Magnitude 7 Metals LLC

STACK SAMPLE RESULTS

CARBON BAKE
LINE 3

Run Number 2 | 2/27/2020 | EPA Method # 5 & 13

METER VOLUME	177.222	CU. FT.
SQUARE ROOT OF DELTA P	0.317	SQ. ROOT IN. WATER
AVERAGE DELTA H	1.136	IN. WATER
METERED GAS TEMPERATURE	55.9	DEG. F
STATIC PRESSURE IN STACK	-0.03	IN. WATER
STACK TEMPERATURE	127.2	DEG. F
BAROMETRIC PRESSURE	29.88	IN. Hg
PROBE TIP DIAMETER	0.3324	INCHES
GAS METER CORRECTION FACTOR	0.992	
TOTAL SAMPLING TIME	300.0	MINUTES
TOTAL WATER COLLECTED	78.3	GRAMS
MOLECULAR WEIGHT	28.8	LB/LB-MOLE
SAMPLING DUCT AREA	52.56	SQ. FT.
TOTAL PARTICULATE COLLECTED	0.0250	GRAMS
GASEOUS FLUORIDE COLLECTED	0.00202	GRAMS
PARTICULATE FLUORIDE COLLECTED	0.00022	GRAMS
TOTAL FLUORIDE COLLECTED	0.00224	GRAMS
GREEN ANODE MATERIAL USED	540491	LBS./DAY
VOLUME GAS SAMPLED	180.280	SCF
MOISTURE IN STACK GAS	2.003	%
VELOCITY OF STACK GAS (ACTUAL)	1133	FT./MIN.
VOLUMETRIC FLOWRATE IN DUCT	52404	SCFM
PERCENT ISOKINETIC - TRAIN TO DUCT	100.02	%
TOTAL PARTICULATE CONCENTRATION	0.0049	GRAMS/SCM
TOTAL PARTICULATE CONCENTRATION	0.00214	GRAINS/SCF
TOTAL PARTICULATE EMISSION	0.96	LBS./HR.
TOTAL PARTICULATE EMISSION	0.085	LBS./TON
GASEOUS FLUORIDE CONCENTRATION	0.396	MG./SCM
GASEOUS FLUORIDE CONCENTRATION	0.000173	GRAINS/SCF
PARTICULATE FLUORIDE CONCENTRATION	0.043	MG./SCM
PARTICULATE FLUORIDE CONCENTRATION	0.000019	GRAINS/SCF
TOTAL FLUORIDE CONCENTRATION	0.439	MG./SCM
TOTAL FLUORIDE CONCENTRATION	0.000192	GRAINS/SCF
TOTAL FLUORIDE EMISSION	0.086	LBS./HR.
GREEN ANODE MATERIAL USED	11.26	TON/HR.
TOTAL FLUORIDE EMITTED	0.008	LBS./TON

Stack Sample Results
Raw Data Averages

CARBON BAKE LINE 3

Start Date: 2/27/2020 **Stop Date:** 2/27/2020 **Run #:** 2

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	0.16	1.75	45	45	-0.06	118
1-2	0.17	1.85	45	45	-0.07	123
1-3	0.15	1.65	45	45	-0.06	123
1-4	0.10	1.10	45	43	-0.03	123
1-5	0.08	0.85	46	44	-0.02	123
2-1	0.13	1.40	47	45	-0.05	122
2-2	0.14	1.55	48	46	-0.06	123
2-3	0.14	1.55	48	46	-0.06	125
2-4	0.10	1.10	52	50	-0.02	126
2-5	0.08	0.90	52	50	-0.02	126
3-1	0.08	0.90	55	53	-0.03	127
3-2	0.10	1.10	55	53	-0.03	127
3-3	0.12	1.30	57	55	-0.05	127
3-4	0.10	1.10	57	55	-0.04	128
3-5	0.08	0.90	57	55	-0.02	129
4-1	0.07	0.78	65	61	-0.03	129
4-2	0.10	1.10	65	61	-0.01	131
4-3	0.10	1.10	65	61	-0.02	132
4-4	0.09	1.00	66	62	-0.01	129
4-5	0.07	0.80	66	62	-0.02	126
5-1	0.08	0.90	68	64	-0.04	132
5-2	0.11	1.25	68	64	-0.03	135
5-3	0.09	1.00	70	67	-0.01	134
5-4	0.07	0.78	70	67	-0.01	133
5-5	0.06	0.68	70	67	-0.01	130
Averages	**0.317** (AVG. SQ. RT.)	**1.136**	**55.86**		**-0.03**	**127.2**

