Material Safety Data Sheet

SECTION 1- PRODUCT IDENTIFICATION

Product Name(s):	**GEN SIL LITE &** **GEN SIL ULTRA LITE**
Product Type:	Refractory Brick or Shape
Manufacturer's Name:	Utah Refractories, LLC
Address:	2200 North 1100 West Lehi, Utah 84043
Business Phone:	(801) 768-3591
Business Fax	(801) 768-2684
Emergency Phone:	**Chemtrec North America** 1-800-424-9300 or 1-703-527-3887
Preparation/Revision Date:	May 15, 2013

SECTION 2 - HAZARD IDENTIFICATION

Hazard Classification
Classification of Mixture Under Regulation (EC) 1272/2008/EC (CLP/GHS) This product is classified as a Specific Target Organ Toxicity – Repeated Exposure, Inhalation (Category 2) as defined in the Regulation EC 1272/2008. **Classification of the Mixture Under Directive 67/548/EEC & 1999/45/EC** This product does not meet the criteria for classification as hazardous as defined in the Directive 67/548/EEC.
Label Elements
Name on Label: GEN SIL LITE or GEN SIL ULTRA LITE **OSHA Hazards:** Carcinogen, Target Organ Effect **Target Organs:** Lungs

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SECTION 2 - HAZARD IDENTIFICATION (Cont.)

GHS Classification:
Specific Target Organ Toxicity – Repeated Exposure, Inhalation (Category 2)

Label Pictograms :

Signal Word:
Warning

Hazard Statements:

H373	May cause damage to lungs through prolonged or repeated exposure if inhaled.

Precautionary Statements:

P260	Do not breathe dust.
P285	In case of inadequate ventilation wear respiratory protection
P501	Dispose of contents/containers in accordance with local regulations.

This product contains various forms of crystalline silica. Finished GEN SIL LITE refractory bricks do not present any unusual health or safety hazards. However, if this product is used in such a way as to generate airborne particulate, health hazards can arise from chronic exposure to the airborne particulate. Also, these refractory bricks may be contaminated with other compounds during their use in industrial applications. End users of this product are responsible for determining additional hazards that may arise after this product is used in their specific industrial application.

Symptoms of Exposure by Route

Acute Effects:	Very high exposures to crystalline silica over periods as short as a few months can result in acute silicosis. Symptoms include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.
Chronic Effects:	The adverse health effects listed above, silicosis, lung cancer, kidney diseases, tuberculosis, and non-malignant respiratory disease are chronic effects from prolonged exposure to crystalline silica.
Signs and Symptoms of Exposure:	There are generally no immediate signs and symptoms of exposure to crystalline silica other than minor respiratory and/or eye irritation.

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SECTION 3 - COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredients	% by Weight	CAS No.	EINECS No.	R Phrases*
Cristobalite (SiO_2)	60 - 65	14464-46-1	238-455-4	R48/20, R40
Quartz (SiO_2)	<1	14808-60-7	238-878-4	R48/20, R40
Tridymite (SiO_2)	25 - 30	15468-32-3	239-487-1	R48/20, R40

*R Phrases under European Directive 67/548/EEC or 1999/45/EC, as amended.

SECTION 4 - FIRST-AID MEASURES

Inhalation:	No specific first aid measures are generally required for inhalation exposures since the adverse health effects associated with crystalline silica result from chronic exposures. For massive inhalation exposures to crystalline silica, move victims to fresh air and give artificial respiration and seek medical attention as necessary.
Skin Contact:	Wash with soap and water.
Eye Contact:	Wash with large amounts of water or normal saline. If irritation persists, get medical attention.
Ingestion:	Not applicable. Ingestion in an occupational setting is unlikely.
Most Significant Symptoms of Exposure by Route	
Inhalation:	Silicosis: Chronic exposure to respirable crystalline silica can cause silicosis, a fibrous scarring of the lungs. Silicosis may be progressive and may lead to disability and death. Lung Cancer: Crystalline silica inhaled from occupational sources is classified as carcinogenic to humans by IARC and NTP. Tuberculosis: Silicosis increases the risk of tuberculosis. Autoimmune Disease: There is evidence that exposure to crystalline silica (without silicosis) or the disease silicosis may be associated with the increased incidence of several autoimmune disorders including scleroderma, systematic lupus, and rheumatoid arthritis. Kidney Disease: There is evidence that exposure to crystalline silica (without silicosis) or that the disease silicosis is associated with the increased risk of kidney diseases, including end stage renal disease. Non-malignant Respiratory Disease: There is evidence that exposure to crystalline silica is associated with an increased incidence of chronic bronchitis and emphysema.

