Magnitude 7 Metals LLC

STACK SAMPLE RESULTS

CARBON BAKE
LINE 2

Run Number 7 POM | 5/20/2020 | EPA Method # 5 & 315

METER VOLUME	186.000	CU. FT.
SQUARE ROOT OF DELTA P	0.977	SQ. ROOT IN. WATER
AVERAGE DELTA H	1.781	IN. WATER
METERED GAS TEMPERATURE	82.6	DEG. F
STATIC PRESSURE IN STACK	-0.62	IN. WATER
STACK TEMPERATURE	164.6	DEG. F
BAROMETRIC PRESSURE	29.61	IN. Hg
PROBE TIP DIAMETER	0.2141	INCHES
GAS METER CORRECTION FACTOR	0.982	
TOTAL SAMPLING TIME	240.0	MINUTES
TOTAL WATER COLLECTED	86.5	GRAMS
MOLECULAR WEIGHT	29.0	LB/LB-MOLE
SAMPLING DUCT AREA	12.05	SQ. FT.
TOTAL PARTICULATE COLLECTED	0.0060	GRAMS
MCEM COLLECTED	0.0096	GRAMS
GREEN ANODE MATERIAL USED	601435	LBS./DAY
VOLUME GAS SAMPLED	176.673	SCF
MOISTURE IN STACK GAS	2.253	%
VELOCITY OF STACK GAS (ACTUAL)	3607	FT./MIN.
VOLUMETRIC FLOWRATE IN DUCT	35492	SCFM
PERCENT ISOKINETIC - TRAIN TO DUCT	99.97	%
TOTAL PARTICULATE CONCENTRATION	0.0012	GRAMS/SCM
TOTAL PARTICULATE CONCENTRATION	0.00052	GRAINS/SCF
TOTAL PARTICULATE EMISSION	0.16	LBS./HR.
TOTAL PARTICULATE EMISSION	0.013	LBS./TON
POM CONCENTRATION	1.919	MG./SCM
POM CONCENTRATION	0.000839	GRAINS/SCF
POM EMISSION	0.255	LBS./HR.
GREEN ANODE MATERIAL USED	12.53	TON/HR.
POM EMITTED	0.020	LBS./TON

Stack Sample Results
Raw Data Averages

CARBON BAKE LINE 2

Start Date: 5/20/2020 **Stop Date:** 5/20/2020 **Run #:** 7 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)
1-1	0.85	1.60	84	84	-0.63	156
1-2	0.85	1.55	79	79	-0.61	157
1-3	1.00	1.90	81	81	-0.57	158
1-4	1.05	2.00	80	80	-0.70	156
2-1	1.05	1.95	90	91	-0.60	174
2-2	1.00	1.85	84	83	-0.60	176
2-3	0.90	1.65	84	84	-0.60	170
2-4	0.95	1.75	79	79	-0.65	170
Averages	**0.977** (AVG. SQ. RT.)	**1.781**	**82.63**		**-0.62**	**164.6**

AP

12:32

MAGNITUDE 7 METALS LLC

CARBON BAKE 2 STACK SAMPLING DATA

Date 5/20/20

Start Time 9:00

Stop Time 14:30

Run # (Scrubber #) 7 POM

Avg. Tip Diameter .2141

Duct Area = 12.05 sq. ft.

Delta H 1.77

2 % Moisture (assumed)

METHOD (circle one)

Part & F or Part & POM

Operators

Joe Schneider

Initial L.C. @ 15.0 = .002

Final L.C. @ 5.0 = .001

Digital meter used 2077

Initial Pitot L.C. = N2

Final Pitot L.C. = N2

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	30	403.500	.85	1.60	84	84	-.63	156	55	230	.1	1.91
1-2			.85	1.55	79	79	-.61	158	52	235	.1	1.83
1-3			1.00	1.90	81	81	-.57	158	50	248	.1	1.89
1-4			1.05	2.00	80	80	-.70	156	54	254	.1	1.89
2-1		496.330	1.05	1.95	90	91	-.60	174	55	255	.1	1.87
2-2			1.00	1.85	84	83	-.60	176	54	260	.1	1.85
2-3			.90	1.65	84	84	-.60	170	54	260	.1	1.85
2-4			.95	1.75	79	79	-.65	170	57	254	.1	1.85
FINAL		589.500										
S/N		1312 4829					77	3-6	54	54		

Nomograph factor: 2.16

Stacks sampled 2

Run number designates scrubber sampled. If not followed by POM, designates Method 13. POM following the run number designates Method 315.

Form: SS CB2 Raw Data.xlsx 12/9/19

Magnitude 7 Metals

GAS ANALYSIS REPORT

Location CB2

Date 5/20/20

Run 7 POM

Room

Analyzed by CA

Run	Time	Percent Carbon Dioxide (CO_2)	Percent Oxygen (O_2)
1	9:15	1.2	20.2
2	9:20	1.4	20.0
3	9:25	1.4	20.0

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

Location: CB2 Line: ___ Date sampled: 5-20-20 Run: 7PM Filter: HP

PITOT TUBE — Circle to document visual inspection.

SN 488

Visually inspected? Yes

PROBE TIP

SN 4576

DIAMETER MEASUREMENT (in.)

1. .2150
2. .2155
3. .2150
4. .2145
5. .2130
6. .2135
7. .2130
8. .2135

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 .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 29.75 (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	732.4	759.7
IMPINGER #	+ 100 ml water	738.1	761.1
IMPINGER #	+ EMPTY	640.7	652.8
IMPINGER #	+ SILICA GEL	702.6	726.7
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

MCEM analysis

Location: CB | Scrubber: 7 | Date: 5/20/2020 | Filter #: HP

	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	2.5071	2.5064	0.0007	0.7		120
2 (Part. Beaker)+2M	2	2.5176	2.5117	0.0059	5.9	100	140
3W	3W	2.5175	2.5167	0.0008	0.8		125
3S	3S	2.5118	2.5084	0.0034	3.4	85.2	148.5
3S converted to ml						108.5	112.7
Totals					10.8	208.5	497.7
					$\sum m_{total}$	$\sum v_{aw}$	$\sum v_{tw}$

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	0.21	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	0.75	0.00	0.00
Less filter blank (mg) (not to exceed … (mg/filter) F_b		1.2	mg
MCEM weight (mg) No blank corr. $\sum m_{total}$		10.8	mg
MCEM weight (g)		0.0108	g
MCEM wt (mg) minus acetone & MeCl2 blk $\sum m_{total} - w_a - w_t$		10.8	mg
MCEM weight (mg) blk corr. $m_{MCEM} = \sum m_{total} - w_a - w_t - f_b$		9.6	mg
MCEM weight (g)		0.0096	g

Notes:

Filename: M315-2020 Data.xlsx