

Safety Data Sheet



Section 1: Identification

Product identifier

- Product Name** • Reno NC Gun 85 SICP
Product Code • 184900

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** • Specific Target Organ Toxicity Repeated Exposure 1

Label elements

OSHA HCS 2012

DANGER



- Hazard statements** • Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

- Prevention** • Do not breathe dust.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
- Response** • 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 - D2B

Label elements

WHMIS



WHMIS

- Other Toxic Effects - D2B

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
Silicon carbide	CAS:409-21-2	75.72% TO 84.3%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Aluminum oxide	CAS:1344-28-1	7.05% TO 12%	Inhalation-Rat LC50 • 0.2 mg/L 5 Hour(s) 28 Week(s)	OSHA HCS 2012: Not Classified	NDA
Amorphous silica fume	CAS:69012-64-2	1.8% TO 4%	NDA	OSHA HCS 2012: STOT RE 1 (Lungs)	NDA
Alumina Silicate	Proprietary	0.87% TO 1.74%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Bentonite	CAS:1302-78-9	< 1%	NDA	OSHA HCS 2012: STOT RE 2 (Lungs)	NDA
Sodium silicate	CAS:1344-09-8	< 0.6075%	Ingestion/Oral-Rat LD50 • 1960 mg/kg Skin-Rabbit LD50 • >4640 mg/kg	OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2; Acute Tox. 4 (orl)	NDA
Silica, amorphous	CAS:7631-86-9	< 0.26%	NDA	OSHA HCS 2012: Not Classified	NDA
Titanium dioxide	CAS:13463-67-7	< 0.25%	NDA	OSHA HCS 2012: Not Classified	NDA

Amorphous/fused silica	CAS:60676-86-0	< 0.25%	NDA	OSHA HCS 2012: Not Classified	NDA
Magnesium oxide	CAS:1309-48-4	< 0.1284%	NDA	OSHA HCS 2012: Not classified	NDA
Zirconium oxide	CAS:1314-23-4	< 0.1%	NDA	OSHA HCS 2012: Exposure limits	NDA
Iron oxide	CAS:1309-37-1	< 0.1%	NDA	OSHA HCS 2012: Exposure limits	NDA
Quartz	CAS:14808-60-7	< 0.059%	NDA	OSHA HCS 2012: Exposure limits	NDA
Nickel	CAS:7440-02-0	< 0.05%	NDA	OSHA HCS 2012: Exposure limits	NDA
Chromium	CAS:7440-47-3	< 0.05%	NDA	OSHA HCS 2012: Exposure limits	NDA
Calcium oxide	CAS:1305-78-8	< 0.05%	NDA	OSHA HCS 2012: Exposure limits	NDA
Cobalt	CAS:7440-48-4	< 0.025%	Ingestion/Oral-Rat LD50 • 6171 mg/kg	OSHA HCS 2012: Exposure limits	NDA
Cristobalite	CAS:14464-46-1	< 0.013%	NDA	OSHA HCS 2012: Exposure limits	NDA
Silica, crystalline - tridymite	CAS:15468-32-3	< 0.01%	NDA	OSHA HCS 2012: Exposure limits	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. Get medical attention immediately.

Skin

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If skin irritation occurs: Get medical advice/attention.

Eye

- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion

- Rinse mouth. Do not give anything by mouth to an unconscious person. Get medical attention immediately.

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 • Material is non-combustible. In case of fire use media as appropriate for 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

- Wear positive pressure self-contained breathing apparatus (SCBA). 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.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Isolate hazard area and deny entry to unauthorized and/or unprotected personnel. Do not walk through spilled material. Ensure adequate ventilation to remove vapors, fumes, dust etc. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures

- Ventilate closed spaces before entering. Isolate hazard area and deny entry to unauthorized and/or unprotected personnel.

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.
 FOR SMALL SPILLS: Clean with a vacuum with a filtration system sufficient to remove and prevent recirculation of crystalline silica (a vacuum equipped with a high-efficiency particulate air (HEPA) filter is recommended).
 FOR LARGE SPILLS: Use a fine spray or mist to control dust creation and carefully scoop or shovel into clean dry container for later reuse or disposal.
 If, an appropriate vacuum is unavailable, only wet-clean-up methods should be used (i.e. misting). Moisture should be added as necessary to reduce exposure to airborne respirable silica dust.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Use good safety and industrial hygiene practices. Use only in well ventilated areas. Wear appropriate personal protective equipment, avoid direct contact. Wear long sleeves and/or protective coveralls. Do not breathe dust. Avoid contact with skin, eyes, and clothing. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Contaminated clothing must be vacuumed before removal. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities

Storage

- Keep container closed. Store in a covered location. Store in a cool, dry place. Keep from freezing. Storage and work area should be periodically cleaned to minimize dust accumulation.

