



South Coast Air Quality Management District

21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SOURCE TEST REPORT

17-338

CONDUCTED AT

Press Forge
7700 Jackson Street
Paramount, CA 90723

HEXAVALENT CHROMIUM EMISSIONS FROM FURNACES and GRINDING AREAS

TESTED: April 20 and May 3, 2017

ISSUED: September 1, 2017

REPORTED BY: William Welch
Air Quality Engineer II

REVIEWED BY:

A handwritten signature in blue ink, appearing to read "Michael Garibay".

Michael Garibay
Supervising Air Quality Engineer

SOURCE TEST ENGINEERING BRANCH

MONITORING & ANALYSIS DIVISION

Cleaning the air that we breathe...

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Test No. 17-338

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Date: 4/20/2017 and 5/3/2017

SUMMARY

- a. Firm Press Forge

- b. Test Location 7700 Jackson Street,
Paramount, CA 90723

- c. Units Tested Grinding Room Baghouses and Furnaces

- d. Test Requested by Matt Miyasato, PhD (DEO), (909) 396-3249,
SCAQMD

- e. Reason for Test Request..... High ambient air monitor readings of Cr⁺⁶

- f. Dates of Tests April 20 and May 3, 2017

- g. Source Tests Performed by Mike Garibay, Jason Aspell, Wayne
Stredwick, Bill Welch, Eric Padilla

- h. Test Arrangements Made
Through..... Kyle Nelson (EHS Manager,
Press Forge) [REDACTED]

- g. Source Test Observed by Kyle Nelson

- j. Company I.D. No. 000136

- k. Permit No. N/A

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RESULTS

Summary of Test Conditions:

During the source test on 4/20/17, Furnace #1304 was operating at approximately [REDACTED] °F. The parts inside the furnace were titanium; containing no chromium. In the Billet Grinding Area, three grinding stations were being used to process titanium parts. During the source test on 5/3/17, the North Slot Furnace was operating at approximately [REDACTED] °F, and the South Slot Furnace was operating at approximately [REDACTED] °F. The parts inside the furnace were 300 Series and 400 series stainless steels, containing 10% – 30% chromium. 300 series are austenitic grades of stainless steel, whereas 400 Series are ferritic/martensitic grades of stainless steel. In the Hand Grinding/Inspection Area, both grinding stations were being used to process the 3XX and 4XX stainless steel parts. Due to the nature and configuration of the process, testing was performed as a screening test, non-isokinetically, lacking sampling ports to determine exhaust rate.

Three ambient monitors are located in close proximity to the facility, Monitors 19, 26, and 27. The map in Figure 1 displays the locations of the ambient monitors in relation to the facility. Table 2 shows monitoring results for three different days recent to the test date.

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Results:

Table 1: Summary of Hexavalent Chromium Emissions

Date	Emissions Source	Concentration (ng/m ³) *
4/20/17	Furnace #1304 (titanium)	82.3
4/20/17	Billet Grinding Area Baghouse (titanium)	18.5
5/3/17	North Slot Furnace (300 and 400 series stainless steel)	34.6
5/3/17	South Slot Furnace (300 and 400 series stainless steel)	49.3
5/3/17	Hand Grinding/Inspection Area Baghouse (300 and 400 series stainless steel)	7.82

* The concentrations are reported in the same units as the ambient air monitoring data (see Table 2).

Table 2: Ambient Air Monitoring Data (ng/m³)

Date	Monitor 19	Monitor 26	Monitor 27
4/19/17	2.37	Invalid	1.89
4/22/17	0.65	0.12	0.54
4/25/17	3.71	0.75	1.33
4/28/17	0.8	0.82	0.85
5/1/17	NS	0.34	0.82

NS – No Sample

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EXECUTIVE SUMMARY

Due to ongoing citizen complaints and elevated nearby monitoring results prior to testing, Source Test engineers from the SCAQMD Source Test Branch conducted screening source tests on April 20 and May 3, 2017 at Press Forge to determine hexavalent chromium emissions from several processes at the facility. The testing resulted in hexavalent chromium emissions that were higher than the average ambient monitor readings in the days surrounding the test date, but on the lower end of the range of other furnace emissions that have been tested by the SCAQMD.

INTRODUCTION

On April 20 and May 3, 2017, engineers from the South Coast Air Quality Management District (SCAQMD) Source Test Engineering (STE) branch conducted source testing at Press Forge in Paramount, California. The purpose of the testing was to identify the specific causes of elevated ambient hexavalent chromium levels measured very near to the facility.

Several processes at the facility were identified as containing chromium materials. Processing of these materials can result in emissions of hexavalent chromium. Emissions testing was conducted on five of these processes: Furnace #1304, the Billet Grinding Area baghouse, the North Slot Furnace, the South Slot Furnace, and a Grinding/Inspection Area baghouse.

According to the facility, the material processed in Furnace #1304 and the Billet Grinding Area baghouse was titanium (non-chromium). The material processed in the slot furnaces and the Grinding/Inspection Area baghouse was 3XX and 4XX stainless steel, containing 10% – 30% chromium by weight. Type 3XX stands for austenitic grades of stainless steel, whereas the 4XX stands for ferritic/martensitic grades of stainless steel.

Sources whose emissions are measured as greater than that of the downwind monitor are considered to be potential contributors to the hexavalent chromium measured by the monitor, with those exhibiting the greater concentrations more positively identified as contributors.

EQUIPMENT AND PROCESS DESCRIPTION

Press Forge performs ██████████ of stainless steel and non-stainless steel parts for the aerospace industry. Parts are heated in forge furnaces to a specified temperature endpoint dependent upon the product and are then subjected to presses to shape them to meet specific product parameters. Grinding is carried out to remove imperfections and to finish the product cycle.

Furnaces and presses are arranged so that heated parts may be removed at their appropriate temperature and shaped in an expedient manner. Testing was performed only on heating and grinding processes.

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SAMPLING AND ANALYTICAL PROCEDURES

Five sampling trains were utilized during testing. Train #27 was used for the testing of Furnace #1304, Train #5 was used for the Billet Grinding Area, Train #19 was used for the testing of the South Slot Furnace, Train #36 was used for the testing of the North Slot Furnace, and Train #6 was used for the Grinding/Inspection Area.

The furnaces did not have exhaust stacks. Furnace #1304 had an outlet for the hot air controlled by a damper. The sampling probe was secured with the nozzle facing into the damper opening to collect emissions from the furnace as they were emitted into the atmosphere. Care was taken to prevent the probe from being stuck by the movement of the damper or for interfering with that movement. Because of the lack of a suitable stack, the testing was performed non-isokinetically. The North and South Slot Furnaces had openings at the top of the doors where exhaust gases were vented. The sampling probes were secured with the nozzles facing into the openings at the top of the doors.

The Billet Grinding Area and Grinding/Inspection Area are largely enclosed, with ventilation systems venting to cyclone/baghouse control devices. The inlet tubing for these samples were secured to a sample port downstream of the baghouses

Hexavalent Chromium Sampling (CARB Method 425)

Testing was conducted based on California Air Resources Board Method 425 applied to the furnace exhausts and the grinding areas, with the procedures of the method specific to stack sampling omitted. Five samples were taken at single non-isokinetic sample points as described above for informational purposes. Each sampling train consisted of a sampling line, which was used to draw the stack sample from the source. The furnace samples used quartz probes and nozzles. Samples were drawn through two impingers each filled with an aqueous solution of 0.1N NaHCO₃ (per Section 21.2), an empty impinger, a 2" filter, and an impinger bubbler filled with tared silica gel. Each sampling train was connected to a leak free vacuum pump, a dry gas meter, and a calibrated orifice. The impingers were contained in an ice bath to condense water vapor and other condensable matter present in the sample stream (see Figure 2).

The samples were extracted using the sampling trains. The pH of the solution in the first impinger was measured after the test, but prior to recovery, at pH of at least 9 (the method requires a pH of 8.0 or higher). The impinger solutions were recovered within 24 hours and the SCAQMD laboratory analyzed the hexavalent chromium in the samples by CARB Method 425. Hexavalent chromium deposited in the filter, sample line and impingers were extracted and analyzed by an Ion Chromatograph equipped with a post-column reactor (IC/PCR) and a visible wavelength detector. Moisture content was determined gravimetrically and volumetrically.

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DISCUSSION/TEST CRITIQUE

Isokinetic sampling was not possible due to exhaust stacks that were not conducive to isokinetics. Exhausts were extracted at a constant rate and the total volume of the samples were used to determine the mass emissions at each location. More precisely representative emissions samples would require the addition of a portable stack or other method for sampling isokinetically. The purpose of the screening samples were to identify potential sources of high hexavalent chromium levels so that further testing may be conducted, if necessary.

To more effectively interpret the test results, the results of the most recent Multiple Air Toxics Exposure Study (MATES), MATES IV, conducted by SCAQMD, should be considered. In that study, the typical ambient level of hexavalent chromium in the Los Angeles Basin averaged 0.06 ng/m^3 . The emissions from the five sources tested, ranging from $7.82 - 82.3 \text{ ng/m}^3$, were orders of magnitude higher than this average. Though it should be noted that levels of source emissions are reduced over distance as dilution occurs, the elevated levels at the ambient monitors indicate that high levels of hexavalent chrome are being emitted in Paramount. The processes tested indicate that they may be contributors to the high ambient readings.

As of the issue date of this report, SCAQMD has measured a wide variation of furnace emissions concentrations from 19 to $24,400 \text{ ng/m}^3$. Although the emissions from Furnace #1304, Slot Furnaces, and Grinding Areas are on the lower end of the range and may not have a large impact on the ambient monitoring readings, it is thought that the overall effect of the numerous furnaces emitting at various emissions levels at the facility may individually and/or cumulatively have a significant effect on the measured ambient concentrations.

