

Facility ID: 1652100077 Issuance type: Final State Permit To Operate

This version of facility specific terms and conditions was converted from a database format to an HTML file during an upgrade of the Ohio EPA, Division of Air Pollution Control's permitting software. Every attempt has been made to convert the terms and conditions to look and substantively conform to the permit issued or being drafted in STARS. However, the format of the terms may vary slightly from the original. In addition, although it is not expected, there is a slight possibility that a term and condition may have been inadvertently "left out" of this reproduction during the conversion process. Therefore, if this version is to be used as a starting point in drafting a new version of a permit, it is imperative that the entire set of terms and conditions be reviewed to ensure they substantively mimic the issued permit. The official version of any permit issued final by Ohio EPA is kept in the Agency's Legal section. The Legal section may be contacted at (614) 644-3037.

In addition to the terms and conditions, hyperlinks have been inserted into the document so you may more readily access the section of the document you wish to review.

Finally, the term language under "Part II" and before "A. Applicable Emissions Limitations..." has been added to aid in document conversion, and was not part of the original issued permit.

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Facility ID: 1652100077 Emissions Unit ID: F002 Issuance type: Final State Permit To Operate

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**Part II - Special Terms and Conditions**

This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
  - (a) None.
2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
  - (a) None.

**A. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Crucible type, natural gas-fired aluminum melt furnace with a capacity of 2000 pounds and a maximum process weight rate of 666 lbs/hr	OAC rule 3745-31-05 (PTI 16-946)	10% opacity as a 3-minute average
		2.18 tons/yr of particulate matter See A.2.a and A.2.b below.
		1.25 lbs/hr of chlorine See A.2.a and A.2.c below.
		0.50 lb/hr of hydrogen chloride See A.2.a and A.2.d below.
	OAC rule 3745-17-07	See A.2.e below.
	OAC rule 3745-17-08	See A.2.f below.

**2. Additional Terms and Conditions**

- (a) The annual particulate matter emission limit is greater than the potential to emit for this emissions unit, as demonstrated in Section A.2.b below. Therefore, no annual recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

The hourly chlorine emission limit is greater than the potential to emit for this emissions unit, as demonstrated in Section A.2.c below. Therefore, no short-term (e.g., hourly or daily) recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

The hourly hydrogen chloride emission limit is greater than the potential to emit for this emissions unit, as demonstrated in Section A.2.d below. Therefore, no short-term (e.g., hourly or daily) recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

For the purpose of determining annual potential emissions of particulate matter from this emissions unit, the following particulate matter emission factors from the RACM, Table 2.11-1, page 2-271, published in September, 1980 shall be utilized as well as the following emissions unit operating parameters:

Particulate matter emission factors:

- i. charging and tapping (CT): 0.09 lb/ton of aluminum processed;
- ii. hot metal pouring (HMP): negligible;
- iii. hot dross handling/cooling (HDH): 0.22 lb/ton of aluminum processed; and
- iv. degassing (D): 50 lbs/ton of chlorine used.

Emissions unit operating parameters:

- i. maximum process weight rate (PWRmax): 666 lbs/hr;
- ii. pounds to ton conversion factor (T): 1 ton/2000 lbs;
- iii. hours per year (H1): 8760 hrs/yr;
- iv. maximum weight of chlorine gas used per year to degas the aluminum melt (Cl2): 277.5 lbs/yr; and

v. operating hours restriction (H2): 1248 hrs/yr.

Potential to emit for annual particulate matter emissions, in tons/yr (PTE):

$$PTE = [(CT + HDH)(PWRmax)(T)(H1)(T)] + [(D)(Cl2)(T)(H1/H2)(T)] = 0.5 \text{ ton/yr}$$

For the purpose of determining hourly potential emissions of chlorine from this emissions unit, the following derived chlorine emission factor (EFchlorine) and the maximum process weight rate (PWRmax), based on application data and PTI #16-946, as issued June 7, 1991, shall be utilized:

EFchlorine: 2.0 lbs/ton of aluminum processed\*; and

PWRmax: 0.333 ton of aluminum processed/hr.