Section 8 - Exposure Controls/Personal Protection

Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Manitoba	Canada Ontario	Canada Quebec	Mexico
Silica, crystalline - tridymite (15468-32-3)	TWAs	Not established	Not established	Not established	0.05 mg/m3 TWAEV (respirable dust)	0.05 mg/m3 TWA LMPE-PPT (respirable fraction)

Cristobalite (14464-46-1)	TWAs	0.025 mg/m3 TWA (respirable fraction)	Not established	0.05 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)	0.05 mg/m3 TWAEV (respirable dust)	0.05 mg/m3 TWA LMPE-PPT (respirable fraction)
Cobalt (7440-48-4)	TWAs	0.02 mg/m3 TWA	Not established	0.02 mg/m3 TWA	0.02 mg/m3 TWAEV	0.1 mg/m3 TWA LMPE-PPT (dust and fume, as Co)
Calcium oxide (1305-78-8)	TWAs	2 mg/m3 TWA	Not established	2 mg/m3 TWA	2 mg/m3 TWAEV	2 mg/m3 TWA LMPE -PPT
Chromium (7440-47-3)	TWAs	0.5 mg/m3 TWA	Not established	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.5 mg/m3 TWA LMPE-PPT
	Designated Substances	Not established	Present	Not established	Not established	Not established
Nickel	TWAs	1.5 mg/m3 TWA (inhalable fraction)	Not established	1 mg/m3 TWA (inhalable)	1 mg/m3 TWAEV	1 mg/m3 TWA LMPE -PPT
	Designated Substances	Not established	Present	Not established	Not established	Not established
Quartz (14808-60-7)	TWAs	0.025 mg/m3 TWA (respirable fraction)	Not established	0.10 mg/m3 TWA (designated substances regulation, respirable, listed under Silica, crystalline)	0.1 mg/m3 TWAEV (respirable dust)	0.1 mg/m3 TWA LMPE-PPT (respirable fraction)
Iron oxide (1309-37-1)	STELs	Not established	Not established	Not established	Not established	10 mg/m3 STEL [LMPE-CT] (as Fe)
	TWAs	5 mg/m3 TWA (respirable fraction)	Not established	5 mg/m3 TWA (respirable)	5 mg/m3 TWAEV (dust and fume, as Fe); 10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, regulated under Rouge, total dust)	5 mg/m3 TWA LMPE -PPT
Zirconium oxide	STELs	10 mg/m3 STEL (as Zr) <i>as Zirconium compounds</i>	Not established	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 STEL [LMPE-CT] (as Zr) <i>as Zirconium compounds</i>
	TWAs	5 mg/m3 TWA (as Zr) <i>as Zirconium compounds</i>	Not established	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 TWA LMPE -PPT (as Zr) <i>as Zirconium compounds</i>
Magnesium oxide (1309-48-4)	TWAs	10 mg/m3 TWA (inhalable fraction)	Not established	10 mg/m3 TWA (inhalable)	10 mg/m3 TWAEV (fume, as Mg)	10 mg/m3 TWA LMPE-PPT (fume, as Mg)
Titanium dioxide	STELs	Not established	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT] (as Ti)
					10 mg/m3 TWAEV	