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Figure 1: Facility and Ambient Monitor Location

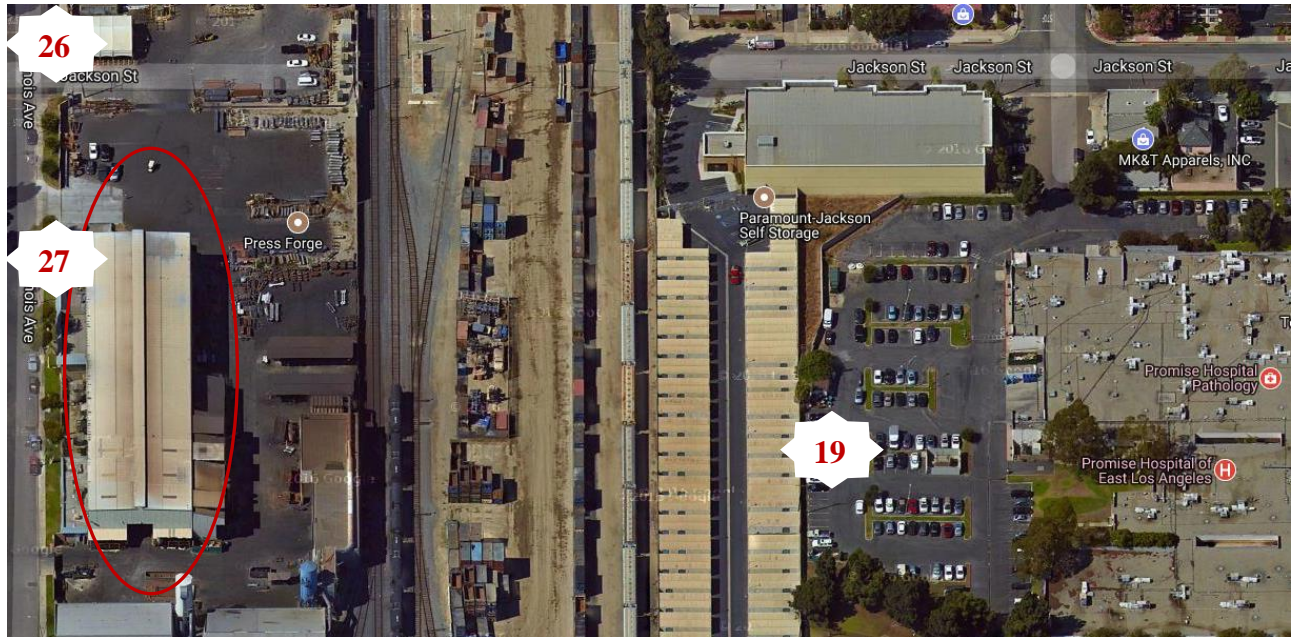


Figure 2: CARB Method 425 Train Diagram

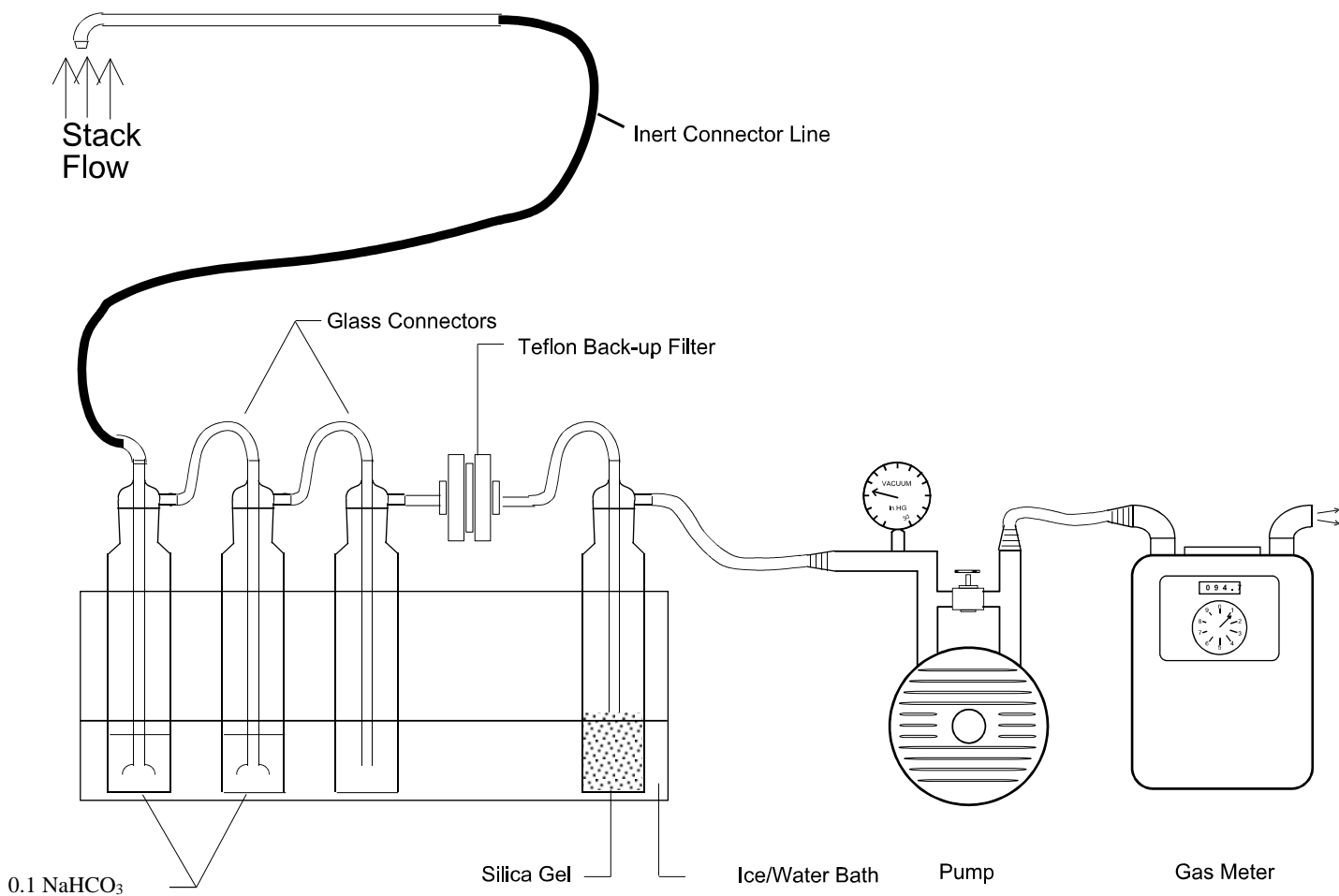


Figure 3: Sampling Equipment Location (Furnace #1304)



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CALCULATIONS

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21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 16-338

Test Date: 4/20/2017

SOURCE TEST CALCULATIONS

Sampling Location: Press Forge - Furnace No. 1304
Sample Train: 27-(Hex-Chrome)

Input by: B. Welch

SUMMARY

A. Average Traverse Velocity.....	#DIV/0!	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters).....	99.0417	deg F
C. Gas Meter Correction Factor.....	1.0024	
D. Average Orifice Pressure.....	2.30	"H ₂ O
E. Nozzle Diameter.....		inch
F1. Stack Diameter or Dimension #1.....		inch
F2. Stack Dim #2 (blank if circular).....		inch
G. Stack Cross Sect. Area.....	0.000	ft ²
H. Average Stack Temp.....	#DIV/0!	deg F
I. Barometric Pressure.....	29.66	"HgA
J. Gas Meter Pressure (H(D/13.6)).....	29.83	"HgA
K. Static Pressure.....		"H ₂ O
L. Total Stack Pressure (H(K/13.6)).....	29.66	"HgA
M. Pitot Correction Factor.....	0.84	
N. Sampling Time.....	120	min
O. Nozzle X-Sect. Area.....	0.00000	ft
P. Net Sample Collection.....	0.00022	mg
Q. Net Solid Collection.....	0.00022	mg
R. Water Vapor Condensed.....	131	ml
S. Gas Volume Metered.....	101.479	dcf
T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C].....	94.331	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))..... 6.05 %

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.061		1.000		18.0	,	1.09
Carbon Dioxide	0.000	Dry Basis	0.939		44.0	,	0.00
Carbon Monoxide	0.000	Dry Basis	0.939		28.0	,	0.00
Oxygen	0.209	Dry Basis	0.939		32.0	,	6.28
Nitrogen & Inerts	0.791	Dry Basis	0.939		28.2	,	20.96
						,	
					Sum		28.33

FLOW RATE

W. Gas Density Correction Factor (28.95/V)^{.5}..... 1.01

X. Velocity Pressure Correction Factor (29.92/L)^{.5}..... 1.00

Y. Corrected Velocity (A x M x W x X)..... #DIV/0! fps

Z. Flow Rate (Y x G x 60)..... #DIV/0! cfm

AA. Flow Rate (Standard) {Z x (L/29.92) x [520/(460+H)]}..... #DIV/0! scfm

BB. Dry Flow Rate (AA x (U/100))..... #DIV/0! dscfm

SAMPLE CONCENTRATION/EMISSION RATE

CC. Sample Concentration [0.01543 x (P/T)]..... 3.60E-08 gr/dscf

DD. Sample Concentration [54.143xCC (Molecular Wt.)]..... 1.95E-05 ppm

EE. Sample Concentration (2288373506.65 X CC)..... 82.3 ng/m3

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21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 16-338

Test Date: 4/20/2017

SOURCE TEST CALCULATIONS

Sampling Location: Press Forge - Billet Grinding Area Baghouse
Sample Train: 5-(Hex-Chrome)

Input by: B. Welch

SUMMARY

A. Average Traverse Velocity.....	#DV/0!	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters).....	90.4444	deg F
C. Gas Meter Correction Factor.....	0.9910	
D. Average Orifice Pressure.....	3.81	"H ₂ O
E. Nozzle Diameter.....		inch
F1. Stack Diameter or Dimension #1.....	inch	
F2. Stack Dim #2 (blank if circular).....	inch	
G. Stack Cross Sect. Area.....	0.000	ft ²
H. Average Stack Temp.....	#DV/0!	deg F
I. Barometric Pressure.....	29.66	"HgA
J. Gas Meter Pressure (H+(D/13.6)).....	29.94	"HgA
K. Static Pressure.....		"H ₂ O
L. Total Stack Pressure (H+(K/13.6)).....	29.66	"HgA
M. Pitot Correction Factor.....	0.84	
N. Sampling Time.....	120	min
O. Nozzle X-Sect. Area.....	0.00000	ft
P. Net Sample Collection.....	0.00006	mg
Q. Net Solid Collection.....	0.00006	mg
R. Water Vapor Condensed.....	5.2	ml
S. Gas Volume Metered.....	122.318	dcf

