

Safety Data Sheet



Section 1: Identification

Product identifier

Product Name • Reno NC 70 HGS
Product Code • 183400

Relevant identified uses of the substance or mixture and uses advised against

Recommended use • Refractory applications

Details of the supplier of the safety data sheet

Manufacturer • Reno Refractories, Inc.
 P O Box 201
 Morris, AL 35116
 United States
 www.renorefractories.com
 sales@renorefractories.com
Telephone (General) • 205-647-0240

Emergency telephone number

Manufacturer • 1-800-262-8200 - CHEMTREC

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

OSHA HCS 2012 • Skin Sensitization 1A
 Respiratory Sensitization 1A
 Carcinogenicity 1A
 Specific Target Organ Toxicity Repeated Exposure 1

Label elements

OSHA HCS 2012

DANGER



Hazard statements • May cause an allergic skin reaction
 May cause allergy or asthma symptoms or breathing difficulties if inhaled
 May cause cancer.
 Causes damage to organs - lungs through prolonged or repeated exposure

Precautionary statements

- Prevention** • Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.

- Response** • IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
IF ON SKIN: Wash with plenty of soap and water.
Specific treatment, see supplemental first aid information.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.

- Storage/Disposal** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Other hazards

- OSHA HCS 2012**
 - Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

Classification of the substance or mixture

- WHMIS**
 - Other Toxic Effects - D2A

Label elements

- WHMIS**
 - 

- WHMIS**
 - Other Toxic Effects - D2A

Other hazards

- WHMIS**
 - In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Mullite	CAS:1302-93-8	43.22% TO 47.94%	NDA	OSHA HCS 2012: STOT RE 2(Lungs)	NDA
Aluminum oxide	CAS:1344-28-1	22.96% TO 38.01%	NDA	OSHA HCS 2012: Not Classified - Criteria not met	NDA

Silica, amorphous	CAS:7631-86-9	12.78% TO 14.06%	NDA	OSHA HCS 2012: Data Lacking	NDA
Aluminum(III) silicate (2:1)	CAS:1302-76-7	2.55% TO 6.65%	NDA	OSHA HCS 2012: STOT RE2 (Lungs)	NDA
Amorphous silica fume	CAS:69012-64-2	2% TO 4%	NDA	OSHA HCS 2012: STOT RE 1 (Lungs)	NDA
Cement, alumina, chemicals	CAS:65997-16-2	0.5% TO 1.5%	NDA	OSHA HCS 2012: Not classified	NDA
Titanium dioxide	CAS:13463-67-7	< 1.2165%	NDA	OSHA HCS 2012: Carc. 2	NDA
Quartz	CAS:14808-60-7	< 0.89%	NDA	OSHA HCS 2012: Carc. 1A; STOT RE 1 (Lungs)	NDA
Amorphous/fused silica	CAS:60676-86-0	< 0.85%	NDA	OSHA HCS 2012: Data lacking	NDA
Zirconium oxide	CAS:1314-23-4	< 0.391%	NDA	OSHA HCS 2012: Data lacking	NDA
Iron oxide	CAS:1309-37-1	< 0.3415%	NDA	OSHA HCS 2012: Data lacking	NDA
Magnesium oxide	CAS:1309-48-4	< 0.25%	NDA	OSHA HCS 2012: Not classified	NDA
Cristobalite	CAS:14464-46-1	< 0.19%	NDA	OSHA HCS 2012: Carc. 1A	NDA
Calcium oxide	CAS:1305-78-8	< 0.185%	NDA	OSHA HCS 2012: Skin Irrit 2, Eye Irrit 2, STOT SE 3 (resp)	NDA
Nickel	CAS:7440-02-0	< 0.17%	NDA	OSHA HCS 2012: Carc. 2, Skin Sens. 1A; Resp. Sens. 1A; STOT RE 2(Lungs)	NDA
Chromium	CAS:7440-47-3	< 0.17%	NDA	OSHA HCS 2012: Not classified	NDA
Cobalt	CAS:7440-48-4	< 0.085%	Ingestion/Oral-Rat LD50 • 6171 mg/kg	OSHA HCS 2012: Data lacking	NDA
Sodium hydroxide	CAS:1310-73-2	0.0375% TO 0.0405%	NDA	OSHA HCS 2012: WHMIS: Corrosive - E	NDA

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing.

