Magnitude 7 Metals LLC

STACK SAMPLE RESULTS

CARBON BAKE
LINE 3

Run Number 3 | 3/3/2020 | EPA Method # 5 & 13

METER VOLUME	191.440	CU. FT.
SQUARE ROOT OF DELTA P	0.340	SQ. ROOT IN. WATER
AVERAGE DELTA H	1.271	IN. WATER
METERED GAS TEMPERATURE	71.1	DEG. F
STATIC PRESSURE IN STACK	-0.03	IN. WATER
STACK TEMPERATURE	148.3	DEG. F
BAROMETRIC PRESSURE	29.50	IN. Hg
PROBE TIP DIAMETER	0.3313	INCHES
GAS METER CORRECTION FACTOR	0.995	
TOTAL SAMPLING TIME	300.0	MINUTES
TOTAL WATER COLLECTED	98.6	GRAMS
MOLECULAR WEIGHT	28.8	LB/LB-MOLE
SAMPLING DUCT AREA	52.56	SQ. FT.
TOTAL PARTICULATE COLLECTED	0.0296	GRAMS
GASEOUS FLUORIDE COLLECTED	0.01215	GRAMS
PARTICULATE FLUORIDE COLLECTED	0.00031	GRAMS
TOTAL FLUORIDE COLLECTED	0.01246	GRAMS
GREEN ANODE MATERIAL USED	540491	LBS./DAY
VOLUME GAS SAMPLED	187.304	SCF
MOISTURE IN STACK GAS	2.418	%
VELOCITY OF STACK GAS (ACTUAL)	1246	FT./MIN.
VOLUMETRIC FLOWRATE IN DUCT	54674	SCFM
PERCENT ISOKINETIC - TRAIN TO DUCT	100.26	%
TOTAL PARTICULATE CONCENTRATION	0.0056	GRAMS/SCM
TOTAL PARTICULATE CONCENTRATION	0.00244	GRAINS/SCF
TOTAL PARTICULATE EMISSION	1.14	LBS./HR.
TOTAL PARTICULATE EMISSION	0.101	LBS./TON
GASEOUS FLUORIDE CONCENTRATION	2.290	MG./SCM
GASEOUS FLUORIDE CONCENTRATION	0.001001	GRAINS/SCF
PARTICULATE FLUORIDE CONCENTRATION	0.058	MG./SCM
PARTICULATE FLUORIDE CONCENTRATION	0.000026	GRAINS/SCF
TOTAL FLUORIDE CONCENTRATION	2.349	MG./SCM
TOTAL FLUORIDE CONCENTRATION	0.001027	GRAINS/SCF
TOTAL FLUORIDE EMISSION	0.481	LBS./HR.
GREEN ANODE MATERIAL USED	11.26	TON/HR.
TOTAL FLUORIDE EMITTED	0.043	LBS./TON

Stack Sample Results
Raw Data Averages

CARBON BAKE LINE 3

Start Date: 3/3/2020 **Stop Date:** 3/3/2020 **Run #:** 3

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	60	60	-0.06	140
1-2	0.18	1.95	62	61	-0.06	142
1-3	0.16	1.70	64	62	-0.05	145
1-4	0.11	1.20	66	64	-0.03	146
1-5	0.08	0.85	66	64	-0.02	146
2-1	0.13	1.40	66	64	-0.02	146
2-2	0.15	1.60	67	65	-0.04	147
2-3	0.15	1.60	67	65	-0.05	147
2-4	0.10	1.10	69	67	-0.03	147
2-5	0.08	0.85	69	67	-0.01	147
3-1	0.08	0.85	72	70	-0.01	144
3-2	0.12	1.30	72	70	-0.04	147
3-3	0.14	1.50	72	70	-0.05	148
3-4	0.12	1.30	72	72	-0.03	148
3-5	0.08	0.85	74	72	-0.01	148
4-1	0.10	1.10	79	75	-0.02	150
4-2	0.12	1.30	79	75	-0.03	152
4-3	0.13	1.40	79	75	-0.02	153
4-4	0.11	1.20	78	77	-0.01	151
4-5	0.06	0.65	78	77	-0.01	150
5-1	0.12	1.30	77	77	-0.03	152
5-2	0.15	1.65	77	77	-0.04	155
5-3	0.13	1.40	77	77	-0.02	154
5-4	0.10	1.10	78	78	-0.01	153
5-5	0.08	0.88	78	78	-0.03	149
Averages	**0.340** (AVG. SQ. RT.)	**1.271**	**71.14**		**-0.03**	**148.3**

MAGNITUDE 7 METALS LLC

CARBON BAKE 3 STACK SAMPLING DATA

Date 3-3-20

Start Time 0810

Stop Time 13:10

Run # 3

Avg. Tip Diameter .3324

Duct Area = 52.56 sq. ft.