T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C]..... 114.590 dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))..... 0.21 %

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.002		1.000		18.0	,	0.04
Carbon Dioxide	0.000	Dry Basis	0.998		44.0	,	0.00
Carbon Monoxide	0.000	Dry Basis	0.998		28.0	,	0.00
Oxygen	0.209	Dry Basis	0.998		32.0	,	6.67
Nitrogen & Inerts	0.791	Dry Basis	0.998		28.2	,	22.26
						,	
					Sum		28.97

FLOW RATE

W. Gas Density Correction Factor (28.95/V) ^{.5}	1.00
X. Velocity Pressure Correction Factor (29.92/L) ^{.5}	1.00
Y. Corrected Velocity (A x M x W x X).....	#DV/0! fps
Z. Flow Rate (Y x G x 60).....	#DV/0! cfm
AA. Flow Rate (Standard) (Z x (L/29.92) x [520/(460+H)]).....	#DV/0! scfm
BB. Dry Flow Rate (AA x (U/100)).....	#DV/0! dscfm

SAMPLE CONCENTRATION/EMISSION RATE

CC. Sample Concentration [0.01543 x (P/T)].....	8.08E-09	gr/dscf
DD. Sample Concentration [54,143xCC (Molecular Wt.)].....	4.37E-06	ppm
EE. Sample Concentration (2288373506.65 X CC).....	18.5	ng/m3

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 17-338

Test Date: 5/3/2017

SOURCE TEST CALCULATIONS

Sampling Location: Press Forge
Sample Train: Slot Furnace North (Train #36) Input by: W. Stredwick

SUMMARY

A. Average Traverse Velocity.....	#DIV/0!	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters).....	95.75	deg F
C. Gas Meter Correction Factor.....	1.0051	
D. Average Orifice Pressure.....	2.30	"H ₂ O
E. Nozzle Diameter.....		inch
F1. Stack Diameter or Dimension #1.....	inch	
F2. Stack Dim #2 (blank if circular).....	inch	
G. Stack Cross Sect. Area.....	0.000	ft ²
H. Average Stack Temp.....	#DIV/0!	deg F
I. Barometric Pressure.....	29.25	"HgA
J. Gas Meter Pressure (H/(D/13.6)).....	29.42	"HgA
K. Static Pressure.....		"H ₂ O
L. Total Stack Pressure (H+(K/13.6)).....	29.25	"HgA
M. Pitot Correction Factor.....	0.84	
N. Sampling Time.....	120	min
O. Nozzle X-Sect. Area.....	0.00000	ft
P. Hex-Chrome Collection.....	0.00009	mg
Q. Total Chrome Collection.....		mg
R. Water Vapor Condensed.....	41.8	ml
S. Gas Volume Metered.....	99.377	dscf
T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C].....	91.894	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))..... 2.07 %

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.021		1.000		18.0	,	0.37
Carbon Dioxide	0.001	Dry Basis	0.979		44.0	,	0.02
Carbon Monoxide	0.000	Dry Basis	0.979		28.0	,	0.00
Oxygen	0.209	Dry Basis	0.979		32.0	,	6.55
Nitrogen & Inerts	0.791	Dry Basis	0.979		28.2	,	21.83
					Sum		28.77

FLOW RATE

W. Gas Density Correction Factor (28.95/V) ^{.5}	1.00
X. Velocity Pressure Correction Factor (29.92/L) ^{.5}	1.01
Y. Corrected Velocity (A x M x W x X).....	#DIV/0! fps
Z. Flow Rate (Y x G x 60).....	#DIV/0! cfm
AA. Flow Rate (Standard) (Z x (L/29.92) x [520/(460+H)]).....	#DIV/0! scfm
BB. Dry Flow Rate (AA x (U/100)).....	#DIV/0! dscfm

SAMPLE CONCENTRATION/EMISSION RATE

CC. Sample Concentration [0.01543 x (P/T)].....	1.51E-08	gr/dscf
DD. Sample Concentration [54,143xCC 51.996 (Molecular Wt.)].....	1.57E-05	ppm
EE. Hex Chrome Concentration (2288373506.65 X CC).....	3.46E+01	ng/m3

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Test No. 17-338

Test Date: 5/3/2017

SOURCE TEST CALCULATIONS

Sampling Location: Press Forge
Sample Train: Slot Furnace South (Train #19) Input by: W. Stredwick

SUMMARY

A. Average Traverse Velocity.....	#DIV/0!	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters).....	96.75	deg F
C. Gas Meter Correction Factor.....	0.9910	
D. Average Orifice Pressure.....	2.90	"H ₂ O
E. Nozzle Diameter.....		inch
F1. Stack Diameter or Dimension #1.....	inch	
F2. Stack Dim #2 (blank if circular).....	inch	
G. Stack Cross Sect. Area.....	0.000	ft ²
H. Average Stack Temp.....	#DIV/0!	deg F
I. Barometric Pressure.....	29.25	"HgA
J. Gas Meter Pressure (H/(D/13.6)).....	29.46	"HgA
K. Static Pressure.....		"H ₂ O
L. Total Stack Pressure (H+(K/13.6)).....	29.25	"HgA
M. Pitot Correction Factor.....		
N. Sampling Time.....	120	min
O. Nozzle X-Sect. Area.....	0.00000	ft
P. Hex-Chrome Collection.....	0.00014	mg
Q. Total Chrome Collection.....		mg
R. Water Vapor Condensed.....	38.4	ml
S. Gas Volume Metered.....	109.997	dscf
T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C].....	100.257	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))..... 1.75 %

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.017		1.000		18.0	,	0.31
Carbon Dioxide	0.001	Dry Basis	0.983		44.0	,	0.02
Carbon Monoxide	0.000	Dry Basis	0.983		28.0	,	0.00
Oxygen	0.209	Dry Basis	0.983		32.0	,	6.57
Nitrogen & Inerts	0.791	Dry Basis	0.983		28.2	,	21.90
					Sum		28.81

FLOW RATE

W. Gas Density Correction Factor (28.95/V) ^{.5}	1.00
X. Velocity Pressure Correction Factor (29.92/L) ^{.5}	1.01
Y. Corrected Velocity (A x M x W x X).....	#DIV/0! fps
Z. Flow Rate (Y x G x 60).....	#DIV/0! cfm
AA. Flow Rate (Standard) (Z x (L/29.92) x [520/(460+H)]).....	#DIV/0! scfm
BB. Dry Flow Rate (AA x (U/100)).....	#DIV/0! dscfm

SAMPLE CONCENTRATION/EMISSION RATE

CC. Sample Concentration [0.01543 x (P/T)].....	2.15E-08	gr/dscf
DD. Sample Concentration [54,143xCC <u>51.996</u> (Molecular Wt.)].....	2.24E-05	ppm
EE. Hex Chrome Concentration (2288373506.65 X CC).....	4.93E+01	ng/m3

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 17-338

Test Date: 5/3/2017

SOURCE TEST CALCULATIONS

Sampling Location: Press Forge
Sample Train: Grinding/Inspection Baghouse Exhaust (Train #6) Input by: W. Stredwick

SUMMARY

A. Average Traverse Velocity.....	#DIV/0!	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters).....	96.15	deg F
C. Gas Meter Correction Factor.....	1.0024	
D. Average Orifice Pressure.....	2.50	"H ₂ O
E. Nozzle Diameter.....		inch
F1. Stack Diameter or Dimension #1.....	inch	
F2. Stack Dim #2 (blank if circular).....	inch	
G. Stack Cross Sect. Area.....	0.000	ft ²
H. Average Stack Temp.....	#DIV/0!	deg F
I. Barometric Pressure.....	29.25	"HgA
J. Gas Meter Pressure (H/(D/13.6)).....	29.43	"HgA
K. Static Pressure.....		"H ₂ O
L. Total Stack Pressure (H+(K/13.6)).....	29.25	"HgA
M. Pitot Correction Factor.....	0.84	
N. Sampling Time.....	120	min
O. Nozzle X-Sect. Area.....	0.00000	ft
P. Hex-Chrome Collection.....	0.00002	mg
Q. Total Chrome Collection.....		mg
R. Water Vapor Condensed.....	30	ml
S. Gas Volume Metered.....	97.960	dcf

T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C]..... 90.320 dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))..... 1.52 %

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.015		1.000		18.0	,	0.27
Carbon Dioxide	0.001	Dry Basis	0.985		44.0	,	0.02
Carbon Monoxide	0.000	Dry Basis	0.985		28.0	,	0.00
Oxygen	0.209	Dry Basis	0.985		32.0	,	6.59
Nitrogen & Inerts	0.791	Dry Basis	0.985		28.2	,	21.95
					Sum		28.84

FLOW RATE

W. Gas Density Correction Factor (28.95/V)^{.5}..... 1.00
X. Velocity Pressure Correction Factor (29.92/L)^{.5}..... 1.01
Y. Corrected Velocity (A x M x W x X)..... #DIV/0! fps
Z. Flow Rate (Y x G x 60)..... #DIV/0! cfm
AA. Flow Rate (Standard) {Z x (L/29.92) x [520/(460+H)]}..... #DIV/0! scfm
BB. Dry Flow Rate (AA x (U/100))..... #DIV/0! dscfm

SAMPLE CONCENTRATION/EMISSION RATE

CC. Sample Concentration [0.01543 x (P/T)]..... 3.42E-09 gr/dscf
DD. Sample Concentration [54,143xCC 51.996 (Molecular Wt.)]..... 3.56E-06 ppm
EE. Hex Chrome Concentration (2288373506.65 X CC)..... 7.82E+00 ng/m3

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

APPENDICES

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

-18-

Date(s): 4/20/2017 and 5/3/2017

APPENDIX A

Field Data

South Coast Air Quality Management District

Furnace temp: °F

Test No. 17-338 Company: Presq Forge Date: 4/20/17
 Sampling Location: Furnace # 1304 Sample Train: _____

