MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

RECEIVED
SEP 08 2016
AIR QUALITY DIV.

RENEWABLE OPERATING PERMIT REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name: Real Alloy Specification, Inc. County: Branch

Source Address: 368 West Garfield Avenue City: Coldwater

AQD Source ID (SRN): N5957 ROP No.: MI-ROP-N5957-2012e ROP Section No.: 1

Please check the appropriate box(es):

☐ **Annual Compliance Certification (Pursuant to Rule 213(4)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.

☐ 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

☐ **Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.

☐ 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

☒ **Other Report Certification**

Reporting period (provide inclusive dates): From _____ To _____

Additional monitoring reports or other applicable documents required by the ROP are attached as described:

Emissions Test Report dated July 26-29, 2016 for North Plant Reverb Furnace #7N & #8N flues

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

Greg Hall	Plant Manager	517-279-4037
Name of Responsible Official (print or type)	Title	Phone Number
Signature of Responsible Official		9/7/2016 Date

* Photocopy this form as needed.

EQP 5736 (Rev 11-04)

1.0 Introduction

Alliance Source Testing, LLC (AST) was retained by Real Alloy Specification, Inc. (RAS) to conduct compliance testing at the Coldwater (N), Michigan facility. Portions of the facility are subject to provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Secondary Aluminum Production facilities as detailed in 40 CFR 63, Subpart RRR and the Michigan Department of Environment Quality (MDEQ) Title V Permit No. MI-ROP-N5957-2012e. This test program was conducted to demonstrate compliance with the provisions in the latest MDEQ operating permit issued in March 2016 and the requirements of the Administrative Consent Order No. 35-2014 effective in June 2014.

Testing was conducted to determine emission rates and factors of filterable particulate matter (PM), PM less than 10 microns (PM10) and hydrogen chloride (HCl) from the Reverberatory Furnace No. 7 Flue (Reverb No. 7 Flue) and Reverberatory Furnace No. 8 Flue (Reverb No. 8 Flue). The furnaces operated at or near maximum production capacity for the selected test materials.

1.1 Facility Description

RAS is a secondary aluminum production facility (SIC 3341) which produces molten aluminum and specification ingot from the melting and recovery of aluminum from aluminum scrap, sow and pig. The recovery of aluminum from aluminum scrap and aluminum dross and the subsequent production of aluminum ingot have been defined by EPA as secondary aluminum production processes.

1.2 Source and Control System Descriptions

The two (2) reverberatory furnaces – #7 and #8 – are designed as sidewell melter/holder units. The reverberatory furnaces are used to melt aluminum scrap that has been processed by the aluminum shredder, thermal chip dryer or directly charged. The main scrap types consumed include turnings, cast, extrusions, twitch, clips and alloying materials. The scrap is charged to the sidewell of the furnace along with solid flux material, alloying agents and gaseous Cl_2 that are required for the production order. Clean charge consumed includes sow, ingot and molten metal. Once the materials are molten, the metal flows through a submerged opening to the hearth. Once properly alloyed, the furnace is tapped and the molten aluminum is either transferred to a holding furnace, refractory lined crucibles or cast into ingot.

To capture process emissions, the reverberatory furnaces were built with hooding systems over the side wells. To control process emissions, the exhausts from the capture hoods are ducted to lime-injected baghouse systems. In addition, the Reverb No. 7 and Reverb No. 8 flue stacks are now ducted to separate lime-injection baghouse systems for control of PM and HCl. Both baghouse systems exhaust through a common stack to the atmosphere.

As part of the test program, each flue stack was tested individually with the other furnace idled during the three (3) test runs performed.

1.3 Project Team

Personnel involved in this project are identified in the following table.

Table 1-1
Project Team

Facility Personnel	Jeff Ferg – RAS Janine Grossheim – RAS
Regulatory Personnel	Dave Patterson – MDEQ
AST Personnel	Kenji Kinoshita Jared Wansor Ben Updegrave

1.4 Test Plan & Notification

Testing was conducted in accordance with the Test Plan submitted to Rex Lane and Karen Kajiya-Mills of MDEQ on May 24, 2016.

