

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.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 1652100077 Emissions Unit ID: F005 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 maximum batch capacity of 1000 pounds and a maximum average process weight rate capacity of 208 lbs/hr	OAC rule 3745-31-05 (PTI 16-1799)	5.5 lbs/day of particulate emissions 1.25 lbs/hr of chlorine 0.50 lb/hr of hydrogen chloride See A.2.a - A.2.c below.
	OAC rule 3745-17-07	See A.2.d below.
	OAC rule 3745-17-08	See A.2.e below.

2. Additional Terms and Conditions

- (a) The daily particulate emissions limitation is based on the emissions unit's potential to emit. Therefore, no recordkeeping, deviation reporting, or compliance method calculations are required with this limit.

The hourly chlorine emissions limitation is greater than the emissions unit's potential to emit. Therefore, no recordkeeping, deviation reporting, or compliance method calculations are required with this limit.

The hourly hydrogen chloride emissions limitation is greater than the emissions unit's potential to emit. Therefore, no recordkeeping, deviation reporting, or compliance method calculations are required with this limit.

Visible particulate fugitive emissions shall not exceed 10% opacity as a 3-minute average.

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

The visible particulate emissions limitation required by OAC rule 3745-17-07 is less stringent than the visible particulate emissions 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 16-1799.

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 9 hours per day and 3 days per week. This restriction is necessary to assure compliance with the Ohio EPA's "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.
3. Based on the emission factors for chlorine and hydrogen chloride developed in Section E.1 below and the annual amount of aluminum processed, the permittee shall determine and record annual emissions of chlorine, in tons, and annual emissions of hydrogen chloride, in tons.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation 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 sections A.1 and A.2 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:

5.5 lbs/day of particulate emissions

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculations specified below:

For the purpose of determining daily potential emissions of particulates from this emissions unit, the following particulate emission factors from AP-42, Table 7.8-1, page 7.8-5, published in October, 1986 shall be utilized as well as the following emissions unit operating parameters:

Particulate emission factors:

- i. crucible furnace smelting (S) : 1.9 lb/ton of aluminum processed;
- ii. chlorine degassing (D): 1000 lbs/ton of chlorine used.

Emissions unit operating parameters:

- i. maximum average process weight rate (P): 208 lbs/hr;
- ii. pounds to ton conversion factor (T): 1 ton/2000 lbs;
- iii. hours per day (H): 24 hrs/day; and
- iv. weight of chlorine gas in pounds used per ton of aluminum to degas the aluminum melt (C): 0.6 lb/ton.

Daily potential to emit of particulates, in lbs/day (PTE):

$$PTE = [(S)(P)(T)(H)] + [(D)(C)(T)(P)(T)(H)] = 5.5 \text{ lbs/day}$$

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 calculations specified below:

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 16-1799, as issued September 10, 1998, shall be utilized:

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

PWRmax: 0.104 ton of aluminum processed/hr.

Hourly potential to emit of chlorine, in lbs/hr (PTE):

$$PTE = (EFchlorine) \times (PWRmax) = 0.2 \text{ lb/hr}$$

*EFchlorine was developed as shown below:

$$EFchlorine = [((Cl_2) + (FD \times H \times \%KCl/100 \times \%Cl/100)) \times 0.25]/Al$$

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 fraction 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

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

Emission Limitation:

0.50 lb/hr of hydrogen chloride

Applicable Compliance Method:

The permittee shall demonstrate compliance with the above limitation based upon the potential to emit calculations specified below:

For the purpose of determining hourly potential emissions of hydrogen chloride from this emissions unit, the following derived hydrogen chloride emission factor (EF_{hydrogen chloride}) and the maximum process weight rate (PWR_{max}), based on application data and PTI 16-1799, as issued September 10, 1998, shall be utilized:

EF_{hydrogen chloride}: 0.8 lb/ton of aluminum processed*; and

PWR_{max}: 0.104 ton of aluminum processed/hr.

Hourly potential to emit of hydrogen chloride, in lbs/hr (PTE):

$PTE = (EF_{hydrogen\ chloride}) \times (PWR_{max}) = 0.1\ lb/hr$

*EF_{hydrogen chloride} was developed as shown below:

$EF_{hydrogen\ chloride} = \{[(Cl_2) + (FD \times H \times \%KCl/100 \times \%Cl/100)] \times (0.10) \times (36.5/35.5)\}/AI$

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 fraction 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.

F. Miscellaneous Requirements

1. The permittee shall comply with any applicable State and federal requirements governing the storage, treatment, transport, and disposal of any waste material generated by the operation of the source(s).
2. The permittee is hereby notified that this permit, and all agency records concerning the operation of this permitted emissions unit, is subject to public disclosure in accordance with OAC rule 3745-49-03.