Skin

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Take off contaminated clothing and wash before reuse. If skin irritation or rash occurs: Get medical advice/attention.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.

Ingestion

- Rinse mouth. Do not give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to material other than this product may have occurred.

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media • This product does not burn or support combustion. Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media • None known.

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards • None known.

Hazardous Combustion Products • None known.

Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Wear positive pressure self-contained breathing apparatus (SCBA).

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions • Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not walk through spilled material. Ventilate enclosed areas.

Emergency Procedures • As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind.

Environmental precautions

- No specific actions or treatments recommended related to exposure to this material.

Methods and material for containment and cleaning up

Containment/Clean-up Measures • Avoid generating dust. Wet down material before clean-up. Use vacuums with high-efficiency particulate air (HEPA) filters or wet-sweeping for clean-up. Never dry sweep or blow dust with compressed air.

Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

Precautions for safe handling

Handling • Do not use in areas without adequate ventilation. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage • Store in a covered location. Keep container/package tightly closed. Keep from freezing.

Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Ontario	Canada Quebec	Mexico	NIOSH
Reno NC 70 HGS	TWAs	10 mg/m3 TWA (inhalable particles, recommended); 3 mg/m3 TWA (respirable particles, recommended) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWAEV (inhalable particulate); 3 mg/m3 TWAEV (respirable particulate) <i>as Particulates not otherwise classified (PNOC)</i>	10 mg/m3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica) <i>as Particulates not otherwise classified (PNOC)</i>	Not established	Not established
Cobalt (7440-48-4)	TWAs	0.02 mg/m3 TWA	0.02 mg/m3 TWAEV (dust and fume)	0.02 mg/m3 TWAEV	0.1 mg/m3 TWA LMPE-PPT (dust and fume, as Co)	0.05 mg/m3 TWA (dust and fume)
Chromium (7440-47-3)	TWAs	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.5 mg/m3 TWAEV	0.5 mg/m3 TWA LMPE-PPT	0.5 mg/m3 TWA
Nickel	TWAs	1.5 mg/m3 TWA (inhalable fraction)	1 mg/m3 TWAEV (inhalable)	1 mg/m3 TWAEV	1 mg/m3 TWA LMPE-PPT	0.015 mg/m3 TWA
Calcium oxide (1305-78-8)	TWAs	2 mg/m3 TWA	2 mg/m3 TWAEV	2 mg/m3 TWAEV	2 mg/m3 TWA LMPE-PPT	2 mg/m3 TWA
Cristobalite (14464-46-1)	TWAs	0.025 mg/m3 TWA (respirable fraction)	0.05 mg/m3 TWAEV (designated substance regulation)	0.05 mg/m3 TWAEV (respirable dust)	0.05 mg/m3 TWA LMPE-PPT (respirable fraction)	0.05 mg/m3 TWA (respirable dust)
Magnesium oxide (1309-48-4)	TWAs	10 mg/m3 TWA (inhalable fraction)	10 mg/m3 TWAEV (inhalable)	10 mg/m3 TWAEV (fume, as Mg)	10 mg/m3 TWA LMPE-PPT (fume, as Mg)	Not established
Iron oxide (1309-37-1)	STELs	Not established	Not established	Not established	10 mg/m3 STEL [LMPE-CT] (as Fe)	Not established
	TWAs	5 mg/m3 TWA (respirable fraction)	5 mg/m3 TWAEV (respirable); 10 mg/m3 TWAEV (total dust)	5 mg/m3 TWAEV (dust and fume, as Fe)	5 mg/m3 TWA LMPE-PPT	5 mg/m3 TWA (dust and fume, as Fe)
Zirconium oxide	STELs	10 mg/m3 STEL (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEV (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEV (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEL [LMPE-CT] (as Zr) <i>as Zirconium compounds</i>	10 mg/m3 STEL (except Zirconium tetrachloride, as Zr) <i>as Zirconium compounds</i>
	TWAs	5 mg/m3 TWA (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWAEV (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWAEV (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWA LMPE-PPT (as Zr) <i>as Zirconium compounds</i>	5 mg/m3 TWA (except Zirconium tetrachloride, as Zr) <i>as Zirconium compounds</i>
Amorphous/fused silica (60676-86-0)	TWAs	Not established	0.1 mg/m3 TWAEV (respirable)	0.1 mg/m3 TWAEV (respirable dust, containing no asbestos and less than 1% crystalline silica)	0.1 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate)	Not established