Traverse Source Test Data

Pre-Test Leak Check: Filter: _____ cfm @ _____ "Hg vac
 Probe: 0.00 cfm @ 15" "Hg vac
 Pitot Tube Leak Check: Pass / Fail

Post-Test Leak Check: Filter: _____ cfm @ _____ "Hg vac
 Probe: _____ cfm @ _____ "Hg vac
 Pitot Tube Leak Check: Pass / Fail

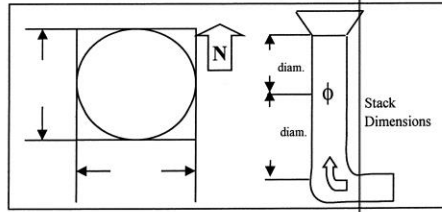
Time	Sample Point #	Gas Meter Reading (dcf) Start:	Stack		Calculated		Orifice ΔP ("H ₂ O)	Probe Temp. °F	Filter Temp. °F	Imp. Temp. °F	Meter Temp. °F		Vacuum "Hg
			Velocity Head ("H ₂ O)	Temp. °F	Velocity (fps)	Sampling Rate (cfm)					In	Out	
4316		979.684					2.3			64	93	89	7.5
+10		981.9					"			55	98	90	7.5
+20		990.2					"			59	102	92	7.5
+30		998.05					"			59	103	94	7.5
+40		1007.05					"			53	105	96	7.5
+50		1015.5					"			56	105	97	7.5
+60		1023.9					"			61	104	97	7.5
+70		1032.4					"			62	104	97	7.5
+80		1040.8					"			58	105	97	7.5
+90		1049.2					"			55	104	97	7.5
+100		1057.6					"			62	106	98	7.5
+110		1066.15					"			65	105	99	7.5
4120.3		1075.163					"						

(Net Vol. Uncorr.) _____ Avg. _____

K-Factor: _____ Stack Moisture: _____ Canister #: _____ Start: _____ "Hg vac
 Nozzle Diameter: _____"
 Barometric Pressure: 29.66 " HgA
 Static Pressure in Stack: +1- _____ " H₂O
 Recorded By: B. Klich
 Pitot Factor: _____

Calibration Data

Inclined Manometer _____ (Cal: N/A)
 Magnehelic No. _____ (Cal: _____)
 Pitot Tube No. _____ (Cal: _____)
 Potentiometer No. _____ (Cal: _____)
 Thermocouple No. _____ (Cal: _____)
 Gas Meter No. _____ (Cal: _____)
 Meter Corr. Factor: 1.0024



Sampling Probe: Stainless Steel / Borosilicate / Quartz Stack: Horizontal / Vertical Rectangular / Circular

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

South Coast Air Quality Management District

Test No. 17-338 Company: Press Forge Date: 5/3/17
 Sampling Location: FURNACE NO. 5 (SOUTH) Sample Train: 19

Traverse Source Test Data

Pre-Test Leak Check: Filter: 0.00 cfm @ 20 "Hg vac
 Probe: 0.00 cfm @ 20 "Hg vac
 Pitot Tube Leak Check: Pass / Fail N/A

Post-Test Leak Check: Filter: _____ cfm @ _____ "Hg vac
 Probe: 0.00 cfm @ 11 "Hg vac
 Pitot Tube Leak Check: Pass / Fail N/A

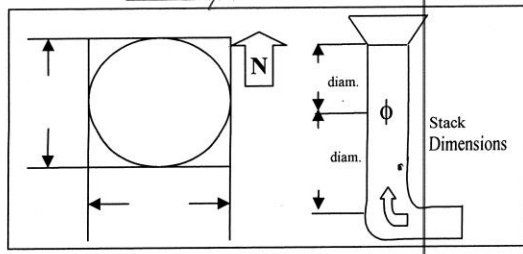
Time	Sample Point #	Gas Meter Reading (dcf)	Stack		Calculated			Probe Temp. °F	Filter Temp. °F	Imp. Temp. °F	Meter Temp. °F		Vacuum "Hg
			Velocity Head "H ₂ O	Temp. °F	Velocity (fps)	Sampling Rate (cfm)	Orifice ΔP ("H ₂ O)				In	Out	
1033	9A	Start: 654.178											
+20	+20	672.40					3.0			68	82	80	5
	+40	690.66					3.0			42	94	86	5
	+60	708.97					3.0			40.1	101	92	5
*	+80	727.35					2.8			50.0	115	97	5
	+100	745.65					2.8			53.2	108	101	5
	+120	764.175					2.8			51.8	111	104	5
1233													

(Net Vol. Uncorr.) _____ Avg. _____ REMOVING REFRACTORY FROM FURN 5

K-Factor: 0.5526 Canister #: _____ Start: _____ "Hg vac
 Nozzle Diameter: _____ " Recorded By: JA
 Barometric Pressure: 29.25 " HgA Pitot Factor: N/A
 Static Pressure in Stack: +1- _____ " H₂O

Calibration Data

Inclined Manometer	<u>715</u>	(Cal: <u>N/A</u>)
Magnehelic No.	_____	(Cal: _____)
Pitot Tube No.	<u>N/A</u>	(Cal: _____)
Potentiometer No.	<u>4120315</u>	(Cal: <u>3/23/17</u>)
Thermocouple No.	<u>1010315</u>	(Cal: _____)
Gas Meter No.	<u>NO 715</u>	(Cal: <u>3/23/17</u>)
Meter Corr. Factor:	<u>0.9916</u>	



Sampling Probe: Stainless Steel / Borosilicate / Quartz
 Stack: Horizontal / Vertical Rectangular / Circular
ABOVE FURNACE DOOR
SOUTH SET POINT 22CFD ACTUAL 225F
 * ATMOSPHERE INSIDE FURNACE BECAME HAZY

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

South Coast Air Quality Management District

Test No. 17-338 Company: Press Forge Date: 5-3-17
 Sampling Location: Baghouse Exhaust Grinding room North Sample Train: 6
Baghouse DC-48

Traverse Source Test Data

Pre-Test Leak Check: SS Grinding by HAND grinder Post-Test Leak Check:
 Filter: 0 cfm @ 15 "Hg vac Filter: 0 cfm @ 5 "Hg vac
 Probe: 0 cfm @ 15 "Hg vac Probe: 0 cfm @ 5 "Hg vac
 Pitot Tube Leak Check: Pass / Fail Pitot Tube Leak Check: Pass / Fail

Time	Sample Point #	Gas Meter Reading (dcf) Start: <u>164,240</u>	Stack		Calculated			Probe Temp. °F	Filter Temp. °F	Imp. Temp. °F	Meter Temp. °F		Vacuum "Hg
			Velocity Head ("H ₂ O)	Temp. °F	Velocity (fps)	Sampling Rate (cfm)	Orifice ΔP ("H ₂ O)				In	Out	
10:55							2.5			38	79	78	5
11:15		176,360					2.5			41	87	80	5
11:30		188,475					2.5			41	94	85	5
11:45		200,400					2.5			47	98	94	5
12:00		212,635					2.5			60	101	92	5
12:00 STOP		216,162					2.5			40	102	95	5
12:25 START													
11:55		225,000					2.5			40	103	98	5
11:40		237,320					2.5			42	108	101	5
11:05		249,700					2.5			39	110	103	5
11:20		262,200					2.5			41	111	104	5

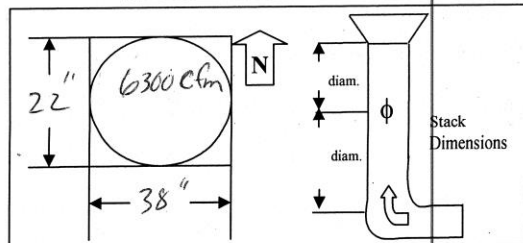
(Net Vol. Uncorr.)

Avg.

K-Factor: 0.5682 Stack Moisture: _____ Canister #: _____ Start: _____ "Hg vac
 Nozzle Diameter: NA " Recorded By: WS
 Barometric Pressure: 29.25 " HgA Pitot Factor: NA
 Static Pressure in Stack: +1- " H₂O

Calibration Data

Inclined Manometer _____	(Cal: <u>N/A</u>)
Magnehelic No. _____	(Cal: _____)
Pitot Tube No. _____	(Cal: _____)
Potentiometer No. <u>N0314</u>	(Cal: <u>B-24-17</u>)
Thermocouple No. <u>N0108</u>	(Cal: <u>5-2-17</u>)
Gas Meter No. <u>N0714</u>	(Cal: <u>7-24-17</u>)
Meter Corr. Factor: <u>1.0024</u>	



Sampling Probe: Stainless Steel / Borosilicate / Quartz (NA)

Stack: Horizontal (Vertical) (Rectangular) / Circular

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

APPENDIX B

District Laboratory Data

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182
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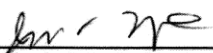
MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS

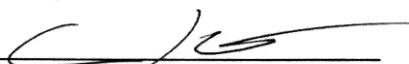
TO Mike Garibay Supervising A.Q. Engineer Source Test & Engineering	LABORATORY NO <u>1710807</u>
	SOURCE TEST NO <u>17-338</u>
SAMPLE(S) DESCRIBED AS 3 Hexavalent Chromium Trains	DATE RECEIVED <u>04/21/17</u>
	RULE NO <u>NA</u>
SAMPLING LOCATION Facility ID 136 Press Forge Co. 7700 Jackson Street Paramount, CA 90723	REQUESTED BY <u>Wayne Stredwick</u>
	DATE ANALYZED <u>4/21/2017</u>

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS AND RESULTS
Moisture and Hexavalent Chromium by CARB 425 (Sodium Bicarbonate(NaHCO₃) solution)

	Train 31	Train 27	Train 5
Moisture gain, g	0.4	131	5.2
Silica gel% expended	1	95	95
Filter gain, g	-0.0007	-0.0017	0.0166
Impinger 1 pH	9-10	9-10	9-10
Impinger 2 pH	9-10	9-10	9-10
Recovery notes	Field Blank	Quartz Probe & Tubing	Tubing
Cr ⁺⁶ total ug	0.02	0.22	0.06

NOTE (1) Additional significant figures provided for calculation purposes.

