five jet melters, as restricted by pouring limitation:

hourly: $9,519 \text{ lbs/hr} / 2000 \text{ lbs/ton} \times 0.86 \text{ lbs PM/ton} = 4.09 \text{ lbs PM/hr}$

yearly: $4.1 \text{ lbs PM/hr} \times 8760 \text{ hrs/yr} \times 1 \text{ ton}/2000 \text{ lbs} = \mathbf{17.9 \text{ tons/yr}}$.

HAP EMISSIONS

The 1992 permit application stated that the casting emissions included no more than 0.4% manganese and 0.35% nickel, maximum, and possibly less depending on the composition of the ingots. This results in 0.07 tons/yr of manganese, and 0.06 tons/yr of nickel potentially emitted.

Trimming

The 1992 permit application reported that approximately 2.3 pounds of "risers" are trimmed from every 100 pounds of castings produced, and an estimated 5% of the trimmings are small enough to be considered particulate matter. However, the company representative reports that only computer controlled (CNC) wet cutting is used; therefore, the PM emissions are negligible.

**Appendix A: Emission Calculations
Abrasive Blasting**

Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, Indiana 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: V. Cordell
Date: May 29, 1997

Table 1 - Emission Factors for Abrasives

Abrasive	Emission Factor	
	lb PM / lb abrasive	lb PM10 / lb PM
Sand	0.041	0.70
Grit	0.010	0.70
Steel Shot	0.004	0.86
Other	0.010	

Table 2 - Density of Abrasives (lb/ft3)

Abrasive	Density (lb/ft3)
Al oxides	160
Sand	99
Steel	487

Table 3 - Sand Flow Rate (FR1) Through Nozzle (lb/hr)

Flow rate of Sand Through a Blasting Nozzle as a Function of Nozzle pressure and Internal Diameter

Internal diameter, in	Nozzle Pressure (psig)							
	30	40	50	60	70	80	90	100
1/8	28	35	42	49	55	63	70	77
3/16	65	80	94	107	122	135	149	165
1/4	109	138	168	195	221	255	280	309
5/16	205	247	292	354	377	420	462	507
3/8	285	355	417	477	540	600	657	720
7/16	385	472	560	645	755	820	905	940
1/2	503	615	725	835	945	1050	1160	1265
5/8	820	990	1170	1336	1510	1680	1850	2030
3/4	1140	1420	1670	1915	2160	2400	2630	2880
1	2030	2460	2900	3340	3780	4200	4640	5060

Calculations

Adjusting Flow Rates for Different Abrasives and Nozzle Diameters

Flow Rate (FR) = Abrasive flow rate (lb/hr) with internal nozzle diameter (ID)
 FR1 = Sand flow rate (lb/hr) with internal nozzle diameter (ID1) From Table 3 =
 D = Density of abrasive (lb/ft3) (Polyplus plastic blast media, from application Form BB-1) =
 D1 = Density of sand (lb/ft3) =
 ID = Actual nozzle internal diameter (in) * =
 ID1 = Nozzle internal diameter (in) from Table 3 =

5060
11.22
99
1
1

Flow Rate (FR) (lb/hr) = 573.467 per nozzle

Uncontrolled Emissions (E, lb/hr)

EF = emission factor (lb PM/ lb abrasive) From Table 1 =
 FR = Flow Rate (lb/hr) =
 w = fraction of time of wet blasting =
 N = number of nozzles =

0.010
573.467
0 %
1

**Uncontrolled Emissions = 5.73 lb/hr
25.12 ton/yr**

Control efficiency: 99.00%
Type of Control: Baghouse

**Emissions after Control = 0.06 lb/hr
0.25 ton/yr**

Emission Factors from Stappa Alapco, Section 3 "Abrasive Blasting"

Ton/yr = lb/hr X 8760 hr/yr X ton/2000 lbs

Flow Rate (FR) (lb/hr) = FR1 x (ID/ID1)2 x (D/D1)

E = EF x FR x (1-w/200) x N

w should be entered in as a whole number (if w is 50%, enter 50)

* Nozzle diameter not specified in application. Reviewer used 1" diameter for maximum potential emissions.