Quartz (14808-60-7)	TWAs	0.025 mg/m3 TWA (respirable fraction)	0.10 mg/m3 TWAEV (designated substance regulation)	0.1 mg/m3 TWAEV (respirable dust)	0.1 mg/m3 TWA LMPE-PPT (respirable fraction)	0.05 mg/m3 TWA (respirable dust)
Titanium dioxide (13463-67-7)	STELs	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT] (as Ti)	Not established
	TWAs	10 mg/m3 TWA	10 mg/m3 TWAEV (total dust)	10 mg/m3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)	10 mg/m3 TWA LMPE -PPT (as Ti)	Not established
Amorphous silica fume (69012-64-2)	TWAs	Not established	2 mg/m3 TWAEV (fume, respirable)	2 mg/m3 TWAEV (respirable dust, containing no asbestos and less than 1% crystalline silica)	2 mg/m3 TWA LMPE- PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate)	Not established
Silica, amorphous (7631-86-9)	TWAs	Not established	Not established	Not established	Not established	6 mg/m3 TWA
Aluminum oxide (1344-28-1)	TWAs	1 mg/m3 TWA (respirable fraction) <i>as Aluminum insoluble compounds</i>	10 mg/m3 TWAEV (total dust)	10 mg/m3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica, as Al)	10 mg/m3 TWA LMPE -PPT	Not established

Exposure Limits/Guidelines (Con't.)

	Result	OSHA
Reno NC 70 HGS	TWAs	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction) <i>as Particulates not otherwise classified (PNOC)</i>
Cobalt (7440-48-4)	TWAs	0.1 mg/m3 TWA (dust and fume)
Chromium (7440-47-3)	TWAs	1 mg/m3 TWA
Nickel (7440-02-0)	TWAs	1 mg/m3 TWA
Calcium oxide (1305-78-8)	TWAs	5 mg/m3 TWA
Magnesium oxide (1309-48-4)	TWAs	15 mg/m3 TWA (fume, total particulate)
Iron oxide (1309-37-1)	TWAs	10 mg/m3 TWA (fume)
Zirconium oxide	TWAs	5 mg/m3 TWA (as Zr) <i>as Zirconium compounds</i>
Titanium dioxide (13463-67-7)	TWAs	15 mg/m3 TWA (total dust)
Aluminum oxide (1344-28-1)	TWAs	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.

If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory

- For limited exposure use an N95 dust mask. For prolonged exposure use an air-purifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face

- Wear safety goggles.

Skin/Body

- Wear long sleeves and/or protective coveralls.

General Industrial Hygiene Considerations

- Handle in accordance with good industrial hygiene and safety practice. Do not get in eyes or on skin or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Dispose of in an approved landfill.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEV = Short Term Exposure Value

NIOSH = National Institute of Occupational Safety and Health

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

OSHA = Occupational Safety and Health Administration

TWAEV = Time-Weighted Average Exposure Value

STEL = Short Term Exposure Limits are based on 15-minute exposures

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Gray granular dry powder with an earthy odor.
Color	Gray	Odor	Earthy
Particulate Size	600 μ	Odor Threshold	No data available
General Properties			
Boiling Point	No data available	Melting Point/Freezing Point	3200 °F(1760 °C)
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	= 2.5 Water=1	Water Solubility	Negligible < 0.1 %
Viscosity	No data available		
Volatility			
Vapor Pressure	No data available	Vapor Density	No data available
Evaporation Rate	No data available		
Flammability			
Flash Point	No data available	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	Not flammable.		
Environmental			
Octanol/Water Partition coefficient	No data available		

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under normal temperatures and pressures.

Possibility of hazardous reactions

- Hazardous polymerization will not occur.

Conditions to avoid

- No data available.

