

**Engineering Analysis  
Imperial Aluminum  
705-0044**

**Project Description**

On January 15, 2019, Imperial Aluminum submitted Synthetic Minor Operating Permit (SMOP) applications for the installation of a new tilting rotary furnace to vent to an existing baghouse. This furnace would replace the existing furnace covered under SMOP 705-0044-X004. Imperial proposes the installation of a tilting rotary furnace with a holding capacity 50,000 lbs, fired with a 20 MMBTU/hr Oxyfuel combustion system. Emissions plan to be controlled by an existing 4-compartment, reverse air baghouse equipped with a lime injection system.

**Emission Limits**

The rotary furnace being replaced (705-0044-X004) has a facility-requested Synthetic Minor HCl emission limit of 0.675 lb/hr. The new furnace is slightly larger, with a control efficiency of 0.75 lb/hr. With the current limits of HCl contained in other permits, the new limit of 0.75 lb/hr should keep facility-wide emissions of HCl below Major Source thresholds of 10 tpy for any single HAP. The current limit of 6.02 lb/hr for PM would be adequate to remain a SMOP for PM emissions. The facility has also requested facility-wide limits for HCl and PM to ensure continued classification as a Synthetic Minor source for the Title V program as well as to remain an area source with regard to MACT RRR.

**Emissions**

The SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOC emissions from the new rotary furnace baghouse are based on AP-42 emission factors; the PM, HCl, and HF emissions from the new rotary furnace baghouse are based on Best Available Technology (BAT); and the Dioxin/Furans emissions from the new rotary furnace baghouse are based on the MACT allowable emissions. The controlled emissions for the new rotary furnace based on 8,760 hours of operation are shown below:

<b>Pollutant</b>	<b>Rotary Tilting Furnace No. 2</b>	
	<b>lb/hr</b>	<b>TPY</b>
<b>PM</b>	4.6	20.15
<b>PM<sub>10</sub></b>	1.73	7.58
<b>SO<sub>2</sub></b>	0.001	0.02
<b>NO<sub>x</sub></b>	1.62	7.10
<b>CO</b>	1.26	5.52
<b>VOC</b>	0.22	0.926
<b>HCl</b>	0.75	3.30
<b>HF</b>	0.375	1.64
<b>Dioxin/Furans</b>	2.25 E -7	9.9 E -7

### **Title V/PSD/NSPS/NESHAP/112g/Air Toxics**

Imperial Aluminum does not currently have a Title V permit. The facility proposes to limit the HCl and PM emissions to remain a minor source in regards to Title V. Imperial Aluminum would not be subject to PSD, as the facility's limited emissions are below the 100 TPY threshold for PSD. There are no New Source Performance Standards applicable to the installation of the new rotary furnace. The new rotary furnace is subject to 40 CFR 63 Subpart RRR "National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production".

Air Toxics are not expected to be emitted in significant quantities, so an Air Toxics review would not be necessary. Because HAP emissions would not be expected to be above the major source threshold (greater than 10 TPY of any single HAP or 25 TPY of any combination of HAPs), a 112(g) case by case MACT review would not be necessary. Emissions from the new equipment would not be expected to impact any Class I Area, the closest of which is more than 100 km from Imperial Aluminum.

### **NESHAP RRR – Applicability**

40 CFR 63 Subpart RRR – National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production applies to each new and existing secondary aluminum processing unit, containing one or more group 1 furnace emission unit processing other than clean charge located at an area source. §63.1500(c)(4) states that the requirements of this subpart pertaining to dioxin and furan (D/F) emissions and associated operating, monitoring, reporting, and recordkeeping requirements apply to each new and existing secondary aluminum processing unit, containing one or more group 1 furnace emission unit processing other than clean charge located at a secondary aluminum production facility that is an area source of HAPs.

### **NESHAP RRR – Emission Standards**

§63.1505(i)(3) states that the owner or operator of a group 1 furnace must use the following limit to determine the emission standard for a secondary aluminum processing unit: 15 µg of D/R TEQ per Mg ( $2.1 \times 10^{-4}$  gr of D/F TEQ per ton) of feed/charge from a group 1 furnace at a secondary aluminum production facility that is a major or area source.

### **NESHAP RRR – Operating and Monitoring Requirements**

The facility must operate the furnace in accordance with Table 2 to 40 CFR RRR. The facility must comply with the applicable monitoring requirements contained in Table 3 to CFR 63 Subpart RRR.

### **NESHAP RRR – Recordkeeping and Reporting Requirements**

The facility must comply with the applicable recordkeeping requirements of §63.1517(a) and (b). The facility must comply with the applicable reporting requirements of §63.1516 (b), (c), and (d).

**Recommendation**

Based upon the above, I recommend issuing Synthetic Minor Operating Permit No. 705-0044-X005 for the new rotary furnace.



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Jacob Olinger  
Energy Branch  
Air Division

February 19, 2019

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Date