**Appendix A: Emission Calculations
 Natural Gas Combustion Only
 MM Btu/hr 0.3 - < 10
 Existing Facilities**

Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, IN 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: VKC
Date: 07/28/97

Heat Input Capacity*
 MMBtu/hr

Potential Throughput
 MMCF/yr

40.34

353.4

Pollutant

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	11.9	11.9	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	2.1	2.1	0.1	17.7	0.9	3.7

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 15, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, and 1.4-2, as amended 10/96; VOC from FIRE Version 5.0; SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

* Combined capacity of four jet melters, 1 aging furnace, 2 die furnaces, 5 air make-up units, and 2 ladle heaters.
 (Additional die furnace and dosers are electric, not natural gas fired.)

**Appendix A: Emission Calculations
 Natural Gas Combustion Only
 MM Btu/hr 0.3 - < 10
 New Facilities**

Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, IN 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: VKC
Date: 07/28/97

Heat Input Capacity*
 MMBtu/hr

Potential Throughput
 MMCF/yr

16.80

147.2

Pollutant

	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	11.9	11.9	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.9	0.9	0.0	7.4	0.4	1.5

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 15, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, and 1.4-2, as amended 10/96; VOC from FIRE Version 5.0; SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

* Combined capacity of two new air make-up units, 6 MMBtu/hr each, and one new jet melter, 4.8 MMBtu/hr.

**Appendix A: Emission Calculations
Natural Gas Combustion Only
MM Btu/hr < 0.3**

Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, Indiana 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: V. Cordell
Date: June 26, 1997

Heat Input Capacity *
MMBtu/hr

Potential Throughput
MMCF/yr

0.63

5.52

Emission Factor in lb/MMCF	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
	11.17	11.17	0.60	94.00	5.30	40.00
Potential Emission in lbs/hour	0.01	0.01	0.00	0.06	0.00	0.03
Potential Emission in lbs/day	0.17	0.17	0.01	1.42	0.08	0.60
Potential Emission in tons/yr	0.03	0.03	0.00	0.26	0.01	0.11

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3 as updated 10/96; and from FIRE Version 5.0.

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

* Combined capacity of three residential-type space heaters and two dock heaters.

**Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations**

Company Name: Amcast Automotive - Richmond
Address City IN Zip: Richmond, IN 47374
CP: 177-7118
Plt ID: 177-00050
Reviewer: V. Cordell
Date: July 30, 1997

NOTE: These emissions are for touch-up coating only. The castings are color-coded with powder coatings which melt on contact with the hot aluminum and have no quantifiable emissions.

Material	Density (Lb/Gal)	Weight % Volatile* (H2O& Organics)	Weight % Water*	Weight % Organics*	Volume % Water*	Volume % Non-Vol (solids)	Gal of Mat (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential ton/yr	lb VOC /gal solids	Transfer Efficiency**
Concote 260	16.01	65.00%	65.0%	0.00%	65.00%	35.00%	0.0400	3.00	0.00	0.00	0.00	0.00	0.00	1.77	0.00	40%
Concote 206	11.76	60.00%	60.0%	0.0%	60.00%	40.00%	0.04000	3.000	0.00	0.00	0.00	0.00	0.00	1.48	0.00	40%
Concote 255	9.69	82.00%	82.0%	0.0%	82.00%	18.00%	0.04000	3.000	0.00	0.00	0.00	0.00	0.00	0.55	0.00	40%

State Potential Emissions **Add worst case coating to all solvents** **0.00** **0.00** **0.00** **3.80**

Potential PM emissions, after control:

3.8 tons/yr x (1 - 0.69) = **1.18 tons/yr**

METHODOLOGY

*Water is the only solvent, additional water may be used to thin 206 and 260. Percentages as supplied were used for maximum potential PM emissions.

**Air atomized spray.

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)

Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)

Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)

Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)

Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)

Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)

Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)