Incompatible materials

- No data available

Hazardous decomposition products

- No data available

Section 11 - Toxicological Information

Information on toxicological effects

Components		
Silica, amorphous (12.78% TO 14.06%)	7631-86-9	Irritation: Eye-Rabbit • 25 mg 24 Hour(s) • Mild irritation
Titanium dioxide (< 1.2165%)	13463-67-7	Irritation: Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation; Tumorigen / Carcinogen: Inhalation-Rat TCLo • 250 mg/m ³ 6 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic: Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: Tumors</i>

GHS Properties	Classification
Acute toxicity	OSHA HCS 2012 • No data available
Skin corrosion/Irritation	OSHA HCS 2012 • No data available
Serious eye damage/Irritation	OSHA HCS 2012 • No data available
Skin sensitization	OSHA HCS 2012 • Skin Sensitizer 1A
Respiratory sensitization	OSHA HCS 2012 • Respiratory Sensitizer 1A
Aspiration Hazard	OSHA HCS 2012 • No data available
Carcinogenicity	OSHA HCS 2012 • Carcinogenicity 1A
Germ Cell Mutagenicity	OSHA HCS 2012 • No data available
Toxicity for Reproduction	OSHA HCS 2012 • No data available
STOT-SE	OSHA HCS 2012 • No data available
STOT-RE	OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1

Target Organs

- Lungs

Route(s) of entry/exposure

- Inhalation, Skin, Eye, and Ingestion

Medical Conditions

Aggravated by Exposure

- Any pre-existing conditions of the lungs. Inhalation of dust containing crystalline silica pulmonary diseases such as asthma and lung disorder associated with smoking.

Potential Health Effects

Inhalation

Acute (Immediate)

- Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)

- Chronic overexposure to dust containing respirable sized crystalline silica can cause delayed lung injury (silicosis). May cause allergy or asthma symptoms or breathing

difficulties if inhaled.

Skin

Acute (Immediate)

- May cause skin sensitization. Symptoms include redness, and skin rash. Exposure to dust may cause mechanical irritation.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- Exposure to dust may cause mechanical irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)

- No data available.

Ingestion

Acute (Immediate)

- Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed)

- No data available.

Carcinogenic Effects

- May cause cancer. IARC studies have shown sufficient evidence from animal studies to categorize crystalline silica as a group 1 carcinogen.

Carcinogenic Effects			
	CAS	IARC	NTP
Cobalt	7440-48-4	Group 2B-Possible Carcinogen	Not Listed
Nickel	7440-02-0	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Nickel as Nickel Compounds	NDA	Group 1-Carcinogenic	Known Human Carcinogen
Cristobalite	14464-46-1	Group 1-Carcinogenic	Not Listed
Quartz	14808-60-7	Group 1-Carcinogenic	Known Human Carcinogen
Titanium dioxide	13463-67-7	Group 2B-Possible Carcinogen	Evidence of Carcinogenicity

Key to abbreviations

MLD = Mild

TC = Toxic Concentration

Section 12 - Ecological Information

Toxicity

- Material data lacking.

Persistence and degradability

- Material data lacking.

Bioaccumulative potential

- Material data lacking.

Mobility in Soil

- Material data lacking.

Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

Waste treatment methods

Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class (es)	Packing group	Environmental hazards
DOT	NDA	Not regulated	NDA	NDA	NDA
TDG	NDA	Not regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not regulated	NDA	NDA	NDA

Special precautions for user • None known.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code • Not relevant.

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications • Acute, Chronic

State Right To Know				
Component	CAS	MA	NJ	PA
Aluminum oxide	1344-28-1	Yes	Yes	Yes
Amorphous/fused silica	60676-86-0	Yes	Yes	No
Calcium oxide	1305-78-8	Yes	Yes	Yes
Chromium	7440-47-3	Yes	Yes	Yes
Cobalt	7440-48-4	Yes	Yes	Yes
Cristobalite	14464-46-1	Yes	Yes	Yes
Iron oxide	1309-37-1	Yes	Yes	Yes
Magnesium oxide	1309-48-4	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Quartz	14808-60-7	Yes	Yes	Yes
Silica, amorphous	7631-86-9	Yes	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes	Yes
Zirconium oxide	1314-23-4	Yes	No	No

Inventory			
Component	CAS	Canada DSL	TSCA
Aluminum oxide	1344-28-1	Yes	Yes
Amorphous/fused silica	60676-86-0	Yes	Yes
Calcium oxide	1305-78-8	Yes	Yes
Chromium	7440-47-3	Yes	Yes