(13463-67-7)	TWAs	10 mg/m3 TWA	Not established	10 mg/m3 TWA	(containing no Asbestos and <1% Crystalline silica, total dust)	10 mg/m3 TWA LMPE-PPT (as Ti)
Amorphous/fused silica (60676-86-0)	TWAs	Not established	Not established	0.1 mg/m3 TWA (respirable)	0.1 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, respirable dust)	0.1 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate)
Amorphous silica fume (69012-64-2)	TWAs	Not established	Not established	2 mg/m3 TWA (respirable, listed under Silica fume)	2 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, respirable dust)	2 mg/m3 TWA LMPE-PPT; 10 mg/m3 TWA LMPE-PPT (inhalable particulate); 3 mg/m3 TWA LMPE-PPT (respirable particulate)
Aluminum oxide (1344-28-1)	TWAs	1 mg/m3 TWA (respirable fraction) <i>as Aluminum insoluble compounds</i>	Not established	1 mg/m3 TWA (respirable) <i>as Aluminum insoluble compounds</i>	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust, as Al)	10 mg/m3 TWA LMPE-PPT
Silicon carbide (409-21-2)	STELs	Not established	Not established	Not established	Not established	20 mg/m3 STEL [LMPE-CT]
	TWAs	10 mg/m3 TWA (nonfibrous, inhalable fraction, particulate matter containing no asbestos and <1% crystalline silica); 3 mg/m3 TWA (nonfibrous, respirable fraction, particulate matter containing no asbestos and <1% crystalline silica); 0.1 fiber/cm3 TWA (as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination., respirable fibers, including whiskers, length >5 µm, aspect ratio >=3:1)	Not established	10 mg/m3 TWA (non-fibrous, containing no Asbestos and <1% Crystalline silica, inhalable); 3 mg/m3 TWA (non-fibrous, containing no Asbestos and <1% Crystalline silica, respirable); 0.1 fibre/cm3 TWA (fibrous, including whiskers, fibres >5 µm in length and an aspect ratio >=3:1 as determined by the membrane filter method at 400-450 times magnification (4-mm objective), using phase-contrast illumination, respirable)	10 mg/m3 TWAEV (non fibrous, containing no Asbestos and <1% Crystalline silica, total dust)	10 mg/m3 TWA LMPE-PPT

Exposure Limits/Guidelines (Con't.)

	Result	NIOSH	OSHA
Silica, crystalline - tridymite (15468-32-3)	TWAs	0.05 mg/m3 TWA (respirable dust)	Not established

Cristobalite (14464-46-1)	TWAs	0.05 mg/m ³ TWA (respirable dust)	Not established
Cobalt (7440-48-4)	TWAs	0.05 mg/m ³ TWA (dust and fume)	0.1 mg/m ³ TWA (dust and fume)
Calcium oxide (1305-78-8)	TWAs	2 mg/m ³ TWA	5 mg/m ³ TWA
Chromium (7440-47-3)	TWAs	0.5 mg/m ³ TWA	1 mg/m ³ TWA
Nickel (7440-02-0)	TWAs	0.015 mg/m ³ TWA	1 mg/m ³ TWA
Quartz (14808-60-7)	TWAs	0.05 mg/m ³ TWA (respirable dust)	Not established
Iron oxide (1309-37-1)	TWAs	5 mg/m ³ TWA (dust and fume, as Fe)	10 mg/m ³ TWA (fume); 15 mg/m ³ TWA (total dust, listed under Rouge); 5 mg/m ³ TWA (respirable fraction, listed under Rouge)
Zirconium oxide	TWAs	5 mg/m ³ TWA (except Zirconium tetrachloride, as Zr) <i>as Zirconium compounds</i>	5 mg/m ³ TWA (as Zr) <i>as Zirconium compounds</i>
	STELs	10 mg/m ³ STEL (except Zirconium tetrachloride, as Zr) <i>as Zirconium compounds</i>	Not established
Magnesium oxide (1309-48-4)	TWAs	Not established	15 mg/m ³ TWA (fume, total particulate)
Titanium dioxide (13463-67-7)	TWAs	Not established	15 mg/m ³ TWA (total dust)
Silica, amorphous (7631-86-9)	TWAs	6 mg/m ³ TWA	Not established
Aluminum oxide (1344-28-1)	TWAs	Not established	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)
Silicon carbide (409-21-2)	TWAs	10 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable dust)	15 mg/m ³ TWA (total dust); 5 mg/m ³ TWA (respirable fraction)

Exposure Control Notations

Mexico

- Silicon carbide (409-21-2): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Aluminum oxide (1344-28-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Zirconium oxide as Zirconium compounds: **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Chromium (7440-47-3): **Carcinogens:** (A4 - Not classifiable as a human carcinogen)
- Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed animal carcinogen)

Canada Ontario

- Quartz (14808-60-7): **Designated Substances:** (0.10 mg/m³ TWA (respirable fraction, listed under Silica, crystalline))
- Cristobalite (14464-46-1): **Designated Substances:** (0.05 mg/m³ TWA (respirable fraction, listed under Silica, crystalline))

Canada Quebec

- Quartz (14808-60-7): **Carcinogens:** (C2 carcinogen - effect suspected in humans)
- Cobalt (7440-48-4): **Carcinogens:** (C3 carcinogen - effect detected in animals)

ACGIH

- Silicon carbide (409-21-2): **Carcinogens:** (A2 - Suspected Human Carcinogen (fibrous, including whiskers))
- Quartz (14808-60-7): **Carcinogens:** (A2 - Suspected Human Carcinogen)

