

SPECIAL TERMS AND CONDITIONS
PCM Company, Inc.
PTI #16-1799

A. Permit Profile

1. Operations/Equipment

The PCM Company is seeking a Permit-to-Install (PTI) for a new crucible natural gas-fired aluminum melt furnace to be installed and operated at their facility located in Wadsworth, Medina County, Ohio (OEPA facility ID #1652100077). The furnace (OEPA emissions unit ID #F005), with a company reported batch design capacity of 1000 pounds of aluminum and a maximum heat input of 1 million Btu/hr, will be used to melt down aluminum pigs and clean foundry returns for recasting into aluminum tire molds for sale to the tire manufacturing industry. Emissions Unit F005 is a fugitive dust source, with no pollution controls.

2. Rules Applicability/BAT Determination

The above plant is located in an "Appendix A" geographical area, as specified in Appendix A of Ohio Administrative Code (OAC) rule 3745-17-08, and in so being, is defined as an "Appendix A" facility. Therefore, fugitive dust source F005 is subject to OAC rule 3745-17-08, restricting emissions of fugitive dust. Since Emissions Unit F005 shall be restricted to the burning of only natural gas and the melting of only clean raw materials (specified below in Section B), which satisfies the employment of "best available technology" (BAT) as required per OAC rule 3745-31-05 for new sources, the provisions of Paragraph (B) of OAC rule 3745-17-08 are not appropriate in order to comply with OAC rule 3745-17-08. With the restrictions of BAT alone imposed, potential emissions of particulates are 5.5 lbs/day, less than the DeMinimis level of 10 lbs/day. Therefore, BAT is sufficient to comply with OAC rule 3745-17-08.

Since the requirements of OAC rule 3745-17-08 are applicable to Emissions Unit F005, then per OAC rule 3745-17-11(A)(1)(f), the requirements of OAC rule 3745-17-11 are not applicable to Emissions Unit F005.

Since Emissions Unit F005 is exempted from the requirements of Paragraph (B) of OAC rule 3745-17-08, then per OAC rule 3745-17-07(B)(11)(d), the visible particulate emission limitations of OAC rule 3745-17-07(B) are not applicable to Emissions Unit F005. Visible particulate emissions of fugitive dust shall be limited by the employment of BAT, as required by OAC rule 3745-31-05.

There are no applicable rules, except OAC rule 3745-31-05 requiring the

employment of BAT, limiting emissions of chlorine and hydrogen chloride from Emissions Unit F005. To assure compliance with the Ohio EPA Air Toxics Policy, a BAT requirement, the permittee shall limit hours and days of operation of Emissions Unit F005 (specified below in Section B).

A. Permit Profile (cont'd)

3. Emission Limits

a. The daily particulates emission limit is based on the emissions unit's potential to emit. Therefore, no daily recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

The annual particulates emission limit is based on the emissions unit's potential to emit. Therefore, no annual recordkeeping, deviation reporting, or compliance method calculations are required to demonstrate compliance with this limit.

b. The hourly chlorine emission limit is greater than 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.

c. The hourly hydrogen chloride emission limit is greater than 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.

4. Emissions Determination

a. For the purpose of demonstrating compliance with the annual chlorine emission limitation via recordkeeping, the following derived emission factor, based on application data and company reported information, shall be utilized:

chlorine emissions from aluminum processing: **2.0 lbs/ton of aluminum processed.**

The above chlorine emission factor (EF_{chlorine}) was developed as shown

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below:

$$EF_{\text{chlorine}} = [((Cl_2) + (FD \times H \times \%KCl \times \%Cl)) \times 0.25]/Al$$

where:

$Cl_2 = 277.5$ lbs/yr, the maximum weight of pure chlorine gas used per year to degas (lance) 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 (BEJ), the assumed percentage by weight of available chloride, from the chlorine lance 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.

A. Permit Profile

4. Emissions Determination (cont'd)

b. For the purpose of demonstrating compliance with the annual hydrogen chloride emission limitation via recordkeeping, the following derived emission factor, based on application data and company reported information, shall be utilized:

hydrogen chloride emissions from aluminum processing: **0.8 lb/ton of aluminum processed.**

The above hydrogen chloride emission factor ($EF_{\text{hydrogen chloride}}$) was developed as shown below:

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

where:

$Cl_2 = 277.5$ lbs/yr, the maximum weight of pure chlorine gas used per year to degas (lance) 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 (BEJ), the assumed percentage by weight of available chloride, from the chlorine lance 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

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

B. Operational Restrictions

1. Emissions Unit F005 shall be limited to only natural gas as fuel.

2. Emissions Unit F005 shall be charged with only clean raw materials (aluminum pigs, clean foundry returns, etc.). Aluminum scrap or contaminated foundry returns shall not be employed in this emissions unit. The permittee shall employ best available operating practices to minimize air contaminant emissions from this emissions unit.

3. Emissions Unit F005 shall not operate more than 9 hours per day, 3 days per week, in accordance with the PTI application. Any increase in hours or days of operation must be approved by Ohio EPA, as part of a new PTI.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall record the number of hours each day and the number of days each week the emissions unit was in operation.

2. The permittee shall collect and record each calendar year the weight of aluminum processed, in tons.

3. The permittee shall, based on the emissions factors of Sections A.4.a-b above and the annual weight of aluminum processed, as recorded in C.2 above, determine and record annual emissions of chlorine and hydrogen chloride, in tons.

D. Reporting requirements

1. The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or recordkeeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures, which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

2. 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.

3. The permittee shall submit deviation (excursion) reports identifying each calendar year chlorine and/or hydrogen chloride emissions from this emissions unit exceeded the respective chlorine and hydrogen chloride annual emission limitations of 0.9 tpy and 0.4 tpy.

E. Testing Requirements

1. Compliance with the emission limitations in this permit shall be determined in accordance with the following methods:

- a. Emission Limitation: 10% opacity as a 3-minute average

Applicable Compliance Method: Compliance shall be determined by visible particulate emission evaluations performed using the procedures specified in USEPA Method 9.

E. Testing Requirements (cont'd)

- b. Emission Limitation: 0.9 tpy chlorine

Applicable Compliance Method: The permittee shall demonstrate compliance with the above limitation based upon the recordkeeping requirements of these T&C's.

- c. Emission Limitation: 0.4 tpy hydrogen chloride

Applicable Compliance Method: The permittee shall demonstrate compliance with the above limitation based upon the recordkeeping requirements of these T&C's.

F. Miscellaneous Requirements

None