Cobalt	7440-48-4	Yes	Yes
Cristobalite	14464-46-1	Yes	Yes
Iron oxide	1309-37-1	Yes	Yes
Magnesium oxide	1309-48-4	Yes	Yes
Nickel	7440-02-0	Yes	Yes
Quartz	14808-60-7	Yes	Yes
Silica, amorphous	7631-86-9	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes
Zirconium oxide	1314-23-4	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Calcium oxide	1305-78-8	E
• Chromium	7440-47-3	Uncontrolled product according to WHMIS classification criteria
• Iron oxide	1309-37-1	Uncontrolled product according to WHMIS classification criteria
• Magnesium oxide	1309-48-4	Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Titanium dioxide, mixture containing on Health Canada's WHMIS Division website.)
• Titanium dioxide	13463-67-7	D2A, D2B
• Cobalt	7440-48-4	Uncontrolled product according to WHMIS classification criteria
• Aluminum oxide	1344-28-1	D2A, D2B; B6, D2A (Raney)
• Nickel	7440-02-0	D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.)
• Cristobalite	14464-46-1	Uncontrolled product according to WHMIS classification criteria
• Silica, amorphous	7631-86-9	Uncontrolled product according to WHMIS classification criteria
• Amorphous/fused silica	60676-86-0	Uncontrolled product according to WHMIS classification criteria
• Zirconium oxide	1314-23-4	Uncontrolled product according to WHMIS classification criteria D2A (In certain cases, this classification does not apply.)

• Quartz	14808-60-7	For more information, consult the section Substance Specific Issues - Silica, crystalline, encapsulated on Health Canada's WHMIS Division website.)
----------	------------	---

Canada - WHMIS - Ingredient Disclosure List

• Calcium oxide	1305-78-8	1 %
• Chromium	7440-47-3	0.1 %
• Iron oxide	1309-37-1	1 %
• Magnesium oxide	1309-48-4	1 %
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	0.1 %
• Aluminum oxide	1344-28-1	1 %
• Nickel	7440-02-0	0.1 %
• Cristobalite	14464-46-1	1 %
• Silica, amorphous	7631-86-9	1 %
• Amorphous/fused silica	60676-86-0	1 %
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	1 %

Mexico

Other

Mexico - Hazard Classifications

• Calcium oxide	1305-78-8	Hazard Class = 8 PG = III UN1910
• Chromium	7440-47-3	Not Listed
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

Mexico - Regulated Substances

• Calcium oxide	1305-78-8	UN1910
• Chromium	7440-47-3	Not Listed
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

United States

Environment

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Calcium oxide	1305-78-8	Not Listed 5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Chromium	7440-47-3	
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed 100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Nickel	7440-02-0	
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	1.0 % de minimis concentration
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	0.1 % de minimis concentration
• Aluminum oxide	1344-28-1	1.0 % de minimis concentration (fibrous forms)
• Nickel	7440-02-0	0.1 % de minimis concentration
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Included in waste streams: F032, F034, F035, F037, F038, F039
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Included in waste streams: F006, F039
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Tox Characteristic

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	5.0 mg/L regulatory level
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	Not Listed
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	hazardous constituent - no waste number
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed

• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	hazardous constituent - no waste number
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater)
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	3.98 mg/L (wastewater); 11.0 mg/L TCLP (nonwastewater)
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	(total)
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	(total)
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed

• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Not Listed
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	carcinogen, initial date 9/2/11 (airborne, unbound particles of respirable size)
• Cobalt	7440-48-4	carcinogen, initial date 7/1/92 (powder)
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	carcinogen, initial date 10/1/89 (metallic)
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	carcinogen, initial date 10/1/88 (airborne particles of respirable size)

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	
• Aluminum oxide	1344-28-1	
• Nickel	7440-02-0	
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed
• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• Iron oxide	1309-37-1	Not Listed
• Magnesium oxide	1309-48-4	Not Listed
• Titanium dioxide	13463-67-7	Not Listed
• Cobalt	7440-48-4	Not Listed
• Aluminum oxide	1344-28-1	Not Listed
• Nickel	7440-02-0	
• Cristobalite	14464-46-1	Not Listed
• Silica, amorphous	7631-86-9	Not Listed

• Amorphous/fused silica	60676-86-0	Not Listed
• Zirconium oxide	1314-23-4	Not Listed
• Quartz	14808-60-7	Not Listed

Other Information

- **WARNING:** This product contains a chemical known to the State of California to cause cancer.

Section 16 - Other Information

Revision Date

- 01/May/2018

Last Revision Date

- 07/October/2015

Preparation Date

- 09/August/2013

Disclaimer/Statement of Liability

- The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release. Reno Refractories **MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE.** User is responsible for determining whether the product is fit for a particular purpose and suitable for user's method of use or application. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key to abbreviations

NDA = No data available