Delta H 1.77

2 % Moisture (assumed)

Operators: Chi Allen, Joe Schneider

Initial L.C. @ 15.0 = .009

Final L.C. @ 5.0 = .002

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	359.060	.16	1.75	60	60	-.06	140	51	156	.1	10.75
1-2			.18	1.95	62	61	-.06	142	53	156	.1	10.74
1-3			.16	1.70	64	62	-.05	145	54	156	.1	10.73
1-4			.11	1.20	66	64	-.03	146	55	156	.1	10.75
1-5			.08	.85	66	64	-.02	146	56	155	.1	10.75
2-1		400.005	.13	1.40	66	64	-.02	146	57	155	.1	10.75
2-2			.15	1.60	67	65	-.04	147	58	156	.1	10.75
2-3			.15	1.60	67	65	-.05	147	58	155	.1	10.75
2-4			.10	1.10	69	67	-.03	147	60	156	.1	10.79
2-5			.08	.85	69	67	-.01	147	60	156	.1	10.79
3-1		439.825	.08	.85	72	70	-.01	144	62	155	.1	10.91
3-2			.12	1.30	72	70	-.04	147	63	155	.1	10.86
3-3			.14	1.50	72	70	-.05	148	64	155	.1	10.86
3-4			.12	1.30	72	72	-.03	148	63	155	.1	10.86
3-5			.08	.85	74	72	-.01	148	63	156	.1	10.88
4-1		477.400	.10	1.10	79	75	-.02	150	64	155	.1	10.92
4-2			.12	1.30	79	75	-.03	152	61	155	.1	10.89
4-3			.13	1.40	79	75	-.02	153	56	156	.1	10.87
4-4			.11	1.20	78	77	-.01	151	60	155	.1	10.92
4-5			.06	.65	78	77	-.01	150	64	155	.1	10.94
5-1		513.900	.12	1.30	77	77	-.03	152	64	155	.1	10.89
5-2			.15	1.65	77	77	-.04	155	65	156	.2	10.84
5-3			.13	1.40	77	77	-.02	154	61	155	.1	10.85
5-4			.10	1.10	78	78	-.01	153	62	156	.1	10.89
5-5			.08	.88	78	78	-.03	149	62	155	.1	10.96
FINAL		550.500										
S/N		3622944					77	8-1	5A	5H		

Nomograph factor: 12.41

Scrubbers operating: 11, 12

Magnitude 7 Metals LLC

GAS ANALYSIS REPORT

Location Carbon Bake 3 Date 3-3-20

Run 3

Room _____ Analyzed by CA

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	0840	0.0	19.6
2	0850	0.0	19.5
3	0900	0.0	19.5

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

Location: CB3 Line: ___ Date sampled: 3/3/20 Run: 3 Filter: 13

PITOT TUBE — Circle to document visual inspection.

SN D372

Visually inspected? Yes

PROBE TIP

SN 3185

DIAMETER MEASUREMENT (in.)

1. .3310
2. .3315
3. .3310
4. .3315
5. .3320
6. .3325
7. .3305
8. .3305

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

Out of round max. 0.004 in.

CAL. BY: SS

CALIPER: MITUTOYO S/N 7002015

NORANDA 0.5"

THICKNESS STD # 1 .5

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 29.64 (in. Hg)

CORRECTION FACTOR -.14 (in. Hg)

For Method 13 only:

ORIGINAL GASEOUS FLUORIDE SAMPLE VOLUME 1 (liter)

		INITIAL WEIGHT	FINAL WEIGHT
IMPINGER #	+ 100 ml water	736.5	774.0
IMPINGER #	+ 100 ml water	597.4	612.7
IMPINGER #	+ EMPTY	634.3	644.4
IMPINGER #	+ SILICA GEL	1217.7	1253.4
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