Most Significant Symptoms of Exposure by Route (Cont.)	
Eye Contact:	Crystalline silica may cause abrasion of the cornea.
Skin Contact:	May cause abrasion to skin.
Ingestion:	Unlikely route of occupational exposure. No known effects

SECTION 5 - FIRE-FIGHTING MEASURES

Flashpoint:	Not applicable.
Auto-ignition Temperature:	Not applicable.
Flammable Limits (in air by volume, %)	Not applicable.
Fire Extinguishing Media:	Not Applicable
Unusual Fire and Explosion Hazards:	None. Product is not flammable, combustible or explosive.
Special Fire Fighting Procedures:	None. Product is not flammable, combustible or explosive.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Spill and Leak Response:	Clean up spills or releases of this product using methods that will not generate dust such as high efficiency particulate air (HEPA) vacuums and/or wet methods. Wear protective equipment specified in Section 8 of this MSDS if significant levels of dust are generated during clean-up activities. Place spilled material in closeable container and dispose of in accordance with any federal, state or local regulations (see Section 13)

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SECTION 7 - HANDLING AND STORAGE

Storage and Handling Practices:	Avoid creating dust during handling, use or storage of this product. Do not allow dust from this product to accumulate on walls, floors, sills, ledges, machinery or equipment. Do not breathe dust that may be created during the handling or use of this product. Do not rely on visible dust clouds as an indicator of the presence of airborne crystalline silica. Significant airborne levels of crystalline silica may be present without a visible dust cloud. Use local exhaust ventilation and dust collection equipment if dust is created during handling or use of this product. Ensure that the dust collection equipment is sufficient to keep worker exposures below applicable occupational exposure levels. Exposure monitoring of affected workers may be necessary to determine if worker exposures above allowable limits are occurring. If airborne silica levels cannot be kept below occupational exposure limits using ventilation controls, affected employees must wear National Institute for Occupational Safety and Health (NIOSH) approved respirators in accordance with the information provided in Section 8 of this MSDS. Vacuum then launder clothing that has been contaminated with silica-containing dust. Use precautions when cleaning and laundering contaminated clothes so as not to create dust.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation and Engineering Controls:	Use local exhaust ventilation and dust collection equipment if dust is created during handling or use of this product. Ensure that the dust collection equipment is sufficient to keep worker exposures below applicable occupational exposure levels. Exposure monitoring of affected workers may be necessary.
Respiratory Protection:	If airborne silica levels cannot be kept below occupational exposure limits using ventilation controls, affected employees must wear National Institute for Occupational Safety and Health (NIOSH) approved respirators. Respirator selection should be in accordance with Table 1 below.
Eye Protection:	Wear safety glasses if product is used in a way that creates dust.
Hand Protection:	Wear appropriate hand protection to prevent abrasions.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION (Continued)

TABLE 1 – RESPIRATOR SELECTION GUIDELINES	
PARTICULATE CONCENRATION	**MINIMUIM RESPIRATORY PROTECTION***
10 x OEL** or less	Half-face air purifying respirator (APR), including N-95 dust respirators. Half-face APR with P-100 cartridges are preferred.
50 x OEL* or less	Full-face APR with P-100 cartridges
500 x OEL* or less	Full face airline respirator operated in pressure demand, positive pressure or continuous flow mode
Greater than 500 X the OEL or unknown conditions	Self contained breathing apparatus (SCBA) or full face airline respirator operated in pressure demand, positive pressure or continuous flow mode and equipped with SCBA escape capabilities.
** Higher levels of protection may always be used.* ***OEL = Applicable Occupational Exposure Limit*	

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Specific Gravity:	2.3 – 2.4
Evaporation Rate:	Not applicable.
Vapor Pressure:	Not applicable.
Odor	None
Appearance and Color:	Light tan solid brick
Solubility in Water:	Insoluble in water
pH:	Not applicable
Melting Point:	>1650 ˚C

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SECTION 10 - STABILITY AND REACTIVITY

Stability:	Stable at normal temperatures and pressures.
Hazardous Decomposition Products:	Silica will dissolve in hydrofluoric acid and produce silicon tetrafluoride, a corrosive gas.
Materials with Which Substance is Incompatible:	Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride may cause fires.
Hazardous Polymerization:	Will not polymerize.