Reviewed By:  Date Reviewed: 04/28/17
Joan Nierit, Principal A.Q. Chemist
Laboratory Services

Approved By:  Date Approved: 5/2/17
Aaron Katzenstein, Ph.D.
Senior Manager
Laboratory Services
(909) 396-2219

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182
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MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS

LABORATORY NO 1710807

REQUESTED BY Wayne Stredwick

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS AND RESULTS
Moisture and Hexavalent Chromium by CARB 425 (Sodium Bicarbonate(NaHCO₃) solution)

QUALITY CONTROL

BALANCE CHECK

Lab No.	Result (g)	Limit (g)	Check Status
B17D149-CCV1	99.9997	±0.0005	Pass
B17D149-CCV2	500.0	±0.2	Pass

CCV RECOVERIES

Lab No.	Results (ppt)	Limit (%)	% Recovery
S17D063-CCV1	99	90-110	99
S17D063-CCV2	97	90-110	97
S17D063-CCV3	94	90-110	94
S17D063-CCV4	96	90-110	96
S17D063-CCV5	99	90-110	99

REF B17D149
S17D063

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182
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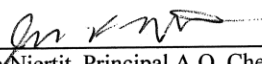
**MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS**

TO Mike Garibay Supervising A.Q. Engineer Source Test & Engineering	LABORATORY NO _____ 1711830 SOURCE TEST NO _____ 17-338
SAMPLE(S) DESCRIBED AS 3 Hexavalent Chromium Trains	DATE RECEIVED _____ 05/03/17 RULE NO _____ NA
SAMPLING LOCATION Facility ID 136 Press Forge Co. 7700 Jackson Street Paramount, CA 90723	REQUESTED BY _____ Wayne Stredwick DATE ANALYZED _____ 5/4/2017 DATE REPORTED _____ 5/12/2017

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS AND RESULTS
Moisture and Hexavalent Chromium by CARB 425 (Sodium Bicarbonate(NaHCO₃) solution)

	Train 6	Train 19	Train 36
Moisture gain, g	30.0	38.4	41.8
Silica gel% expended	80	90	85
Filter gain, g	0.0002	0.0009	-0.0004
Impinger 1 pH	9	9	9
Impinger 2 pH	9	9	9
Cr ⁺⁶ total ug	0.02	0.14	0.09
Recovery Notes:	Tubing	Probe and tubing	Probe and tubing

NOTE: Additional significant figures provided for calculation purposes.

Reviewed By: 
Joan Nierit, Principal A.Q. Chemist
Laboratory Services

Date Reviewed: 05/12/17

Approved By: 
Aaron Katzenstein, Ph.D.
Senior Manager
Laboratory Services
(909) 396-2219

Date Approved: 5/12/17

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182
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MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS

LABORATORY NO 1711830

REQUESTED BY Wayne Stredwick

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS AND RESULTS
Moisture and Hexavalent Chromium by CARB 425 (Sodium Bicarbonate(NaHCO₃) solution)

QUALITY CONTROL

BALANCE CHECK

Lab No.	Result (g)	Limit (g)	Check Status
B17E025-CCV1	100.0002	±0.0005	Pass
B17E025-CCV2	500.0	±0.2	Pass

CCV RECOVERIES

Lab No.	Results (ppt)	Limit (%)	% Recovery
S17E021-CCV1	94	90-110	94
S17E021-CCV2	102	90-110	102
S17E021-CCV3	105	90-110	105
S17E021-CCV4	96	90-110	96
S17E021-CCV5	94	90-110	94

REF B17E025
S17E021

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOURCE TEST REQUEST FOR EQUIPMENT/ANALYSIS

Company	Press Forge Co.	Source Test No.	17-338
Address	7700 Jackson Street	Request Date	April 28, 2017
Basic Equipment	Heat Treat Furnaces & Metal Grinding	Control Device	Un-controlled
Analysis/Equipment Requested By	W. Stredwick	Date Equipment Needed	May 2, 2017
For Compliance, Rule(s)	Rule Development/ AB2588		
Other (specify)		Facility ID No.	136
Dry Ice Needed	<input checked="" type="checkbox"/> Yes	Laboratory No.	<u>17-11830</u>

SAMPLE EQUIPMENT ANALYSIS REQUEST

Equipment Requested/ID #	Analysis Requested	Set ID
3- CARB Method 425 Trains with sodium bicarbonate solution and filter in the back of train	Hexavalent and Total Chromium, % moisture <i>Trains: Nos: 6, 19, 36</i> <i>Reference: Blue Book 41 Pages 132, 133</i>	
1 - Quartz Probe, tubing and tube fittings	Acid washed and sodium bicarbonate rinsed	
<i>1 quartz probe</i> <i>3 lengths tubing 2x8' 1x10'</i> <i>acid cleaned fittings</i>		
<u>Return</u>		
<i>Train 36: tubing, probe</i>	<i>Start: 5/3/17 10:55, End: 5/3/17 12:55</i>	
<i>Train 6: tubing</i>	<i>Start: 5/3/17 10:55, End: 5/3/17 13:30</i>	
<i>Train 19: tubing, probe</i>	<i>Start: 5/3/17 10:55, End: 5/3/17 12:30</i>	
<i>2 probes</i> <i>1 for sure quartz</i>		
<u>Recovery Samples</u>		
<i>Train 6: J-02, -03, -04</i>		
<i>Train 19: -06, -07, -08</i>		
<i>Train 36: -10, -11, -12</i>		
<i>Trip Blank: -13</i>		

SAMPLE EQUIPMENT CHAIN OF CUSTODY

Sample Equipment Set ID	From	To	For (S/T, Analysis, Cleanup, Not Used)	Date Received	Time
<i>Trains 6, 19, 36</i>	<i>C. Schmalz</i>	<i>W. G. ...</i>	<i>S/T</i>	<i>5-2-17</i>	<i>13:30</i>
<i>See above under return</i>	<i>W. G. ...</i>	<i>C. Schmalz</i>	<i>Recovery</i>	<i>5/3/17</i>	<i>16:17</i>
<i>Recovery Samples</i>	<i>Schmalz</i>	<i>C. Schmalz</i>	<i>Analysis</i>	<i>5/4/17</i>	<i>15:00</i>

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

**SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SAMPLE ANALYSIS REQUEST**

DISTF
 INVOI
LABOR.



TO: SCAQMD LAB: OTHER:

SOURCE NAME: Press Forge Co I.D. No. 136

Source Address: 7700 Jackson St City: Paramount

Mailing Address: 7700 Jackson St City: Paramount Zip: 90723

Contact Person: Kyle Nelson Title: EHS Manager Tel: 562-531-4962

Analysis Requested by: Areio Soltani Date: 05/05/2017

Approved by: [Signature] Office: Toxics/ Waste Mgmt Budget #: 60511

REASON REQUESTED: Court/Hearing Board Permit Pending Hazardous/Toxic Spill

Suspected Violation Rule(s) 1401/1404 (hexavalent chromium) Other

Sample Collected by: A. Soltani Date: 05/05/2017 Time: 0955-1055 hrs

Specify the description and location where the sample was collected:

- Sample #1: Refractory brick debris from inside furnace #5
- Sample #2: "Kaowool" refractory ceramic fiber debris from inside furnace #5

Analysis Requested: detection of the PPM and percent weight of: (1) Chromium VI; (2) Total Chromium; (3) Nickel (4) Cadmium; (5) Arsenic; (6) Lead; (7) Aluminum; & (8) Titanium the 8 oz container.

Relinquished by	Received by	Firm/Agency	Date	Time
<u>A. Soltani</u>	<u>[Signature]</u>	<u>SCAQMD Lab</u>	<u>5/5/17</u>	<u>1304</u>

Remarks: Please send results to Scott Caso, Sr. Enforcement Manager, Toxics & Waste Management Unit

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182

MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS
(Page 3 of 3)

Laboratory No. 1712518-01

Metals in Bulk Samples by Bruker S1 Titan Handheld X-Ray

QUALITY CONTROL SUMMARY

Note: Metals QC available upon request

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182

MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS
(Page 1 of 2)

To: Scott Caso
Sr. Enforcement Manager
Science & Technology Advancement

Laboratory No. 1712518-01

Requested By Areio Soltani

Submitted On 05/05/2017

Sample Source:
Press Forge Co.
7700 Jackson St.
Paramount, CA 90723

Analyzed On 05/23/2017

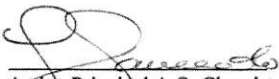
Report Created 07/06/2017

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS AND RESULTS


Metals in Bulk by Bruker S1 Titan Handheld X-Ray

See attached results and sample description

Note: Analysis for Hexavalent chromium was not performed due to sample matrix.

Reviewed By: 
Laura Saucedo, Acting Principal A.Q. Chemist
Laboratory Services

Reviewed Date: 07/06/2017

Approved By: 
Aaron Katzenstein, Ph.D., Senior Manager
Laboratory Services

Approved Date: 7/11/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

Test No. 17-336

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182

MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS
(Page 2 of 2)

Laboratory No. 1712518-01
Sample Description Refractory brick debris from inside furnace #5
Sample Date 05/05/2017 Received Date 05/05/2017 Analyzed Date 05/23/2017

Metals in Bulk Samples by Bruker S1 Titan Handheld X-Ray

Analyte, Unit	Result	LOD
Al, %	22.09	0.498
As, %	< LOD	0.0004
Cd, %	< LOD	0.004
Cr, %	0.04	0.002
Ni, %	0.02	0.003
Pb, %	< LOD	0.002
Ti, %	0.74	0.009

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, California 91765

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Date(s): 4/20/2017 and 5/3/2017



SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr. Diamond Bar, CA 91765-4182

MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS

(Page 1 of 5)

To: Scott Caso
Sr. Enforcement Manager
Compliance & Enforcement

Laboratory No. 1712518-02
Requested By Areio Soltani
Rule No. R1401

Sampling Location
Facility ID 136
Press Forge, Co.
7700 Jackson St.
Paramount, CA 90723

ST No. NA
Report Created 07/06/2017

ANALYTICAL WORK PERFORMED, METHOD OF ANALYSIS, AND RESULTS

Metals in Bulk Samples by Inductively Coupled Plasma - Mass Spectrometry

See attached results and sample information.