1.5 Test Program Notes

The isokinetic sampling rates exceeded the allowable range of 80-120% for Reverb Furnace No. 8 PM10 Runs 2 and 3. The high isokinetic sampling rates were due to low velocity pressures observed during the test runs, and the gas velocity was approximately 6.5 feet per second. The increased isokinetic sampling rates may have impacted the reported filterable PM2.5 and PM10 fractions; however, AST is confident the impact is minimal based on the results of all three (3) test runs for filterable PM, filterable PM2.5 and filterable PM10. In addition, compliance can be demonstrated by assuming all filterable PM is filterable PM10.

Run 3 for Furnace No. 7 was paused from 8:04 a.m. to 12:15 p.m. on July 29, 2016. Run 3 was begun as the first run on Friday morning at 6:10 AM. At 8:04 a.m. the testing was paused to allow for a port change. Thunderstorms moved into the area by 8:30 a.m. and the testing crew was called down from the man lift due to visible lightning in the area by Plant Maintenance. The furnace had been charged with 24,540 lb scrap and 540 lb flux at the time of the hold for inclement weather. The weather deteriorated into a full monsoon for about 2-hrs, with urban street flooding, etc. Once the weather cleared about 11:00 a.m., the idled furnace FCE 8 main burners had to be fired to restore temperature. This further delayed the restart of the test of FCE 7 flue baghouse.

Run 3 was resumed at 12:15 p.m. with sufficient freeboard in the FCE to accommodate the remaining 15,440 lb scrap and 320 lb flux charge required to complete the test. After restart, the test was run for 2-hrs additional hours to facilitate the melt in of the charged materials. The total clock time for Run 3 was 4 hrs, 20 minutes.

The cause of the hold was severe weather which made outside testing unsafe for test team personnel so a "Safe or Stop" resulted until thunderstorms passed through to the east. The resulting heavy rainfall would have made testing in these conditions difficult even without the lightning hazards. The 380 heat in the furnace was preserved during the delay rather than tapped since sufficient freeboard was available to accommodate the additional charge added after the test resumed.

2.0 Summary of Results

AST conducted compliance testing at the RAS facility in Coldwater, Michigan on July 26-29, 2016. Testing consisted of determining the emission rates and factors of PM, PM10 and HCl from Reverb No. 7 Flue and Reverb No. 8 Flue.

Tables 2-1 and 2-2 provide a summary of the emission testing results with comparisons to the applicable MDEQ permit limits. This table also provides a summary of the process operating and control system data collected during testing. Any difference between the summary results listed in the following tables and the detailed results contained in appendices is due to rounding for presentation.

Table 2-1
Summary of Results – Reverb No. 7

Emissions Data				
Run Number	**Run 1**	**Run 2**	**Run 3**	**Average**
Date	**7/28/16**	**7/28/16**	**7/29/16**	**--**
Particulate Matter Data				
Emission Factor, lb/ton	0.030	0.022	0.016	0.023
Permit Limit, lb/ton	--	--	--	0.580
Percent of Limit, %	--	--	--	**4**
Particulate Matter <10 Microns Data				
Emission Factor, lb/ton	0.074	0.11	0.056	0.080
Permit Limit, lb/ton	--	--	--	0.489
Percent of Limit, %	--	--	--	**16**
Hydrogen Chloride Data				
Emission Factor, lb/ton	0.018	0.020	0.010	0.016
Permit Limit, lb/ton	--	--	--	1.181
Percent of Limit, %	--	--	--	**1**
Process Operating / Control System Data				
Run Number	**Run 1**	**Run 2**	**Run 3**	**Average**
Date	**7/28/16**	**7/28/16**	**7/29/16**	**--**
Feed Rate, lb/hr	8,463	8,838	10,251	9,184
Baghouse Inlet Temperature, °F	249	251	248	249
Flux Percentage, %	2.59	2.56	2.15	2.43
Cl_2 Feed, lb	389	550	608	516
Lime Injection Rate, lb/hr	19.8	19.5	20.2	19.8