- Aluminum oxide as Aluminum insoluble compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Cristobalite (14464-46-1): **Carcinogens:** (A2 - Suspected Human Carcinogen)
- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Iron oxide (1309-37-1): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Zirconium oxide as Zirconium compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Magnesium oxide (1309-48-4): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Nickel (7440-02-0): **Carcinogens:** (A5 - Not Suspected as a Human Carcinogen)
- Chromium (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Cobalt (7440-48-4): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

Exposure Limits Supplemental

OSHA

- Quartz (14808-60-7): **Mineral Dusts:** ((30)/(%)SiO₂ + 2) mg/m³ TWA, total dust; (250)/(%)SiO₂ + 5) mppcf TWA, respirable fraction; (10)/(%)SiO₂ + 2) mg/m³ TWA, respirable fraction)
- Cristobalite (14464-46-1): **Mineral Dusts:** ((1/2)(30)/(%)SiO₂ + 2) mg/m³ TWA, total dust; (1/2)(250)/(%)SiO₂ + 5) mppcf TWA, respirable fraction; (1/2)(10)/(%)SiO₂ + 2) mg/m³ TWA, respirable fraction)
- Silica, crystalline - tridymite (15468-32-3): **Mineral Dusts:** ((1/2)(30)/(%)SiO₂ + 2) mg/m³ TWA, total dust; (1/2)(250)/(%)SiO₂ + 5) mppcf TWA, respirable fraction; (1/2)(10)/(%)SiO₂ + 2) mg/m³ TWA, respirable fraction)
- Amorphous/fused silica (60676-86-0): **Mineral Dusts:** ((80)/(%) SiO₂) mg/m³ TWA; 20 mppcf TWA)
- Silica, amorphous (7631-86-9): **Mineral Dusts:** (20 mppcf TWA; (80)/(%) SiO₂) mg/m³ TWA)

ACGIH

- Silicon carbide (409-21-2): **TLV Basis - Critical Effects:** (upper respiratory tract irritation (nonfibrous); cancer (fibrous, including whiskers); mesothelioma (fibrous, including whiskers))
- Quartz (14808-60-7): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)
- Aluminum oxide as Aluminum insoluble compounds: **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)
- Cristobalite (14464-46-1): **TLV Basis - Critical Effects:** (lung cancer; pulmonary fibrosis)
- Titanium dioxide (13463-67-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation) | **Notice of Intended Changes (TLVs):** (1 mg/m³ TWA (respirable fraction); A3 - confirmed animal carcinogen with unknown relevance to humans; TLV basis: lower respiratory tract irritation, pneumoconiosis)
- Iron oxide (1309-37-1): **TLV Basis - Critical Effects:** (pneumoconiosis)
- Calcium oxide (1305-78-8): **TLV Basis - Critical Effects:** (upper respiratory tract irritation)
- Nickel (7440-02-0): **TLV Basis - Critical Effects:** (dermatitis; pneumoconiosis)
- Chromium (7440-47-3): **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)
- Cobalt (7440-48-4): **BEIs:** (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)) | **TLV Basis - Critical Effects:** (asthma; myocardial effects; pulmonary function)

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. Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment). Collection systems must be designed and maintained to prevent the accumulation and recirculation of respirable silica into the workplace.

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 protective eyewear (goggles, face shield, or safety glasses).

- Hands**
- Wear appropriate gloves.
- Skin/Body**
- Wear long sleeves and/or protective coveralls.
- General Industrial Hygiene Considerations**
- Do not breathe dust. Avoid contact with skin, eyes or clothing. Do not remove dusts from clothing by blowing or shaking. Do not eat, drink or smoke during work. Wash thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice.
- 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

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

TWA EV = Time-Weighted Average Exposure Value

TWA = Time-Weighted Averages are based on 8h/day, 40h/week 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	No data available
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	= 2.53 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	VOC (Wt.)	0 %
VOC (Vol.)	0 %		
Flammability			
Flash Point	No data available	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	No data available		
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		
Sodium silicate (< 0.6075%)	1344-09-8	Acute Toxicity: Ingestion/Oral-Rat LD50 • 1960 mg/kg; Irritation: Eye-Rabbit • 10 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 500 mg 24 Hour(s) • Severe irritation
Magnesium oxide (< 0.1284%)	1309-48-4	Multi-dose Toxicity: Inhalation-Rat TCLo • 1000 mg/m ³ 4 Hour(s) 50 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Other changes; Blood:Other hemolysis with or without anemia</i>
Silica, amorphous (< 0.26%)	7631-86-9	Irritation: Eye-Rabbit • 25 mg 24 Hour(s) • Mild irritation

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 • No data available
Respiratory sensitization	OSHA HCS 2012 • No data available
Aspiration Hazard	OSHA HCS 2012 • No data available
Carcinogenicity	OSHA HCS 2012 • No data available
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

Route(s) of entry/exposure

- Inhalation, Skin, Eye, Ingestion

Medical Conditions

- Any pre-existing conditions of the lungs. Disorders of the lungs.