Reviewed By:

Handwritten signature of Laura Saucedo in black ink.

Laura Saucedo
Acting Principal A.Q. Chemist
Laboratory Services

Date Reviewed:

07/06/2017

Approved By:

Handwritten signature of Aaron Katzenstein in black ink.

Aaron Katzenstein, Ph.D.
Senior Manager
Laboratory Services
(909) 396-2219

Date Approved:

7/12/2017

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MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS

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Laboratory No. 1712518-02

Sample Description Plastic Jar - Kaowool refractory ceramic fiber debris from inside furnace #5

Sample Date 05/05/2017

Received Date 05/05/2017

Analyzed Date 06/14/2017

Metals in Bulk Samples by Inductively Coupled Plasma - Mass Spectrometry

Analyte, Unit	Result	Dilution Factor	MDL	MRL
As, µg/g	0.206	240	0.03	0.09
Cd, µg/g	AS	-	-	-
<i>Analyte Qualifier - AS - Poor Quality Assurance Results</i>				
Cr, µg/g	39.5	240	0.07	0.22
Ni, µg/g	16.1	240	0.07	0.22
Pb, µg/g	AS	-	-	-
<i>Analyte Qualifier - AS - Poor Quality Assurance Results</i>				
Ti, µg/g	AS	-	-	-
<i>Analyte Qualifier - AS - Poor Quality Assurance Results</i>				
V, µg/g	28.2	240	0.07	0.22

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MONITORING AND ANALYSIS
REPORT OF LABORATORY ANALYSIS

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Laboratory No. 1712518-02

Metals in Bulk Samples by Inductively Coupled Plasma - Mass Spectrometry

QUALITY CONTROL SUMMARY

Note: Metals QC available upon request.

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Date(s): 4/20/2017 and 5/3/2017

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT DRY GAS METER CALIBRATION WORKSHEET															
DATE: March 24, 2017										PERFORMED BY: W. Stredwick					
AMBIENT AIR 74 ° F										DRY GAS METER ID : N0714					
PBAR: 29.87 In.Hg										DRY GAS METER ID :					
STANDARD DRY GAS METER ID#: 7812470															
TRIAL	CFM	TOTAL TEMP	cubicF	H2O PRESSURE			METER		TOTAL	HRS	MIN	SEC	TIME	UC	PL RT
				IN	OUT	H2O	READ1	READ2							
1	1/4	1.6	74	1.2	1.2	1.2	343.2	344.8	1.6	5	3.00	5.05	0.3168		
2	1/4	1.1	74	1.2	1.2	1.2	345.2	346.3	1.1	3	29.00	3.48	0.3158		
3	1/4	1.3	74	1.2	1.2	1.2	346.4	347.7	1.3	4	7.00	4.12	0.3158		
1	1/2	4.7	74	2.8	2.8	2.8	349.3	354.0	4.7	8	51.00	8.85	0.5311		
2	1/2	11.5	74	2.8	2.8	2.8	354.6	366.1	11.5	21	46.00	21.77	0.5283		
3	1/2	2.9	74	2.8	2.8	2.8	366.2	369.1	2.9	5	18.00	5.30	0.5472		
1	3/4	3.8	74	5.2	5.2	5.2	370.4	374.2	3.8	4	53.00	4.88	0.7782		
2	3/4	5.1	74	5.2	5.2	5.2	374.4	379.5	5.1	6	30.00	6.50	0.7846		
3	3/4	4.9	74	5.2	5.2	5.2	379.8	384.7	4.9	6	14.00	6.23	0.7861		
1	1	5.2	74	9	9	9.0	386.3	391.5	5.2	5	9.00	5.15	1.0097		
2	1	7.0	74	9	9	9.0	391.7	398.7	7.0	6	56.00	6.93	1.0096		
3	1	6.5	74	9	9	9.0	399.0	405.5	6.5	6	25.00	6.42	1.0130		

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT DRY GAS METER CALIBRATION WORKSHEET																		
Page 2																		
DATE:		March 24, 2017					PERFORMED BY:					W. Stredwick						
DRY GAS METER ID		: N0714																
TRIAL	CFM	TOTAL	TEMP	H2O	IN	OUT	H2O	METER	READ1	READ2	CubicF	HRS	MIN	SEC	TIME	UC	FL	RT
		cubicF		IN				(in cubic F)							Decimal	CFM		
1	1/4	1.7	74	1.2	0.4	0.4	0.8	810.0	811.7	1.7	5	20.00			5.33	0.3188		
2	1/4	1.2	74	1.2	0.4	0.4	0.8	812.0	813.2	1.2	3	48.00			3.80	0.3158		
3	1/4	1.2	74	1.2	0.4	0.4	0.8	813.4	814.6	1.2	3	46.00			3.77	0.3186		
1	1/2	4.9	74	2.8	1.0	1.0	1.9	816.2	821.1	4.9	9	13.00			9.22	0.5316		
2	1/2	11.5	74	2.8	1.0	1.0	1.9	821.5	833.0	11.5	21	50.00			21.83	0.5267		
3	1/2	2.9	74	2.8	1.0	1.0	1.9	833.2	836.1	2.9	5	29.00			5.48	0.5289		
1	3/4	4.0	74	5.2	2.0	2.0	3.6	837.4	841.4	4.0	5	6.00			5.10	0.7843		
2	3/4	5.2	74	5.2	2.0	2.0	3.6	841.6	846.8	5.2	6	36.00			6.60	0.7879		
3	3/4	4.8	74	5.2	2.0	2.0	3.6	847.0	851.8	4.8	6	5.00			6.08	0.7890		
1	1	5.4	74	9.0	3.1	3.1	6.1	853.4	858.8	5.4	5	19.00			5.32	1.0157		
2	1	6.7	74	9.0	3.1	3.1	6.1	859.5	866.2	6.7	6	35.00			6.58	1.0177		
3	1	6.3	74	9.0	3.1	3.1	6.1	866.5	872.8	6.3	6	11.00			6.18	1.0189		

DATE: March 24, 2017

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SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT DRY GAS METER CALIBRATION WORKSHEET											
DRY GAS METER COEFFICIENT CALCULATIONS											
STANDARD DRY GAS METER ID#:						DRY GAS METER NO714					
With Coefficient of						1.0000					
TRIAL	CFM	U/C	TEMP	H2O Corrected	U/C	TEMP	H2O Corrected	COEF	AVE:	OVERALL	
	FlowRate			FlowRate	FlowRate		FlowRate				
1	1/4	0.3168	74	1.2	0.3089	74	0.8	0.3105	0.9950	0.9960	1.0024
2	1/4	0.3158	74	1.2	0.3079	74	0.8	0.3076	1.0010		
3	1/4	0.3158	74	1.2	0.3079	74	0.8	0.3103	0.9922		
1	1/2	0.5311	74	2.8	0.5198	74	1.88	0.5192	1.0012	1.0145	
2	1/2	0.5283	74	2.8	0.5172	74	1.88	0.5144	1.0053		
3	1/2	0.5472	74	2.8	0.5356	74	1.88	0.5165	1.0369		
1	3/4	0.7782	74	5.2	0.7662	74	3.6	0.7692	0.9960	0.9986	
2	3/4	0.7846	74	5.2	0.7725	74	3.6	0.7727	0.9997		
3	3/4	0.7861	74	5.2	0.7740	74	3.6	0.7739	1.0002		
1	1	1.0097	74	9	1.0033	74	6.05	1.0021	1.0012	1.0006	
2	1	1.0096	74	9	1.0032	74	6.05	1.0041	0.9991		
3	1	1.0130	74	9	1.0066	74	6.05	1.0052	1.0013		
CORRECTION FACTOR:										1.0024	

DATE : March 24, 20
PERFORMED BY: W. Stredwick
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Appendix D
Material Safety Data Sheets

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
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Date(s): 4/20/2017 and 5/3/2017



SAFETY DATASHEET

(Following Regulations (EC) No 1907/2006 & (EC) No 1272/2008)

SDS Number: 210 Date of first issue: 01 May 1987 Date of last revision: 22 October 2014

1 - Identification of product

Tradenames: Cerwool Cement, Cerwool Mouldable, Cerwool Pumpable, Cerwool Sealcoat, Kaowool Cement A, Kaowool Cement B, Kaowool Mouldable, Kaowool Mouldable AR, Kaowool Mouldable SV, Kaowool Pumpable, Kaowool Pumpable HS, Kaowool Pumpable HT, Kaowool Pumpable TP, Kaowool Pumpable XTP, Kaowool Sealcoat HT, Kaowool XTP-HT,

Product Group

REFRACTORY CERAMIC FIBER PRODUCT

Chemical Name

Vitreous Aluminosilicate Fiber

Intended Release

Use of the products is restricted to professional users for application as thermal insulation, heat shields, heat containment, gaskets and expansion joints at temperatures up to 1400°C in industrial furnaces, ovens, kilns, boilers and other process equipment and in the aerospace and automotive industries. Products are not intended for direct sale to the general public

• Primary Use: Manufacture of fiber (this use refers to the initial production of the fiber and is therefore not relevant to the downstream user)

• Secondary Use: Conversion into wet and dry mixtures and articles

• Tertiary Use: Installation, removal (industrial and professional) / Maintenance and service life (industrial and professional)

Uses Advised Against

Spraying of the product

Synonyms

RCF, ceramic fiber, synthetic vitreous fiber (SVF), man-made vitreous fiber (MMVF), man-made mineral fiber (MMMF)

Trade Names

Kaowool®: Cement A, Cement B, Moldable, Moldable SV, Pumpable TP, XTP, XTP-HT

Kaowool®: Pumpable, Pumpable HT, Pumpable HS, Moldable AR, Sealcoat HT

Kaofit: Moldable, HT Pumpable, XTP Pumpable

Cer-Wool®: Cement, Pumpable, Moldable, Seal-Coat™

Company

Morgan Advanced Materials
Thermal Ceramics Inc.
P. O. Box 923; Dept. 300
Augusta, GA 30903-0923

For Product Stewardship and Emergency Information:

Hotline - 1-800-722-5681

Fax - 706-560-4054

For additional SDSs and to confirm this is the most current SDS for the product, visit our web page www.morganthermalceramics.com or send a request to MT.NorthAmerica@morganplc.com

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2 - Hazard Identification

Emergency Overview

POSSIBLE CANCER HAZARD BY INHALATION.