SECTION 11 - TOXICOLOGICAL INFORMATION

Toxicity Data:	**SILICOSIS** Silicosis is the major concern associated with occupational exposure to crystalline silica. It is caused by inhalation and retention of respirable crystalline silica dust. Silicosis can exist in chronic (ordinary), accelerated, or acute forms. The most common form of silicosis is chronic (ordinary) silicosis, which can occur after many years of exposure to respirable silica particles that exceed occupational exposure limits. Chronic silicosis can be further defined as either simple or complicated silicosis. Simple silicosis is characterized by small lung lesions primarily in the upper lung zones. People with simple silicosis often do not have health symptoms, detectable changes in lung function, or disability. However, simple silicosis may be progress without additional silica exposure and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized larger lung lesions. As with simple silicosis, there may be no symptoms associated with complicated silicosis or PMF. If symptoms do occur they can include: shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may also be associated with decreased lung function, and may be disabling. Advanced complicated silicosis or PMF may lead to death, or heart disease secondary to the lung disease. Accelerated silicosis can result from exposure to high concentrations of respirable crystalline silica over a relatively short period. Lung lesions can appear within 5 years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis with the exception that lung lesions appear earlier and the progression is more rapid. Acute silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, as short as a few months. Symptoms include progressive shortness of breath, fever, cough, and weight loss. Acute silicosis is fatal.

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SECTION 11 - TOXICOLOGICAL INFORMATION (continued)

Toxicity Data:	**AUTOIMMUNE DISEASES** There is evidence that exposure to respirable crystalline silica could be associated with the increased incidence of several autoimmune disorders such as: scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. These autoimmune diseases may occur in patients with or without existing silicosis. **TUBERCULOSIS** Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if they are exposed to persons with tuberculosis. **KIDNEY DISEASE** There is evidence that exposure to respirable crystalline silica (without silicosis), or silicosis, could be associated with an increased incidence of kidney diseases, including end stage renal disease.
Occupational Exposure Limits:	The occupational exposure limit (OEL) for crystalline silica varies by individual country. It is up to the individual users of this product to determine the legally enforceable OEL for its location. The American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) of 0.025 mg/m^3 for crystalline silica (respirable fraction). This TLV is an 8-hour time weighted average exposure level that is believed to be protective for most workers for a working lifetime. Permissible Exposure Limits (PELs) mandated by the U.S Occupational Safety and Health Administration (OSHA) are listed below: Quartz – $\frac{10\ mg/m^3}{\%SiO_2 + 2}$ (respirable fraction) Cristobalite – $\frac{5\ mg/m^3}{\%SiO_2 + 2}$ (respirable fraction) Tridymite - $\frac{5\ mg/m^3}{\%SiO_2 + 2}$ (respirable fraction) Quartz - $\frac{30\ mg/m^3}{\%SiO_2 + 2}$ (total particulate) Cristobalite – $\frac{15\ mg/m^3}{\%SiO_2 + 2}$ (total particulate) Tridymite - $\frac{15\ mg/m^3}{\%SiO_2 + 2}$ (total particulate)

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Suspected Cancer Agent:	IARC – The International Agency for Research on Cancer ("IARC") reports that there is "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz and cristobalite". IARC's evaluation concluded that, "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans*". However, it was noted that not all industrial circumstances studied show evidence of carcinogenicity because "carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs". For further information on IARC's evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 68, "Silica, Some Silicates…" (1997). NTP – The National Toxicology Program, concluded in its Ninth Annual Report on Carcinogens, that *respirable crystalline silica is known to be a human carcinogen*. This was based on studies in humans, which provided sufficient evidence of carcinogenicity to indicate a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust. OSHA – The Occupational Safety and Health Administration (OSHA) does not regulate crystalline silica as a carcinogen.
Irritancy of Product:	Product may cause irritation by inhalation and eye contact.
Sensitization to the Product:	Not known to cause sensitization
Reproductive Toxicity Information:	Not known to cause reproductive toxicity
Medical Conditions Aggravated by Exposure:	The condition of individuals with existing lung disease such as bronchitis, emphysema and chronic obstructive pulmonary disease (COPD) may be aggravated by exposure to crystalline silica.
Biological Exposure Indices (BEIs):	None known.