Aggravated by Exposure

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). Inhalation of dust containing crystalline silica pulmonary diseases such as asthma and lung disorder associated with smoking.

Skin

Acute (Immediate)

- Exposure to dust may cause mechanical irritation.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- 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**
 - This material does contain components that may cause cancer, however based on regulatory criteria this material is not classified as a carcinogen.

Carcinogenic Effects			
	CAS	IARC	NTP
Silica, crystalline - tridymite	15468-32-3	Group 1-Carcinogenic	Not Listed
Cristobalite	14464-46-1	Group 1-Carcinogenic	Not Listed
Cobalt	7440-48-4	Group 2B-Possible Carcinogen	Not Listed
Nickel	7440-02-0	Group 2B-Possible Carcinogen	Reasonably Anticipated to be Human Carcinogen
Quartz	14808-60-7	Group 1-Carcinogenic	Known Human Carcinogen
Titanium dioxide	13463-67-7	Group 2B-Possible Carcinogen	Not Listed

Key to abbreviations

- LD = Lethal Dose
- 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 specified.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code • No data available

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Chronic

State Right To Know				
Component	CAS	MA	NJ	PA
Aluminum oxide	1344-28-1	Yes	Yes	Yes
Bentonite	1302-78-9	No	No	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
Nickel	7440-02-0	Yes	Yes	Yes
Quartz	14808-60-7	Yes	Yes	Yes
Silica, crystalline - tridymite	15468-32-3	Yes	Yes	Yes
Sodium silicate	1344-09-8	No	No	No
Titanium dioxide	13463-67-7	Yes	Yes	Yes

Inventory			
Component	CAS	Canada DSL	TSCA
Aluminum oxide	1344-28-1	Yes	Yes
Bentonite	1302-78-9	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
Nickel	7440-02-0	Yes	Yes
Quartz	14808-60-7	Yes	Yes
Silica, crystalline - tridymite	15468-32-3	No	No
Sodium silicate	1344-09-8	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Silica, crystalline - tridymite	15468-32-3	D2A
• Calcium oxide	1305-78-8	E
• Chromium	7440-47-3	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	
• Cobalt	7440-48-4	D2A, D2B Uncontrolled product according to WHMIS classification criteria
• Aluminum oxide	1344-28-1	
• Nickel	7440-02-0	D2A, D2B; B6, D2A (Raney) 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	
• Sodium silicate	1344-09-8	D2B (SiO2:Na2O ratio >2.4:1); E (SiO2:Na2O ratio <2.4:1) 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.)
• Quartz	14808-60-7	
• Bentonite	1302-78-9	D2A

Canada - WHMIS - Ingredient Disclosure List

• Silica, crystalline - tridymite	15468-32-3	1 %
• Calcium oxide	1305-78-8	1 %
• Chromium	7440-47-3	0.1 %
• 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 %
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	1 %
• Bentonite	1302-78-9	Not Listed

United States

Environment

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• 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	
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	1.0 % de minimis concentration
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	Included in waste streams: F032, F034, F035, F037, F038, F039
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	5.0 mg/L regulatory level
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	hazardous constituent - no waste number
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	2.77 mg/L (total, wastewater); 0.60 mg/L TCLP (total, nonwastewater)
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	(total)
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

United States - California

Environment

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	carcinogen, initial date 10/1/88 (airborne particles of respirable size)

• Bentonite	1302-78-9	Not Listed
-------------	-----------	------------

United States - Pennsylvania

Labor

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	Not Listed

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

• Silica, crystalline - tridymite	15468-32-3	Not Listed
• Calcium oxide	1305-78-8	Not Listed
• Chromium	7440-47-3	
• 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
• Sodium silicate	1344-09-8	Not Listed
• Quartz	14808-60-7	Not Listed
• Bentonite	1302-78-9	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	• 01/April/2015
Preparation Date	• 01/June/2009
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