Magnitude 7 Metals LLC

STACK SAMPLE RESULTS

POTROOM
LINE 1

Run Number 1 POM | 4/21/2020 | EPA Method # 5 & 315

METER VOLUME	281.500	CU. FT.
SQUARE ROOT OF DELTA P	0.727	SQ. ROOT IN. WATER
AVERAGE DELTA H	1.884	IN. WATER
METERED GAS TEMPERATURE	78.8	DEG. F
STATIC PRESSURE IN STACK	-0.54	IN. WATER
STACK TEMPERATURE	183.2	DEG. F
BAROMETRIC PRESSURE	29.70	IN. Hg
PROBE TIP DIAMETER	0.2534	INCHES
GAS METER CORRECTION FACTOR	0.989	
TOTAL SAMPLING TIME	360.0	MINUTES
TOTAL WATER COLLECTED	40.5	GRAMS
MOLECULAR WEIGHT	29.0	LB/LB-MOLE
SAMPLING DUCT AREA	196.00	SQ. FT.
TOTAL PARTICULATE COLLECTED	0.0114	GRAMS
MCEM COLLECTED	0.0092	GRAMS
AVG ALUMINUM PRODUCTION RATE	443096	LBS./DAY
VOLUME GAS SAMPLED	272.079	SCF
MOISTURE IN STACK GAS	0.696	%
VELOCITY OF STACK GAS (ACTUAL)	2713	FT./MIN.
VOLUMETRIC FLOWRATE IN DUCT	429691	SCFM
PERCENT ISOKINETIC - TRAIN TO DUCT	98.44	%
TOTAL PARTICULATE CONCENTRATION	0.0015	GRAMS/SCM
TOTAL PARTICULATE CONCENTRATION	0.00065	GRAINS/SCF
TOTAL PARTICULATE EMISSION	2.39	LBS./HR.
TOTAL PARTICULATE EMISSION	0.26	LBS./TON
POM CONCENTRATION	1.194	MG./SCM
POM CONCENTRATION	0.000522	GRAINS/SCF
POM EMISSION	1.922	LBS./HR.
AVG. ALUMINUM PRODUCTION RATE	9.23	TON/HR.
POM EMITTED	0.208	LBS./TON

Magnitude 7 Metals

Stack Sample Results Raw Data Averages

POTROOM LINE 1

Start Date: 4/21/2020 **Stop Date:** 4/21/2020 **Run #:** 1 POM

Traverse Point	Delta P (in. Water)	Delta H (in. Water)	Meter Temperature (in)	Meter Temperature (out)	Static Pressure (in. Water)	Stack Temperature (Deg. F)
A 1-1	0.68	2.40	64	64	-0.54	175
A 1-2	0.68	2.40	64	64	-0.56	175
A 1-3	0.64	2.25	66	66	-0.52	174
A 1-4	0.56	2.00	68	67	-0.50	171
A 2-1	0.56	2.00	67	67	-0.48	174
A 2-2	0.52	1.85	70	70	-0.46	177
A 2-3	0.64	2.25	70	70	-0.52	174
A 2-4	0.58	2.05	70	70	-0.44	174
A 3-1	0.48	1.70	71	71	-0.36	179
A 3-2	0.45	1.60	71	71	-0.35	180
A 3-3	0.50	1.75	72	71	-0.40	180
A 3-4	0.50	1.75	73	71	-0.40	180
A 4-1	0.45	1.60	74	74	-0.38	175
A 4-2	0.46	1.65	77	75	-0.38	178
A 4-3	0.48	1.70	77	75	-0.40	181
A 4-4	0.48	1.70	77	75	-0.38	180
A 5-1	0.42	1.50	77	75	-0.30	178
A 5-2	0.42	1.50	77	75	-0.30	180
A 5-3	0.38	1.35	78	76	-0.28	180
A 5-4	0.40	1.40	78	76	-0.32	180
B 1-1	0.55	1.95	80	80	-0.40	188
B 1-2	0.60	2.10	82	82	-3.58	189
B 1-3	0.55	1.95	82	82	-0.40	189
B 1-4	0.56	2.00	82	82	-0.36	189
B 2-1	0.58	2.05	85	83	-0.40	188
B 2-2	0.58	2.05	87	84	-0.46	189
B 2-3	0.55	1.95	88	85	-0.45	190
B 2-4	0.55	1.95	88	85	-0.45	190
B 3-1	0.40	1.45	88	88	-0.60	188
B 3-2	0.55	1.95	88	88	-0.55	189
B 3-3	0.48	1.70	88	88	-0.60	190
B 3-4	0.50	1.80	88	88	-0.55	188
B 4-1	0.54	1.95	88	87	-0.53	189
B 4-2	0.53	1.90	88	87	-0.50	190
B 4-3	0.58	2.05	88	87	-0.60	190
B 4-4	0.62	2.20	88	87	-0.61	191
B 5-1	0.52	1.85	88	86	-0.53	187
B 5-2	0.58	2.05	88	86	-0.62	190
B 5-3	0.60	2.15	88	86	-0.61	190
B 5-4	0.53	1.90	88	86	-0.58	188
Averages	**Avg. Sq. Rt 0.727**	**1.884**	**78.8**		**-0.54**	**183.2**