(See Section 11 for more information)

Chronic Effects

There has been no increased incidence of respiratory disease in studies examining occupationally exposed workers. In animal studies, long term laboratory exposure to doses hundreds of times higher than normal occupational exposures has produced fibrosis, lung cancer and mesothelioma in rats or hamsters. The fibers used in those studies were specially sized to maximize rodent respirability.

Possible Health Effects

Target Organs: Respiratory Tract (nose and throat), Eyes, Skin

Respiratory Tract Irritation: If inhaled in sufficient quantity, may cause temporary, mild mechanical irritation to respiratory tract. Symptoms may include scratchiness of the nose or throat, cough or chest discomfort

Eye Irritation: May cause temporary, mild mechanical irritation. Fibers may be abrasive; prolonged contact may cause damage to the outer surface of the eye.

Skin Irritation: May cause temporary, mild mechanical irritation. Exposure may also result in inflammation, rash or itching.

Gastrointestinal Irritation: Unlikely route of exposure.

Medical Conditions Aggravated by Exposure: Pre-existing medical conditions, including dermatitis, asthma or chronic lung disease may be aggravated by exposure; individuals who have a history of allergies may experience greater amounts of skin and respiratory irritation.

Hazard Classification Info

Although studies, involving occupationally exposed workers, have not identified any increased incidence of respiratory disease, results from animal testing have been used as the basis for hazard classification. In each of the following cases, the conclusions are qualitative only and do not rest upon any quantitative analysis suggesting that the hazard actually may occur at current occupational exposure levels.

The International Agency for Research on Cancer (IARC) confirmed in October 2001 that Group 2B (possible human carcinogen based on sufficient evidence of carcinogenicity in animals but inadequate evidence in humans) continues to be the appropriate classification for refractory ceramic fiber.

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified respirable RCF and glasswool as substances reasonably anticipated to be carcinogens.

The American Conference of Governmental Industrial Hygienists (ACGIH) has classified RCF as "A2-Suspected Human Carcinogen."

The Commission of The European Communities (DG XI) has classified RCF as a substance "that should be regarded as if it is carcinogenic to man."

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a chemical known to the State of California to cause cancer.

The Canadian Environmental Protection Agency (CEPA) has classified RCF as "probably carcinogenic" (Group 2).

The Canadian Workplace Hazardous Materials Information System (WHMIS) - RCF is classified as Class D2A - Materials Causing Other Toxic Effects.

The Hazardous Materials Identification System (HMIS) -
Health 1* Flammability 0 Reactivity 0 Personal Protection Index X (Employer Determined)
(* denotes potential for chronic effects)

3 - Composition / Information On Ingredients

COMPONENTS	CAS NUMBER	% BY WEIGHT
Refractories, Fibers, Aluminosilicate	142844-00-6	Up to 55
Silica, Amorphous	7631-86-9	Up to 30
Propylene Glycol	57-55-6	1 - 10
Water	7732-18-5	45 - 60

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

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4 - First-Aid measures

4.1 - Eyes

If eyes become irritated, flush immediately with large amounts of lukewarm water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes.

4.2 - Skin

If skin becomes irritated, remove soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.

4.3 - Respiratory Tract

If respiratory tract irritation develops, move the person to a dust free location. See Section 8 for additional measures to reduce or eliminate exposure.

4.4 - Gastrointestinal

If gastrointestinal tract irritation develops, move the person to a dust free environment.

If the above symptoms persist, seek medical attention

NOTES TO PHYSICIANS:

Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure does not result in allergic manifestations.

5 - Fire-fighting measures

5.1 - NFPA Codes

Flammability: 0 Health: 1 Reactivity: 0 Special: 0

5.2 - NFPA Unusual Hazards

None

5.3 - Flammable Properties

None

5.4 - Flash Point

None

5.5 - Hazardous decomposition products

None

5.6 - Unusual Fire and explosion hazard

None

5.7 - Extinguishing media

Use extinguishing media suitable for type of surrounding fire

6 - Accidental Release Measures

Avoid creating airborne dust. Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming, the vacuum should be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning.

7 - Handling and storage

7.1 - Handling

Handle ceramic fiber carefully. Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

7.2 - Storage

Store in original container in a dry area. Keep container closed when not in use.

Product packaging may contain residue. Do not reuse.

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Castle Metals

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Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)



Printing date 07/01/2015

Reviewed on 07/01/2015

1 Identification

- **Product identifier**
- **Trade name: Stainless Steel**
- **Other Product Identifiers:** 3XX Series, 4XX Series
- **Recommended use and restriction on use**
- **Recommended use:** Raw materials.
- **Restrictions on use:** Contact manufacturer.
- **Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
Castle Metals
1420 Kensington Road Suite 220
Oak Brook IL 60523
(847) 349-3000
- **Emergency telephone number:** (847)-349-3000

2 Hazard(s) identification

- **Classification of the substance or mixture**
The product is not classified as hazardous according to the Globally Harmonized System (GHS).
- **Additional information:**
There are no other hazards not otherwise classified that have been identified.
0 percent of the mixture consists of ingredient(s) of unknown toxicity.
Not hazardous as delivered. Long term inhalation of product dusts formed during use is harmful.
- **Label elements**
- **GHS label elements**
The product is not classified as hazardous according to OSHA GHS regulations within the United States.
- **Hazard pictograms** Not Regulated
- **Signal word** Not Regulated
- **Hazard-determining components of labeling:** None.
- **Hazard statements** Not Regulated
- **Precautionary statements** Not Regulated
- **Hazard description:**
- **WHMIS-symbols:** Not hazardous under WHMIS.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
 Health = 0
Fire = 0
Reactivity = 0
- **HMIS-ratings (scale 0 - 4)**
 Health = 0
Fire = 0
Reactivity = 0
- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

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Castle Metals

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Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

Trade name: **Stainless Steel**

(Contd. of page 1)

vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:

7439-89-8	iron	60-88%
7440-47-3	chromium	10-30%
7440-02-0	nickel ⊕ Carc. 2, H351; STOT RE 1, H372 ⊕ Skin Sens. 1, H317	0-27%
7439-96-5	manganese, powdered ⊕ Flam. Sol. 1, H228	<6%
7440-50-8	copper	<6%
7439-98-7	molybdenum	<6%
7440-32-8	titanium ⊕ Self-heat. 1, H251; Water-react. 1, H260	<6%
7723-14-0	phosphorus ⊕ Flam. Liq. 2, H225; Flam. Sol. 1, H228	<2%
7704-34-9	sulfur ⊕ Skin Irrit. 2, H315	<2%
7440-21-3	silicon ⊕ Flam. Sol. 2, H228	<2%
7440-48-4	cobalt ⊕ Resp. Sens. 1, H334; Carc. 2, H351 ⊕ Skin Sens. 1, H317	<2%
7440-31-5	tin	<2%
7440-03-1	niobium	<2%
7440-44-0	carbon	<2%

Additional information:

For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.

4 First-aid measures

Description of first aid measures

General information: No special measures required.

After inhalation: Supply fresh air; consult doctor in case of complaints.

After skin contact:

Brush off loose particles from skin.
Immediately wash with water and soap and rinse thoroughly.

After eye contact:

Remove contact lenses if worn, if possible.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

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Castle Metals

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Safety Data Sheet

acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

Trade name: **Stainless Steel**

(Contd. of page 2)

- **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
- **Information for doctor:**
 - **Most important symptoms and effects, both acute and delayed**
No further relevant information available.
 - **Danger** No further relevant information available.
 - **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
Special powder for metal fires. Do not use water.
Dry sand
Graphite powder.
Dry sodium chloride
- **For safety reasons unsuitable extinguishing agents:** Water
- **Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
- **Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information** No further relevant information available.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation.
Do not breathe dust.
Avoid formation of dust.
Use personal protective equipment as required.
For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Pick up mechanically.
Dispose of the collected material according to regulations.
Send for recovery or disposal in suitable receptacles.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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Test No. 17-336

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Castle Metals

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Safety Data Sheet
acc. to OSHA HCS (29 CFR 1910.1200)

Printing date 07/01/2015

Reviewed on 07/01/2015

Trade name: Stainless Steel

(Contd. of page 3)

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Prevent formation of dust.
Any deposit of dust which cannot be avoided must be regularly removed.
Use proper precautions around molten material.
- **Information about protection against explosions and fires:**
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Do not store together with acids.
Do not store together with alkalis (caustic solutions).
Store away from oxidizing agents.
- **Further information about storage conditions:** None.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

Components with limit values that require monitoring at the workplace:

7439-89-6 iron	
EV (Canada)	Long-term value: 1* 5** mg/m ³ as iron;*salts, water-soluble;**welding fume
LMPE (Mexico)	Long-term value: 1 mg/m ³
7440-47-3 chromium	
PEL (USA)	Long-term value: 1* 0.5** mg/m ³ *metal;**inorganic compds., as Cr
REL (USA)	Long-term value: 0.5* mg/m ³ *metal+inorg.compds.as Cr;See Pocket Guide App. C
TLV (USA)	Long-term value: 0.5 mg/m ³
EL (Canada)	Long-term value: 0.5 mg/m ³ as metal
EV (Canada)	Long-term value: 0.05 mg/m ³
LMPE (Mexico)	Long-term value: 0.5 mg/m ³ A4
7440-02-0 nickel	
PEL (USA)	Long-term value: 1 mg/m ³

