



SAFETY DATA SHEET

Section 1: Identification

Product Identifier: SI-RIG, 190-Bind.

Other means of identification: Silica Rigidizer. Colloidal silica suspension. Silica sol. Silica Binder.

Recommended use: Binder and surface hardener on ceramic fiber and refractory products. Primarily used at high temperatures.

Manufacturer

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Section 2: Hazards Identification

Hazard Classification(s): Skin Irritation, Eye Effects, category 2 Respiratory Sensitizer

Signal Word: Warning



Precautionary Statement(s): May cause skin, eye and respiratory irritation.

CAUTION: Handling or machining of products treated with this material may produce respirable dust particles. Dust may irritate eyes, skin and respiratory tract.

Inhalation: Dust may cause irritation or soreness of throat and nose.

Eye Contact: Dust may cause temporary irritation or inflammation.

Skin Contact: May cause temporary dryness, irritation or rash.

Ingestion: Ingestion is unlikely. May cause gastrointestinal disturbances. Never induce vomiting without the advice of a physician.

Medical Conditions Aggravated by Exposure: Respiratory effects may be aggravated by smoking. Pre-existing respiratory problems may be aggravated by dust.

Section 3: Composition / Information on Ingredients

Chemical and common names, CAS numbers and concentration

Chemical Name	Common Name	CAS Number	% by Weight (solids)
Silica (Amorphous)	Silica	7631-86-9	40 – 42

Section 4: First Aid Measures

Inhalation: If respiratory tract irritation develops, move the person to a dust free location. Rinse mouth to clear throat and expel liquid. Blow nose to evacuate dust. Consult a physician if irritation persists.

Eye Contact: Products can be physical irritants to eyes. Do not rub eyes. Keep hands or contaminated body parts away from eyes. Remove contact lenses. Flush with water. If irritation persists, consult a physician.

Skin Contact: Products are irritants. Wash with soap and water. For dryness, a skin cream may be helpful. Do not apply anything to a rash. Consult a physician if irritation persists.

Ingestion: Drink plenty of water. Do not induce vomiting without advice of a physician. Seek medical attention.

Notes to Physicians: Skin and respiratory effects are the result of temporary, mild mechanical irritation; exposure does not result in allergic manifestations. The material is inert in the body. Some individuals may experience allergic sensitivity reactions. These are generally limited to mild occupational dermatitis. Chronic inhalation may result in pleural plaques not associated with cancers. Other effects principally derived from physical abrasion.

Section 5: Fire Fighting Measures

Materials are not combustible. Use extinguishing media suitable for type of surrounding fire.

Section 6: Accidental Release Measures

Spill Procedures: Wet cleanup should be by sponge or mop. Clean up procedures should minimize formation of airborne dusts. Remove dust by vacuuming using HEPA filtration where possible or use wet sweeping or a dust suppressant where sweeping is necessary.

Release into Air: Prevent release of airborne particulates where possible. Not a regulated hazardous substance. See Section 8 for appropriate engineering controls.

Release into Water: Release into water is not appropriate. Not a regulated hazardous substance.

Section 7: Handling and Storage

Storage: These materials are stable and may be stored indefinitely. Physical abrasion of dried material may produce small amounts of respirable dusts. See precautions under Section 8.

Normal Use: Materials are stable under normal use and are not expected to produce significant hazardous by-products or emissions.

Machining and Cutting: Materials treated with this product may produce respirable and nuisance dusts when machined or cut. See Section 8 for exposure controls and personal protection during machining or installation procedures.

High Temperature Conditions: Service significantly above the product design temperature may increase friability and the possibility of generating particulates. While not considered problematic during use, such airborne particulate may complicate removal activities. It is recommended that product use be carefully matched to design parameters.

After Service: As manufactured these products are rather benign. They should, however, be handled with caution, and care taken not to breath airborne dust generated by handling before or after use. It is important to note: The silica used in these products may devitrify and form cristobalite (a form of crystalline silica) when used at temperatures above 1000°C for extended periods. Chronic exposure to respirable crystalline silica may lead to lung disease. IARC has concluded that "Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1)." OSHA has adopted a permissible exposure limit (PEL) for respirable cristobalite at 0.05 mg/m³. Appropriate ventilation and respiratory protection should be provided in compliance with OSHA standards. Strict adherence to recommended safe work practices is advised. Product removal must consider the possibility of usage above design temperatures. See section 8 for appropriate respiratory protection during removal.