Table 2-2
Summary of Results – Reverb No. 8

Emissions Data				
Run Number	**Run 1**	**Run 2**	**Run 3**	**Average**
Date	**7/26/16**	**7/27/16**	**7/27/16**	**--**
Particulate Matter Data				
Emission Factor, lb/ton	0.021	0.012	0.042	0.025
Permit Limit, lb/ton	--	--	--	0.909
Percent of Limit, %	--	--	--	**3**
Particulate Matter <10 Microns Data				
Emission Factor, lb/ton	0.090	0.052	0.061	0.068
Permit Limit, lb/ton	--	--	--	2.234
Percent of Limit, %	--	--	--	**3**
Hydrogen Chloride Data				
Emission Factor, lb/ton	0.010	0.010	0.0072	0.0089
Permit Limit, lb/ton	--	--	--	1.552
Percent of Limit, %	--	--	--	**1**
Process Operating / Control System Data				
Run Number	**Run 1**	**Run 2**	**Run 3**	**Average**
Date	**7/26/16**	**7/27/16**	**7/27/16**	**--**
Feed Rate, lb/hr	8,027	9,359	8,676	8,687
Baghouse Inlet Temperature, °F	247	248	248	248
Flux Percentage, %	2.46	2.38	2.54	2.46
Cl_2 Feed, lb	426	500	300	409
Lime Injection Rate, lb/hr	20.5	20.0	20.0	20.2

3.0 Testing Methodology

The emission testing program was conducted in accordance with the test methods listed in Table 3-1. Method descriptions are provided below while quality assurance/quality control data is provided in Appendix D.

Table 3-1
Source Testing Methodology

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
Volumetric Flow Rate	1 & 2	Full Velocity Traverses
Oxygen/Carbon Dioxide	3 / 3A	Integrated Bag / Instrumental Analysis
Moisture Content	4	Volumetric / Gravimetric Analysis
Particulate Matter / Hydrogen Chloride	5 / 26A	Isokinetic Sampling
Particulate Matter less than 10 Microns	201A / 202	Constant Rate Sampling

3.1 U.S. EPA Reference Test Methods 1 & 2 – Volumetric Flow Rate

The sampling location and number of traverse (sampling) points were selected in accordance with U.S. EPA Reference Test Method 1. A full velocity traverse was conducted in accordance with U.S. EPA Reference Test Method 2 to determine the average stack gas velocity pressure, static pressure and temperature. The velocity and static pressure measurement system consisted of an S-type pitot tube and inclined manometer while the stack gas temperature was measured with a K-type thermocouple and pyrometer.

3.2 U.S. EPA Reference Test Method 3/3A – Oxygen and Carbon Dioxide

The oxygen and carbon dioxide concentrations were determined in accordance with U.S. EPA Reference Test Method 3. One (1) integrated Tedlar bag sample was collected during each test run. The bag samples were analyzed on site with a gas analyzer. The remaining stack gas constituent was assumed to be nitrogen for the stack gas molecular weight determination. The quality control measures are described in Section 3.6.

3.3 U.S. EPA Reference Test Method 4 – Moisture Content

The stack gas moisture content was determined in accordance with U.S. EPA Reference Test Method 4. The gas conditioning train consisted of a series of chilled impingers. Prior to testing, each impinger was filled with a known quantity of water or silica gel. Post testing, the quantities of water and silica gel were measured to determine the amount of moisture condensed during the test run. Alternatively, each impinger was analyzed gravimetrically before and after each test run on the same analytical balance to determine the amount of moisture condensed.

3.4 U.S. EPA Reference Test Methods 5/26A – Particulate Matter / Hydrogen Chloride

The testing was conducted in accordance with U.S. EPA Reference Test Methods 5 and 26A. The complete sampling system consisted of a Teflon-coated nozzle, a glass lined probe, pre-weighed Teflon filter, gas conditioning train, pump and calibrated dry gas meter. The gas conditioning train consisted of four (4) impingers contained in an ice/water bath. The first and second impingers contained 100 mL of 0.1 N H_2SO_4, the third was initially empty and the fourth contained approximately 200 grams of silica gel. The probe and filter box temperatures were maintained above 250°F, and the impinger temperature was maintained below 68°F throughout the testing.