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SECTION 12 - ECOLOGICAL INFORMATION

Environmental Stability:	Crystalline silica is ubiquitous and stable in the environment.
Effect of Material on Plants, Animals or Aquatic Life:	Crystalline silica is not known to be toxic to birds, fish, invertebrates, microorganisms or plants.

SECTION 13 - DISPOSAL CONSIDERATIONS

Preparing Wastes for Disposal:	The unused refractory brick is not considered a hazardous waste under the Resource Conservation and Recovery Act (RCRA). The material may be land filled. This product may be contaminated with other hazardous materials during routine industrial use. It is the responsibility of the user to determine disposal requirements in this situation.

SECTION 14 - TRANSPORTATION INFORMATION

U.S. Department of Transportation Regulations:	Unused refractory bricks are not considered a hazardous material for purposes of transportation under the U.S. Department of Transportation Table of Hazardous Materials 49 CFR Part 172.101
U.N. Identification Number:	Not applicable.
Packing Group:	Not applicable.
North American Emergency Response Guidebook Number (2000):	Not applicable.
Marine Pollutant:	Not applicable.
Canada Transportation of Dangerous Goods Regulations:	This material is not considered a dangerous good.

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SECTION 15 - REGULATORY INFORMATION

The following selected regulatory requirements apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable Federal, State/Provincial and Local regulations.	
UNITED STATES (FEDERAL AND STATE)	
U.S. Superfund Amendments and Reauthorization Act (SARA) Reporting Requirements:	This product is not an Extremely Hazardous Substance (EHS) under Section 302 of Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. This product does contain compounds that require disclosure and reporting under Section 311/312 of SARA. The hazard category for the 311/312 Reporting: Chronic Health. The thresholds planning quantity is 10,000 pounds. This product does not contain compounds that require Toxic Release Inventory (TRI) reporting under Section 313 of SARA
Toxic Substances Control Act (TSCA)	Crystalline silica appears on the EPA TSCA inventory under the CAS No. 14808-60-7
Comprehensive Environmental Response Compensation and Liability Act (CERCLA):	The product ingredients are not listed as “Hazardous Substances” in 40 CFR Part 302.
U.S. DOT Reportable Quantity	Not applicable.
Resource Conservation and Recovery Act (RCRA)	The unused product is not classified as a hazardous waste under the resource Conservation and Recovery Act (RCRA) 40 CFR Part 261 - 265
Clean Air Act (CAA)	This product does not contain any Class I or Class II ozone depleting substances
California Proposition 65	Crystalline silica (airborne particles of particles of a respirable size) are classified as a substance known to cause cancer by the State of California
CANADA	
Canadian DSL/NDSL Inventory Status:	Ingredients are listed.
WHMIS Classification	D2A

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SECTION 15 - REGULATORY INFORMATION (Cont.)

EEC LABELING	
R phrases:	**R 48/20 R40** Harmful: danger of serious damage to health by prolonged exposure through inhalation. Limited evidence of a carcinogenic effect.
S phrases:	**S22 S38** Do not breathe dust. In case of insufficient ventilation, wear suitable respiratory equipment.

SECTION 16 - OTHER INFORMATION

Hazardous Material Information System (HMIS) Classifications:	Health Flammability Reactivity Protective Equipment	1 0 0 E
National Fire Protection Association (NFPA):	Health Flammability Reactivity	1 0 0

Disclaimer: The information and recommendations contained in this document are based on data and information that is believed to be current and correct. The information pertains only to the unused product and does not pertain to this product after it has been used by the customer. No guarantee or warranty of any kind express or implied, is made with respect to the information contained in this document. Utah Refractories, LLC accepts no responsibility for any harmful effects that may result from the purchase, use, or resale of this product. End users of this product are ultimately responsible for complying with all applicable safety, health and environmental rules and regulations that apply to this product.

*****End of MSDS*****