Magnitude 7 Metals LLC

STACK SAMPLE RESULTS

CARBON BAKE
LINE 3

Run Number 3 POM 2/25/2020 EPA Method # 5 & 315

METER VOLUME	208.235	CU. FT.
SQUARE ROOT OF DELTA P	0.375	SQ. ROOT IN. WATER
AVERAGE DELTA H	1.544	IN. WATER
METERED GAS TEMPERATURE	60.1	DEG. F
STATIC PRESSURE IN STACK	-0.04	IN. WATER
STACK TEMPERATURE	147.4	DEG. F
BAROMETRIC PRESSURE	29.54	IN. Hg
PROBE TIP DIAMETER	0.3324	INCHES
GAS METER CORRECTION FACTOR	0.992	
TOTAL SAMPLING TIME	300.0	MINUTES
TOTAL WATER COLLECTED	113.9	GRAMS
MOLECULAR WEIGHT	28.8	LB/LB-MOLE
SAMPLING DUCT AREA	52.56	SQ. FT.
TOTAL PARTICULATE COLLECTED	0.0390	GRAMS
MCEM COLLECTED	0.0381	GRAMS
GREEN ANODE MATERIAL USED	608645	LBS./DAY
VOLUME GAS SAMPLED	207.943	SCF
MOISTURE IN STACK GAS	2.513	%
VELOCITY OF STACK GAS (ACTUAL)	1372	FT./MIN.
VOLUMETRIC FLOWRATE IN DUCT	60333	SCFM
PERCENT ISOKINETIC - TRAIN TO DUCT	100.20	%
TOTAL PARTICULATE CONCENTRATION	0.0066	GRAMS/SCM
TOTAL PARTICULATE CONCENTRATION	0.00289	GRAINS/SCF
TOTAL PARTICULATE EMISSION	1.50	LBS./HR.
TOTAL PARTICULATE EMISSION	0.118	LBS./TON
POM CONCENTRATION	6.470	MG./SCM
POM CONCENTRATION	0.002828	GRAINS/SCF
POM EMISSION	1.462	LBS./HR.
GREEN ANODE MATERIAL USED	12.68	TON/HR.
POM EMITTED	0.115	LBS./TON

Stack Sample Results
Raw Data Averages

CARBON BAKE LINE 3

Start Date: 2/25/2020 **Stop Date:** 2/25/2020 **Run #:** 3POM

Traverse Point	Delta P (in. Water)	Delta H (in. Water)	Meter Temperature (in)	Meter Temperature (out)	Static Pressure (in. Water)	Stack Temperature (Deg. F)
1-1	0.18	1.90	53	53	-0.07	144
1-2	0.22	2.35	54	54	-0.08	145
1-3	0.22	2.35	54	54	-0.07	145
1-4	0.16	1.70	58	56	-0.06	145
1-5	0.10	1.10	58	56	-0.04	145
2-1	0.15	1.60	58	56	-0.06	141
2-2	0.18	1.95	60	58	-0.06	144
2-3	0.20	2.15	61	59	-0.08	145
2-4	0.16	1.75	62	60	-0.06	145
2-5	0.12	1.30	62	60	-0.05	145
3-1	0.10	1.10	60	60	-0.04	145
3-2	0.13	1.40	60	60	-0.05	147
3-3	0.16	1.75	62	60	-0.07	148
3-4	0.14	1.50	62	60	-0.06	148
3-5	0.11	1.20	62	60	-0.05	149
4-1	0.10	1.10	63	61	-0.01	149
4-2	0.14	1.50	63	61	-0.01	151
4-3	0.15	1.60	63	61	-0.03	152
4-4	0.11	1.20	63	61	-0.01	150
4-5	0.09	1.00	64	61	-0.01	144
5-1	0.14	1.50	64	62	-0.01	152
5-2	0.17	1.80	64	62	-0.01	154
5-3	0.15	1.60	64	62	-0.03	153
5-4	0.11	1.20	64	62	-0.01	151
5-5	0.09	1.00	64	62	-0.01	148
Averages	**0.375** (AVG. SQ. RT.)	**1.544**	**60.06**		**-0.04**	**147.4**

MAGNITUDE 7 METALS LLC

CARBON BAKE 3 STACK SAMPLING DATA

Date 2-25-20

Start Time 0800

Stop Time 1300

Run # 3PDM

Avg. Tip Diameter .3324

Duct Area = 52.56 sq. ft.

Delta H 1.77

2 % Moisture (assumed)