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REL (USA)	Long-term value: 0,015 mg/m ³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 1.5* mg/m ³ elemental, *inhalable fraction
EL (Canada)	Long-term value: 0,05 mg/m ³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1 mg/m ³ Inhalable fraction
LMPE (Mexico)	Long-term value: 1.5* mg/m ³ *elemental;A5, fracción inhalable
7439-96-5 manganese, powdered	
PEL (USA)	Ceiling limit value: 5 mg/m ³ as Mn
REL (USA)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ fume, as Mn
TLV (USA)	Long-term value: 0.02* 0.1* mg/m ³ as Mn; *respirable **inhalable fraction
EL (Canada)	Long-term value: 0.2 mg/m ³ as Mn; R
EV (Canada)	Long-term value: 0.2 mg/m ³ as manganese
LMPE (Mexico)	Long-term value: 0.2 mg/m ³ como Mn
7440-50-8 copper	
PEL (USA)	Long-term value: 1* 0.1** mg/m ³ as Cu *dusts and mists **fume
REL (USA)	Long-term value: 1* 0.1** mg/m ³ as Cu *dusts and mists **fume
TLV (USA)	Long-term value: 1* 0.2** mg/m ³ *dusts and mists; **fume; as Cu
EL (Canada)	Long-term value: 1* 0.2** mg/m ³ *dusts and mists; **fume, as Cu
EV (Canada)	Long-term value: 0.2* 1** mg/m ³ as copper, *fume,**dust and mists
LMPE (Mexico)	Long-term value: 0.2* 1** mg/m ³ *humo (como Cu);**polvo y niebla (como Cu)
7439-98-7 molybdenum	
PEL (USA)	Long-term value: 15* mg/m ³ *Total dust
TLV (USA)	Long-term value: 10* 3** mg/m ³ as Mo; *inhalable fraction ** respirable fraction

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EL (Canada)	Long-term value: 3* 10** mg/m ³ as Mo; *respirable **inhalable
EV (Canada)	Long-term value: 10* 3** 0.5*** mg/m ³ metal,insol.compdl.*inh;**resp;sol.compdl.***resp
LMPE (Mexico)	Long-term value: 10* 3** mg/m ³ *fracción inhalable **respirable; como Mo
7723-14-0 phosphorus	
REL (USA)	Long-term value: 0.1 mg/m ³
LMPE (Mexico)	Short-term value: 0.3 mg/m ³ Long-term value: 0.1 mg/m ³
7440-21-3 silicon	
PEL (USA)	Long-term value: 15* 5** mg/m ³ *total dust **respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ *total dust **respirable fraction
TLV (USA)	TLV withdrawn
EL (Canada)	Long-term value: 10* 3** mg/m ³ *total dust,**respirable fraction
EV (Canada)	Long-term value: 10 mg/m ³ total dust
LMPE (Mexico)	Short-term value: 20 mg/m ³ Long-term value: 10 mg/m ³ (e)
7440-48-4 cobalt	
PEL (USA)	Long-term value: 0.1* mg/m ³ as Co; *for metal dust and fume
REL (USA)	Long-term value: 0.05 mg/m ³ as Co; metal dust & fume
TLV (USA)	Long-term value: 0.02; NIC - 0.02* mg/m ³ BEI; *hard metals,thoracic ;NIC-A2,RSN,as W
EL (Canada)	Long-term value: 0.02 mg/m ³ as Co; IARC 2B
EV (Canada)	Long-term value: 0.1 mg/m ³
LMPE (Mexico)	Long-term value: 0.02 mg/m ³ A3, IBE
7440-31-6 tin	
PEL (USA)	Long-term value: 2 mg/m ³ metal
REL (USA)	Long-term value: 2 mg/m ³
TLV (USA)	Long-term value: 2 mg/m ³ metal
EL (Canada)	Long-term value: 2 mg/m ³ metal



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EV (Canada)	Long-term value: 2* 0.1** mg/m ³ *metal, oxide, inorg. compds.; **org. compds.; Skin	
LMPE (Mexico)	Long-term value: 2* mg/m ³ *metal	
Ingredients with biological limit values:		
7440-48-4 cobalt		
BEI (USA)	15 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Cobalt (background)	
	1 µg/L Medium: blood Time: end of shift at end of workweek Parameter: Cobalt (background, semi-quantitative)	
<ul style="list-style-type: none"> · Additional information: No further relevant information available. · Exposure controls · Personal protective equipment: · General protective and hygienic measures: The usual precautionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Store protective clothing separately. Wash hands before breaks and at the end of work. Avoid contact with the eyes. Avoid close or long term contact with the skin. · Engineering controls: No further relevant information available. · Breathing equipment: Particulate mask should filter at least 99% of airborne particles. Use respiratory protection when grinding or cutting material. · Protection of hands: Wear gloves for the protection against mechanical hazards according to OSHA and NIOSH rules. · Eye protection: 		
	 Safety glasses	
<ul style="list-style-type: none"> · Body protection: Protective work clothing · Limitation and supervision of exposure into the environment: Avoid release to the environment. · Risk management measures: See Section 7 for additional information. 		
9 Physical and chemical properties		
<ul style="list-style-type: none"> · Information on basic physical and chemical properties · General information · Appearance: 		
Form:	Solid material	
Color:	Grey to Black.	
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· Odor:	Odorless
· Odor threshold:	Not determined.
· pH-value:	Not applicable.
· Change in condition	
Melting point/Melting range:	1371 °C (2500 °F)
Boiling point/Boiling range:	Undetermined.
· Flash point:	Not applicable.
· Flammability (solid, gaseous):	Not determined.
· Auto-ignition temperature:	Not determined.
· Decomposition temperature:	Not determined.
· Auto igniting:	Product is not self-igniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure:	Not applicable.
· Density at 20 °C (68 °F):	7 g/cm ³ (58.415 lbs/gal)
· Relative density	Not determined.
· Vapour density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water:	Insoluble.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity**
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** Heating may cause release of toxic fumes.
- **Possibility of hazardous reactions**
- Reacts with strong acids and alkali.
- Reacts with strong oxidizing agents.
- Reacts with halogenated compounds.
- As the product is supplied it is not capable of dust explosion; however enrichment with fine dust causes risk of dust explosion.
- **Conditions to avoid** Avoid acids.
- **Incompatible materials:** Oxidizers, strong bases, strong acids


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Trade name: Stainless Steel		
· Hazardous decomposition products: Possible in traces: Toxic metal oxide smoke Leadoxide vapor		(Contd. of page 8)
11 Toxicological information		
· Information on toxicological effects · Acute toxicity:		
· LD/LC50 values that are relevant for classification:		
7439-96-5 manganese, powdered		
Oral LD50 9000 mg/kg (rat)		
7440-48-4 cobalt		
Oral LD50 6170 mg/kg (rat)		
· Primary irritant effect: · on the skin: No irritant effect. · on the eye: No irritating effect. · Sensitization: No sensitizing effects known. · Additional toxicological information: The product is not subject to classification according to internally approved calculation methods for preparations: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.		
· Carcinogenic categories		
· NTP (National Toxicology Program)		
7440-02-0 nickel		R
· OSHA-Ca (Occupational Safety & Health Administration) None of the ingredients is listed.		
· Probable Routes of Exposure Ingestion. Inhalation. Eye contact. Skin contact.		
· Repeated Dose Toxicity: Repeated or long-term inhalation of product dusts may cause pulmonary disease. May cause metal fume disease.		
· CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction): · Germ cell mutagenicity Based on available data, the classification criteria are not met. · Carcinogenicity Based on available data, the classification criteria are not met. · Reproductive toxicity Based on available data, the classification criteria are not met. · STOT-single exposure Based on available data, the classification criteria are not met. · STOT-repeated exposure Based on available data, the classification criteria are not met. · Aspiration hazard Based on available data, the classification criteria are not met.		
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12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability:** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** May be accumulated in organisms.
- **Mobility in soil:** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
The product contains heavy metals. Avoid transfer into the environment. Specific preliminary treatments are necessary.
- **Other adverse effects:** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Contact manufacturer for recycling information.
The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
- **DOT, ADR, ADN, IMDG, IATA** Not Regulated
- **UN proper shipping name**
- **DOT, ADR, ADN, IMDG, IATA** Not Regulated
- **Transport hazard class(es)**
- **DOT, ADR, IMDG, IATA**
- **Class** Not Regulated
- **Label** -
- **ADN/R Class:** Not Regulated
- **Packing group**
- **DOT, ADR, IMDG, IATA** Not Regulated
- **Environmental hazards:**
- **Marine pollutant:** No
- **Special precautions for user** Not applicable.
- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

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UN "Model Regulation": -

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA

· Section 355 (extremely hazardous substances):

7723-14-0 phosphorus

· Section 313 (Specific toxic chemical listings):

7440-47-3 chromium

7440-02-0 nickel

7439-96-5 manganese, powdered

7440-50-8 copper

7723-14-0 phosphorus

7440-48-4 cobalt

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65 (California)

· Chemicals known to cause cancer:

7440-02-0 nickel

7440-48-4 cobalt

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

· Carcinogenic categories

· EPA (Environmental Protection Agency)

7440-47-3 chromium

D

7439-96-5 manganese, powdered

D

7440-50-8 copper

D

7723-14-0 phosphorus

D

· IARC (International Agency for Research on Cancer)

7440-47-3 chromium

3

7440-02-0 nickel

1

7440-48-4 cobalt

2B

· TLV (Threshold Limit Value established by ACGIH)

7440-47-3 chromium

A4

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7440-02-0	nickel	A5
7439-98-7	molybdenum	A3
7440-48-4	cobalt	A3

- NIOSH-Ca (National Institute for Occupational Safety and Health)

7440-02-0 nickel

- State Right to Know Listings

None of the ingredients is listed.

- Canadian substance listings:

- Canadian Domestic Substances List (DSL)

All ingredients are listed.

- Canadian Ingredient Disclosure list (limit 0.1%)

7440-47-3	chromium
7440-02-0	nickel
7440-48-4	cobalt

- Canadian Ingredient Disclosure list (limit 1%)

7439-96-5	manganese, powdered
7440-50-8	copper
7439-98-7	molybdenum
7723-14-0	phosphorus
7440-31-5	tin

- Other regulations, limitations and prohibitive regulations

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Date of preparation / last revision 07/01/2015 / -

- Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 WHMIS: Workplace Hazardous Materials Information System (Canada)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent

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Flam. Liq. 2: Flammable liquids, Hazard Category 2
Flam. Sol. 1: Flammable solids, Hazard Category 1
Flam. Sol. 2: Flammable solids, Hazard Category 2
Self-heat. 1: Self-Heating Substances and Mixtures, Hazard Category 1
Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1

Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1

Sources

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