AP

Date 4-21-20

Location PR 1

Room A

Start Time 0800

Run # 1POM

Avg. Tip Diameter .2534

Duct Area = 196 sq. ft.

Delta H 1.77

2 % Moisture (assumed)

MAGNITUDE 7 METALS LLC

STACK SAMPLING DATA

COMPLIANCE

Operators

Chi Allen

Room Initial L.C. @ 15.0 = .012

Room Final L.C. @ 5.0 = .003

Digital meter used 2027

Initial Pitot L.C. = nil

POINT #	SAMP TIME Min.	METER VOLUME Cu. Ft.	DELTA P in. H_2O	DELTA H in. H_2O	METER TEMP F IN	METER TEMP F OUT	STATIC PRESS. in. H_2O	STACK TEMP. ° F	IMP. TEMP. ° F	HEATER BOX TEMP. ° F	PUMP VAC. in. Hg	SET PT.
1-1	9	958.000	.68	2.40	64	64	-.54	175	48	245	.1	3.50
1-2	9		.68	2.40	64	64	-.56	175	48	249	.1	3.50
1-3	9		.64	2.25	66	66	-.52	174	47	247	.1	3.51
1-4	9		.56	2.00	68	67	-.50	171	50	247	.1	3.54
2-1	9	987.840	.56	2.00	67	67	-.48	174	51	247	.1	3.52
2-2	9		.52	1.85	70	70	-.46	177	52	251	.1	3.53
2-3	9		.64	2.25	70	70	-.52	174	53	243	.1	3.54
2-4	9		.58	2.05	70	70	-.44	174	53	245	.1	3.54
3-1	9	016.450	.48	1.70	71	71	-.36	179	54	243	.1	3.52
3-2	9		.45	1.60	71	71	-.35	180	56	241	.1	3.52
3-3	9		.50	1.75	72	71	-.40	180	60	243	.1	3.57
3-4	9		.50	1.75	73	71	-.40	180	61	242	.1	3.56
4-1	9	043.250	.45	1.60	74	74	-.38	175	64	242	.1	3.55
4-2	9		.46	1.65	77	75	-.38	178	57	242	.1	3.55
4-3	9		.48	1.70	77	75	-.40	181	55	240	.1	3.55
4-4	9		.48	1.70	77	75	-.38	180	52	238	.1	3.55
5-1	9	069.576	.42	1.50	77	75	-.30	178	51	235	.1	3.56
5-2	9		.42	1.50	77	75	-.30	180	50	230	.1	3.55
5-3	9		.38	1.35	78	76	-.28	180	52	230	.1	3.56
5-4	9		.40	1.40	78	76	-.32	180	53	231	.1	3.56
Before LC		093.950										
S/N		1036720					77	7-1	SA	SH		