Following the completion of each test run, the sampling train was leak checked at vacuum pressure greater than or equal to the highest vacuum pressure observed during the run. The impinger contents were measured to determine the amount of moisture gained during the run. The impinger 1 and 2 contents were placed in container 1. The impingers were then rinsed with de-ionized, ultra-filtered water (DIUF) and the rinse added to container 1. The probe and nozzle were triple-rinsed with acetone to remove any adhering particulate matter and these rinses placed in container 2. The front half of the filter holder was also rinsed with acetone and this rinse was added to container 2. The pre-weighed filter was carefully removed and placed in container 3. All containers were sealed, labeled and liquid levels marked for transport to the identified laboratory.

3.5 U.S. EPA Reference Test Methods 201A/202 – Particulate Matter < 10 microns

The PM10 testing was conducted in accordance with U.S. EPA Reference Test Methods 201A and 202. The complete sampling system consisted of an in-stack cyclone and pre-weighed quartz filter, heated stainless-lined probe, gas conditioning train, pump and calibrated dry gas meter. The gas conditioning train consisted of a coiled condenser and four (4) impingers. The first and second impingers were initially empty, the third contained 100mL of water and the fourth impinger contained approximately 200-300 grams of silica gel. An un-weighed 90 mm Teflon filter was placed between the second and third impinger.

Following the completion of each test run, the sampling train was leak checked at a vacuum pressure greater than or equal to the highest vacuum pressure observed during the run. Prior to sample recovery, the sampling system was purged with zero nitrogen at a rate of 14 liters per minute for one hour.

The contents of impingers 1 and 2 were recovered in container 1. Impingers 1 and 2, the coil condenser and all connecting glassware were rinsed with water and then rinsed with acetone, followed by hexane. The water rinses were added to container 1 while the solvent rinses were recovered in container 2. The un-heated Teflon filter was removed from the filter holder and placed in container 3. The front half of the condensable filter holder was rinsed with water and then with acetone, followed by hexane. The water rinse was added to container 1 while the solvent rinses were added to container 2. All containers were sealed, labeled and liquid levels marked for transport to the identified laboratory for condensable particulate matter analysis.

The pre-weighed filter was carefully removed and placed in container 4. The back-half of the PM2.5 cyclone and front half of the filter holder were rinsed six (6) times with acetone to remove any adhering particulate matter, and these rinses were recovered in container 5. The back-half of the PM10 cyclone, front half of the PM2.5 cyclone and the connecting stainless tubing were rinsed six (6) times with acetone, and these rinses were recovered in container 6. All containers were sealed, labeled and liquid levels marked for transport to the identified laboratory for analysis.

3.6 Quality Assurance/Quality Control – U.S. EPA Reference Test Method 3/3A

All volumetric flow rate components were uniquely identified, calibrated and leak-checked as required in the applicable EPA Reference Test Method. Calibrated components included, but were not limited to, pitot tubes, thermocouples and dry gas meters. All sampling systems were checked for leaks before and after each test run.

EPA Protocol 1 Calibration Gases – Cylinder calibration gases were supplied by a certified supplier which meet Protocol 1 (+/- 2%) standards. Copies of all calibration gas certificates can be found in the Quality Assurance/Quality Control Appendix.

Low Level gases were introduced directly to analyzer. After adjusting the analyzer to the Low Level gas concentration and once the analyzer reading was stable, the analyzer reading was recorded. This process was repeated for the High Level gas. Next, Mid Level gases were introduced directly to analyzer and reading was recorded. All recording readings were within +/- 2 percent of the Calibration Span.

All data was reviewed by the Field Team Leader before leaving the facility. Once arriving at AST's office, all written and electronic data was relinquished to the report coordinator and then a final review was performed by the Project Manager.