Potential to emit for hourly chlorine emissions, in lbs/hr (PTE):

$$PTE = (EFchlorine) \times (PWRmax) = 0.7 \text{ lb/hr}$$

\*EFchlorine was developed as shown below:

$$EFchlorine = [((Cl2) + (FD \times H \times \%KCl \times \%Cl)) \times 0.25]/AI$$

where:

Cl2 = 277.5 lbs/yr, the maximum weight of chlorine gas used per year to degas the aluminum melt;

FD = 3 lbs/hr, the maximum hourly usage rate of the fluxing/degassing agent;

H = 1248 hrs/yr, the maximum number of hours per year of operating time for the emissions unit;

%KCl = 95%, the maximum percentage by weight of potassium chloride in the fluxing/degassing agent;

%Cl = 47.5%, the percentage by weight of chloride in each mole of potassium chloride;

0.25 = based on best engineering judgement, the assumed percentage by weight of available chloride, from chlorine degassing and the generation of free chloride from the fluxing/degassing agent, that is emitted as chlorine from the aluminum melt; and

AI = 250 tpy, the maximum annual weight of aluminum processed.

For the purpose of determining hourly potential emissions of hydrogen chloride from this emissions unit, the following derived hydrogen chloride emission factor (EFhydrogen chloride) and the maximum process weight rate (PWRmax), based on application data and PTI #16-946, as issued June 7, 1991, shall be utilized:

EFhydrogen chloride: 0.8 lb/ton of aluminum processed\*; and

PWRmax: 0.333 ton of aluminum processed/hr.

Potential to emit for hourly hydrogen chloride emissions, in lbs/hr (PTE):

$$PTE = (EFhydrogen \text{ chloride}) \times (PWRmax) = 0.3 \text{ lb/hr}$$

\*EFhydrogen chloride was developed as shown below:

$$EFhydrogen \text{ chloride} = [((Cl2) + (FD \times H \times \%KCl \times \%Cl)) \times (0.10) \times (36.5/35.5)]/AI$$

where:

Cl2 = 277.5 lbs/yr, the maximum weight of chlorine gas used per year to degas the aluminum melt;

FD = 3 lbs/hr, the maximum hourly usage rate of the fluxing/degassing agent;

H = 1248 hrs/yr, the maximum number of hours per year of operating time for the emissions unit;

%KCl = 95%, the maximum percentage by weight of potassium chloride in the fluxing/degassing agent;

%Cl = 47.5%, the percentage by weight of chloride in each mole of potassium chloride;

0.10 = based on best engineering judgement, the assumed percentage by weight of available chloride, from chlorine degassing and the generation of free chloride from the fluxing/degassing agent, that is emitted as hydrogen chloride from the aluminum melt;

36.5/35.5 = the conversion of chloride to hydrogen chloride; and

AI = 250 tpy, the maximum annual weight of aluminum processed.

The visible particulate emission limitation based on OAC rule 3745-17-07 is less stringent than the visible particulate emission limitation established by OAC rule 3745-31-05.

The permittee shall comply with the restriction of emissions of fugitive dust, as required under OAC rule 3745-17-08, through the use of best available technology (BAT), as established in PTI #16-946.

The permittee shall employ best available operating practices to minimize air contaminant emissions from this emissions unit.

#### B. Operational Restrictions

1. The permittee shall employ only natural gas as fuel in this emissions unit.
2. The permittee shall charge this emissions unit with only clean raw materials (i.e., aluminum pigs, clean foundry

returns). Aluminum scrap or contaminated foundry returns shall not be employed in this emissions unit.

3. The permittee shall not operate this emissions unit more than 8 hours per day and 3 days per week. This restriction is necessary to assure compliance with the Ohio EPA air toxics policy. Any increase in hours or days of operation must be approved by Ohio EPA as part of a new PTI.

**C. Monitoring and/or Record Keeping Requirements**

1. The permittee shall record the number of hours of operation each day the emissions unit is operated and the number of days each week the emissions unit is operated.
2. The permittee shall collect and record the weight of aluminum processed, in tons, during each calendar year.

**D. Reporting Requirements**

1. The permittee shall submit reports which identify any exceedances of the daily operating hours and the weekly operating days limitations, as well as the corrective actions that were taken to achieve compliance.

**E. Testing Requirements**

1. Compliance with the emission limitations in Section A.1 of these terms and conditions shall be determined in accordance with the following methods:  
Emission Limitation:

10% opacity as a 3-minute average

Applicable Compliance Method:

Compliance shall be determined by visible particulate emission evaluations performed in accordance with OAC rule 3745-17-03(B)(3) using the methods and procedures specified in USEPA Method 9.

Emission Limitation:

2.18 tpy of particulate matter

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculation as specified in Section A.2.b.

Emission Limitation:

1.25 lbs/hr of chlorine

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculation as specified in Section A.2.c.

Emission Limitation:

0.5 lb/hr of hydrogen chloride

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculation as specified in Section A.2.d.

**F. Miscellaneous Requirements**

1. None

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Facility ID: 1652100077 Emissions Unit ID: P901 Issuance type: Final State Permit To Operate

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**Part II - Special Terms and Conditions**

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1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
  - (a) None.
2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
  - (a) None.