Nomograph factor: _____

Date 4-21-20

Location Potroom 1

Room B

Stop Time ~~11:40~~ 14:40

MAGNITUDE 7 METALS

STACK SAMPLING DATA

COMPLIANCE

Operators

Joe Schneider

Chemist

Room Initial L.C. @ 15.0 = .009

Room Final L.C. @ 5.0 = .003

2 % Moisture (assumed)

Final Pitot L.C. = N/A

POINT #	SAMP TIME Min.	METER VOLUME Cu. Ft.	DELTA P in. H_2O	DELTA H in. H_2O	METER TEMP F IN	METER TEMP F OUT	STATIC PRESS. in. H_2O	STACK TEMP. °F	IMP. TEMP. °F	HEATER BOX TEMP. °F	PUMP VAC. in. Hg	SET PT.
1-1	9	94.550	.55	1.95	80	80	-.40	188	50	250	.1	3.53
1-2	9		.60	2.10	82	82	-.38	189	46	255	.1	3.54
1-3	9		.55	1.95	82	82	-.40	189	46	255	.1	3.54
1-4	9		.56	2.00	82	82	-.36	189	45	255	.1	3.54
2-1	9	123.860	.58	2.05	85	83	-.40	188	48	255	.1	3.50
2-2	9		.58	2.05	87	84	-.46	189	50	255	.1	3.56
2-3	9		.55	1.95	88	85	-.45	190	54	255	.1	3.56
2-4	9		.55	1.95	88	85	-.45	190	55	255	.1	3.56
3-1	9	153.350	.40	1.45	88	88	-.60	188	49	255	.1	3.59
3-2	9		.55	1.95	88	88	-.55	189	47	255	.1	3.58
3-3	9		.48	1.70	88	88	-.60	190	48	255	.1	3.57
3-4	9		.50	1.80	88	88	-.55	188	50	255	.1	3.59
4-1	9	181.235	.54	1.95	88	87	-.53	189	51	255	.1	3.58
4-2	9		.53	1.90	88	88	-.50	190	53	255	.1	3.57
4-3	9		.58	2.05	88	87	-.60	190	50	255	.1	3.57
4-4	9		.62	2.20	88	87	-.61	191	49	255	.1	3.57
5-1	9	210.800	.52	1.85	88	86	-.53	187	48	255	.1	3.58
5-2	9		.58	2.05	88	86	-.62	190	47	255	.1	3.57
5-3	9		.60	2.15	88	86	-.61	190	48	255	.1	3.57
5-4	9		.53	1.90	88	86	-.58	188	50	255	.1	3.58
FINAL		240.100										

Nomograph factor: 4.24

MAGNITUDE 7 METALS, LLC
STACK SAMPLING RAW DATA
METHODS ~~5 & 13~~ or METHODS 5 & 315

Location: Potroom Line: 1 Date sampled: 4/21/20 Run: 1 PO M Filter: EP

PITOT TUBE	Circle to document visual inspection.
SN N7052	
Visually inspected?	Yes

PROBE TIP	
SN 7	
DIAMETER MEASUREMENT (in.)	
1. .2545	If previous calibration referenced, circle Yes to document visual inspection.
2. .2525	
3. .2525	
4. .2535	
5. .2540	
6. .2550	
7. .2520	
8. .2530	
Out of round max. 0.004 in.	
CAL. BY: JS	
CALIPER: MITUTOYO S/N 7002015	
NORANDA 0.5" THICKNESS STD # 1 .5000	

SAMPLER OPERATION

PROBE HEAT SETTING	HEATER BOX SETTING
248 deg. F. +/- 25 deg. F.	For Method 13
Range: 223 - 273 deg. F.	165 deg. F. +/- 15 deg. F.
	Range: 150 - 180 deg. F.
	For Method 315
	248 deg. F. +/- 25 deg. F.
	Range: 223 - 273 deg. F.