Operators: Chris Allutto, Joe Schneider

Initial L.C. @ 15.0 = .013

Final L.C. @ 5.0 = .002

Digital meter used _____

Initial Pitot L.C. = .011

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	12	083.415	.18	1.90	53	53	-.07	144	40	231	.1	10.68
1-2			.22	2.35	54	54	-.08	145	40	237	.1	10.69
1-3			.22	2.35	54	54	-.07	145	41	239	.1	10.69
1-4			.16	1.70	58	56	-.06	145	43	237	.1	10.75
1-5			.10	1.10	58	56	-.04	145	43	238	.1	10.75
2-1		129.550	.15	1.60	58	56	-.06	141	47	235	.1	10.82
2-2			.18	1.95	60	58	-.06	144	48	235	.1	10.81
2-3			.20	2.15	61	59	-.08	145	50	236	.1	10.81
2-4			.16	1.75	62	60	-.06	145	49	236	.1	10.81
2-5			.12	1.30	62	60	-.05	145	50	236	.1	10.81
3-1		172.640	.10	1.10	60	60	-.04	145	51	238	.1	10.81
3-2			.13	1.40	60	60	-.05	147	51	238	.1	10.78
3-3			.16	1.75	62	60	-.07	148	48	238	.1	10.78
3-4			.14	1.50	62	60	-.06	148	50	238	.1	10.78
3-5			.11	1.20	62	60	-.05	149	52	239	.1	10.78
4-1		212.550	.10	1.10	63	61	-.01	149	36	237	.1	10.78
4-2			.14	1.50	63	61	-.01	151	36	236	.1	10.75
4-3			.15	1.60	63	61	-.03	152	37	237	.1	10.73
4-4			.11	1.20	63	61	-.01	150	37	237	.1	10.77
4-5			.09	1.00	64	61	-.01	144	37	238	.1	10.88
5-1		251.475	.14	1.50	64	62	-.01	152	38	238	.1	10.75
5-2			.17	1.80	64	62	-.01	154	40	237	.1	10.72
5-3			.15	1.60	64	62	-.03	153	42	237	.1	10.73
5-4			.11	1.20	64	62	-.01	151	42	238	.1	10.77
5-5			.09	1.00	64	62	-.01	148	43	238	.1	10.82
FINAL		291.650										
S/N							77	8-1	5A	5H		

Nomograph factor: 12.58

Scrubbers operating: 11, 12

Form: SS CB3 Raw Data 5 Comp.xls 12/9/19

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

Location: Carbon Bake Line: 3 Date sampled: 2-25-20 Run: 3 POM Filter: BP

PITOT TUBE — Circle to document visual inspection.

SN D322

Visually inspected? Yes

PROBE TIP

SN 3185

DIAMETER MEASUREMENT (in.)

1. .3335
2. .3315
3. .3320
4. .3335
5. .3325
6. .3320
7. .3330
8. .3315

If previous calibration referenced, circle Yes to document visual inspection.

Out of round max. 0.004 in.

CAL. BY: CA

CALIPER: MITUTOYO S/N 7002015

NORANDA 0.5"

THICKNESS STD # 1 .5000

SAMPLER OPERATION

PROBE HEAT SETTING
248 deg. F. +/- 25 deg. F.
Range: 223 - 273 deg. F.

HEATER BOX SETTING
For Method 13
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 29.68 (in. Hg)

CORRECTION FACTOR -.14 (in. Hg)

For Method 13 only:

ORIGINAL GASEOUS FLUORIDE SAMPLE VOLUME _____ (liter)

		INITIAL WEIGHT	FINAL WEIGHT
IMPINGER #	+ 100 ml water	711.8	701.0
IMPINGER #	+ 100 ml water	729.7	777.6
IMPINGER #	+ EMPTY	634.1	653.2
IMPINGER #	+ SILICA GEL	1324.5	1382.2
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		

BALANCE: METTLER PJ6000 SNR K59603 WEIGHED BY: JS

2 Kg Class S-1 Calibration Wt. 2000.0 Balance check must be +/- 0.5 grams.

COMMENTS:

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

Magnitude 7 Metals LLC

GAS ANALYSIS REPORT

Location CB 3

Date 2-25-20

Run 3 RO M

Room

Analyzed by CA

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	0820	0.0	19.8
2	0830	0.0	19.6
3	0845	0.0	19.6

MCEM analysis							
Carbon Bake 3 Run 3 POM	Scrubber:			Date: 2/25/2020		Filter #: BP	
	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	2.5276	2.5173	0.0103	10.3		150
2 (Part. Beaker)+2M	2	2.5466	2.5321	0.0145	14.5	125	150
3W	3W	2.5141	2.5062	0.0079	7.9		125
3S	3S	2.5410	2.5342	0.0068	6.8	170.8	87.7
3S converted to ml						217.6	66.5
Totals					39.5	342.6	491.5
					$\sum m_{total}$	$\sum v_{aw}$	$\sum v_{tw}$

Acetone Lot # 070467 — Density of Acetone (mg/ml)		785.0	
Acetone blank Weight (g) and Volume (ml)	0.0001		200
Acetone blank Concentration $c_a = m_a \div (v_a \rho_a)$	6.37E-07		
Less acetone wash blank (mg) (not to exceed 1 mg/l of acetone used) $w_a = c_a \rho_a \sum v_{aw}$		0.17	
Concentration of acetone (mg/l) allowed compared to actual concentration	0.34	0.17	0.50
$MeCl_2$ Lot # 054318 — 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	0.74	0.00	0.00
Less filter blank (mg) (not to exceed … (mg/filter) F_b		1.2 mg	
MCEM weight (mg) No blank corr. $\sum m_{total}$		39.5 mg	
MCEM weight (g)		0.0395 g	
MCEM wt (mg) minus acetone & MeCl2 blk $\sum m_{total} - w_a - w_t$		39.3 mg	
MCEM weight (mg) blk corr. $m_{MCEM} = \sum m_{total} - w_a - w_t - f_b$		38.1 mg	
MCEM weight (g)		0.0381 g	

Notes:

Filename: M315-2020 Data