AP

MAGNITUDE 7 METALS LLC
CARBON BAKE 3 STACK SAMPLING DATA

Date 2-27-20
Start Time 8750
Stop Time 12:50
Run # 2
Avg. Tip Diameter .3324
Duct Area = 52.56 sq. ft.
Delta H 1.77
2 % Moisture (assumed)

Operators
Chi Ritter
Joe Schneider

Initial L.C. @ 15.0 = .009
Final L.C. @ 5.0 = .003

Digital meter used 2077
Initial Pitot L.C. = nil
Final 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	12	473.593	.16	1.75	45	45	-.06	118	38	150	.1	10.99
1-2			.17	1.85	45	45	-.07	123	40	155	.1	10.90
1-3			.15	1.65	45	45	-.06	123	42	155	.1	10.90
1-4			.10	1.10	45	43	-.03	123	44	153	.1	10.90
1-5			.08	.85	46	44	-.02	123	45	153	.1	10.90
2-1		513.750	.13	1.40	47	45	-.05	122	46	156	.1	10.94
2-2			.14	1.55	48	46	-.06	123	45	152	.1	10.90
2-3			.14	1.55	48	46	-.06	125	45	152	.1	10.90
2-4			.10	1.10	52	50	-.02	126	48	155	.1	10.97
2-5			.08	.90	52	50	-.02	126	48	155	.1	10.97
3-1		552.925	.08	.90	55	53	-.03	127	50	154	.1	11.02
3-2			.10	1.10	55	53	-.03	127	52	155	.1	11.02
3-3			.12	1.30	57	55	-.05	127	53	155	.1	11.04
3-4			.10	1.10	57	55	-.04	128	53	154	.1	11.04
3-5			.08	.90	57	55	-.02	129	55	154	.1	11.04
4-1		588.500	.07	.78	65	61	-.03	129	48	155	.1	11.17
4-2			.10	1.10	65	61	-.01	131	48	155	.1	11.13
4-3			.10	1.10	65	61	-.02	132	49	154	.1	11.11
4-4			.09	1.00	66	62	-.01	129	49	156	.1	11.19
4-5			.07	.80	66	62	-.02	126	49	154	.1	11.25
5-1		619.545	.08	.90	68	64	-.04	132	45	155	.1	11.18
5-2			.11	1.25	68	64	-.03	135	45	155	.2	11.16
5-3			.09	1.00	70	67	-.01	134	46	155	.1	11.19
5-4			.07	.78	70	67	-.01	133	47	156	.1	11.21
5-5			.06	.68	70	67	-.01	130	47	155	.1	11.27
FINAL		650.615										
S/N		[illegible]					77	8-1	5A	5H		

Nomograph factor: 12.58

Scrubbers operating: 11, 12

Magnitude 7 Metals LLC

GAS ANALYSIS REPORT

Location Carbon Bake

Date 2-27-20

Run 2

Room

Analyzed by CA

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	0840	0.0	19.2
2	0900	0.0	19.4
3	0915	0.0	19.4

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

Location: CB3 Line: ___ Date sampled: 2/27/20 Run: 2 Filter: 12

PITOT TUBE

Circle to document visual inspection.

SN D372

Visually inspected? Yes

PROBE TIP

SN 3185

DIAMETER MEASUREMENT (in.)

1. ____
2. .3324
3. AVG
4. ____
5. ____
6. ____
7. ____
8. ____

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

Out of round max. 0.004 in.

CAL. BY: ____

CALIPER: MITUTOYO S/N 7002015

NORANDA 0.5"

THICKNESS STD # 1 ____

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 30.02 (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	715.8	726.6
IMPINGER #	+ 100 ml water	720.0	737.8
IMPINGER #	+ EMPTY	508.1	522.4
IMPINGER #	+ SILICA GEL	1246.1	1284.5
IMPINGER #	+ SILICA GEL		
IMPINGER #	+ SILICA GEL		

BALANCE: METTLER PJ6000 SNR K59603 WEIGHED BY: SS

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