BAROMETER READING 29.84 (in. Hg)

CORRECTION FACTOR .14 (in. Hg)

For Method 13 only:

~~ORIGINAL GASEOUS FLUORIDE SAMPLE VOLUME _____ (liter)~~ M315

		INITIAL WEIGHT	FINAL WEIGHT
IMPINGER #	+ 100 ml water	746.5	698.0
IMPINGER #	+ 100 ml water	741.3	768.5
IMPINGER #	+ EMPTY	633.1	654.5
IMPINGER #	+ SILICA GEL	1117.4	1157.8
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		

BALANCE: METTLER PJ6000 SNR K59603 WEIGHED BY: JS

2 Kg Class S-1 Calibration Wt. 1999.9 Balance check must be +/- 0.5 grams.

COMMENTS:

DGM # 1036720

Form: Impinger Report M5&13 or 5&315.xls 9/17/18

Magnitude 7 Metals LLC

GAS ANALYSIS REPORT

Location Potroom 1 Date 4-21-20

Run 1POM

Room A Analyzed by CA

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	0815	0.4	20.5
2	0830	0.4	20.6
3	0840	0.5	20.5

Room B Analyzed by SS

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	1215	1.0	21.0
2	1220	1.8	21.5
3	1230	1.6	21.0

MCEM analysis							
Location: POTROOM 1 RUN	Scrubber:			Date: 4/21/2020		Filter #: EP	
	Aluminum Dish						
Container No.	ID	Final Weight (g)	Tare Weight (g)	Weight gain (g)	Weight gain (mg)	Acetone wash volume (ml)	Methylene chloride wash volume (ml)
1 - Petri	1	2.5443	2.5443	0.0000	0.0		160
2 (Part. Beaker)+2M	2	2.5190	2.5165	0.0025	2.5	125	200
3W	3W	2.5122	2.5105	0.0017	1.7		130
3S	3S	2.4901	2.4839	0.0062	6.2	166.3	121.0
3S converted to ml						211.8	91.8
Totals					10.4	336.8	581.8
					$\sum m_{total}$	$\sum v_{aw}$	$\sum v_{tw}$
Acetone Lot # 231086				Density of Acetone (mg/ml)		785.0	
Acetone blank Weight (g) and Volume (ml)					0		200
Acetone blank Concentration				$c_a = m_a \div (v_a \rho_a)$		0.00E+00	
Less acetone wash blank (mg) (not to exceed 1 mg/l of acetone used)				$w_a = c_a \rho_a \sum v_{aw}$		0.00	
Concentration of acetone (mg/l) allowed compared to actual concentration					0.34	0.00	0.00
$MeCl_2$ Lot # 174189				Density of Methylene Chloride (mg/ml)		1318	
Methylene blank Weight (g) and Volume (ml)					0		200
Methylene Chloride blank Concentration				$c_a = m_a \div (v_a \rho_a)$		0.00E+00	
Less methylene chloride wash blank (mg) (not to exceed 1.5 mg/l of methylene chloride used)				$w_t = c_t \rho_t \sum v_{tw}$		0.00	
Concentration of methylene chloride (mg/l) allowed compared to actual concentration					0.87	0.00	0.00
Less filter blank (mg) (not to exceed … (mg/filter)				F_b		1.2	mg
MCEM weight (mg) No blank corr.				$\sum m_{total}$		10.4	mg
MCEM weight (g)						0.0104	g
MCEM wt (mg) minus acetone & MeCl2 blk				$\sum m_{total} - w_a - w_t$		10.4	mg
MCEM weight (mg) blk corr.				$m_{MCEM} = \sum m_{total} - w_a - w_t - f_b$		9.2	mg
MCEM weight (g)						0.0092	g

Notes:

Filename: M315-2020 Data