**A. Applicable Emissions Limitations and/or Control Requirements**

1. The specific operation(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be employed. Additional applicable emissions limitations and/or

control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Pneumatic sand unloading from carrier to storage silo, controlled with a fabric filter (baghouse)	OAC rule 3745-31-05 (PTI 16-946)	See A.2.a and A.2.f below.
	OAC rule 3745-17-07	See A.2.b below.
	OAC rule 3745-17-08	See A.2.c below.
Mold sand preparation/mold makeup	OAC rule 3745-31-05 (PTI 16-946)	See A.2.d and A.2.f below.
	OAC rule 3745-17-07	See A.2.b below.
	OAC rule 3745-17-08	See A.2.e below.

**2. Additional Terms and Conditions**

- (a) Particulate emissions from the pneumatic conveying of sand from the carrier to the storage silo shall not exceed 2.0 lbs/hr.

Based on the STAPPA/ALAPCO\*, Table 7-1 particulate matter emission factor of 0.056 lb/ton of conveyed/stored sand, and a reported maximum sand unloading rate from the carrier of 30 tons/hr, potential hourly particulate emissions are 1.7 lbs/hr for this operation of the emissions unit.

The above particulate matter emission limitation for this portion of the emissions unit is greater than the potential to emit. Therefore, no short-term (e.g., hourly or daily) recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

\*STAPPA/ALAPCO is the acronym for: The State And Territorial Air Pollution Program Administrators And The Association Of Local Air Pollution Control Officials

Visible particulate emissions from the baghouse stack shall not exceed 20% opacity as a 6-minute average.

Visible particulate emissions of fugitive dust from any portion or operation of this emissions unit shall not exceed 20% opacity as a 3-minute average.

The silo vent shall be adequately enclosed and vented to the baghouse; the enclosure shall be sufficient to minimize or eliminate visible emissions of fugitive dust at the point of capture.

Particulate matter emissions from the mold sand prep/mold makeup operation of this emissions unit shall not exceed 3.2 lbs/hr (based on the OEPA RACM particulates emission factor of 1.34 lbs/ton of mold sand castings, and the mixer design capacity of 2.5 tons/hr of mold sand).

The above particulates emission limit is based on this portion of the emissions unit's potential to emit. Therefore, no short-term (e.g., hourly or daily) recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

Mold sand preparation and mold makeup equipment shall be of a design and operated in such a manner which minimizes fugitive dust emissions.

The permittee shall comply with the restriction of emissions of fugitive dust, as required under OAC rule 3745-17-08, through the use of best available technology (BAT), as established in permit to install (PTI) 16-946, as issued June 7, 1991.

Total particulate matter emissions from this emissions unit shall not exceed 5.12 tpy.

**B. Operational Restrictions**

- 1. The pressure drop across the baghouse shall be maintained within the range of 2 to 6 inches of water while the emissions unit is in operation.

**C. Monitoring and/or Record Keeping Requirements**

- 1. The permittee shall properly install, operate, and maintain equipment to monitor the pressure drop across the baghouse while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across the baghouse on a daily basis.
- 2. The permittee shall maintain annual records of the quantity of sand conveyed from the carrier to the storage silo, in tons, and the quantity of sand used in mold casting, in tons.
- 3. The permittee shall determine, each calendar year, total annual particulate emissions, in tons, from this emissions unit based on the emission factors of Sections A.2.a and A.2.d above and the recordkeeping information of Section C.2 above.

**D. Reporting Requirements**

- 1. The permittee shall submit pressure drop deviation (excursion) reports that identify all periods of time during which the pressure drop across the baghouse did not comply with the allowable range specified above.
- 2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the annual emission limitation for particulate matter.
- 3. The deviation reports shall be submitted in accordance with the requirements specified in Part I - General Term and Condition 3.

**E. Testing Requirements**

- 1. Compliance with the emission limitations in Section A.2 of these terms and conditions shall be determined in accordance with the following methods:

Emission Limitation:

5.12 tpy of particulate matter

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the recordkeeping requirements of Section C.2 and C.3.

Emission Limitation:

2.0 lbs/hr of particulate matter

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculation as specified in Section A.2.a.

Emission Limitation:

3.2 lbs/hr of particulate matter

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculation as specified in Section A.2.d.

Emission Limitation:

20% opacity as a 6-minute average, for stack emissions

Applicable Compliance Method:

OAC rule 3745-17-03(B)(1)

Emission Limitation:

20% opacity as a 3-minute average, for fugitive dust emissions

Applicable Compliance Method:

OAC rule 3745-17-03(B)(3)

**F. Miscellaneous Requirements**

1. None