Section 8: Exposure Controls / Personal Protection

Exposure Limits

Silica (Amorphous)	
OSHA PEL as 8 hr TWA	(80 mg/m ³ ÷ % SiO ₂) or 20 mppcf
NIOSH PEL as 8 hr TWA	2mg/m ³
Canadian PEL as TWA	2/5 mg/m ³ Total mass/Respirable Mass
ILDH Level by SCPC	3000 mg/m ³

Appropriate Engineering Controls: Use dust suppression controls. Local exhaust ventilation, point of generation dust collection, and/or down-draft work stations to minimize airborne dust generation are recommended when machining product.

Recommendations for Personal Protective Measures

Respiratory Protection:	Use appropriate protection pursuant to OSHA 29CFR 1910.134, 29CFR 1926.103, and CFR1910.1000, Subpart Z, Air Contaminants. The following information is provided as a guide and reflects industry recommendations for control of dust.
PPE < 1.0 f/cc	No specific recommendation, use personal protective equipment based on local conditions.
PPE 1.0 f/cc to 5.0 f/cc	Half-face, air purifying respirator equipped with a high efficiency particulate air (HEPA) filter cartridge.
PPE 5.0 to 25 f/cc	Full-face, air purifying respirator equipped with a high-efficiency particulate air (HEPA) filter cartridge
PPE > 25 f/cc	Full-face, positive pressure, supplied air respirator.
Skin Protection	Wear gloves, head coverings, and full body clothing to prevent skin irritation. Disposable clothing may be used. Store work clothes and street clothes separately.
PPE Other	Work clothes should be washed separately and the washing machine rinsed following use. If possible, do not take work clothes home following machining or removal activities that produce significant amounts of dust.
Eye Protection	Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses without goggles. Do not get dust or liquids into eyes. Have eye washing facilities available when using products.

These products are generally not hazardous during normal use. These guidelines are provided for special circumstances involved in machining, use and or after service removals. See Section 7 for after service and Section 13 for disposal recommendations.

Section 9: Physical and Chemical Properties

Physical and Chemical Properties

Appearance		Odor	pH	Viscosity	Melting Point	Specific Gravity
Physical State	Color					

Liquid - cloudy	Clear to Light Grey	Odorless to slight ammonia	8	7 cps. Max.	>1698°C (3088°F)	1.3
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Note: If allowed to freeze (<0C) solids will agglomerate and will irreversible fall out of suspension. Initial boiling point and boiling range, flash point, evaporation rate, flammability, upper/lower flammability or explosive limits, vapor pressure, vapor density, partition coefficient: n-octanol/water, auto-ignition temperature and decomposition temperature are irrelevant and/or unavailable to/for these materials.

Section 10: Stability and Reactivity

Chemical Stability: Materials are stable with no possibility of hazardous reactions or polymerization.

Chemical Incompatibilities: Powerful oxidizers; fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, etc.

Hazardous Decomposition Products: When used at temperatures above 1000C for sustained periods of time this amorphous material begins to transform into mixtures of crystalline phases. See section 7 for more information.

Section 11: Toxicological Information

Exposure Routes and Effects

Inhalation: Dust from dried product may cause irritation or soreness of throat and nose.

Eye Contact: Solids suspended in solution and dust from dried product may cause temporary irritation or inflammation.

Skin Contact: May cause temporary dryness, irritation or rash.

Ingestion: Ingestion is unlikely. May cause gastrointestinal disturbances. Never induce vomiting without the advice of a physician.

Medical Conditions Aggravated by Exposure: Respiratory effects may be aggravated by smoking. Pre-existing respiratory problems may be aggravated by dust.

Toxicology

Silica (amorphous)	
Acute Toxicity Estimate	LD ₅₀ : 5000 mg/kg
Carcinogenicity by IARC	Group 3: Not classifiable as to its carcinogenicity to humans

Description of Symptoms: See Exposure Routes and Effects, Hazard Statement(s) and Precautionary Statement(s) sections above.

Additional Toxicology Information: The International Agency for Research on Cancer (IARC) has determined that amorphous silica is not classifiable as to its carcinogenicity to humans (Group 3). IARC classified respirable crystalline silica, a possible byproduct

of amorphous silica devitrification following sustained, high-temperature (>1800°F) use, as a substance known to be carcinogenic to humans (Group 1).

Section 12: Ecological Information

Eco toxicological Information: These products are inert materials that remain stable overtime. No adverse effects of this material on the environment are anticipated. No information regarding any negative effects of this persistence has been noted.

Section 13: Disposal Consideration

Disposal: To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

Hazardous Waste Classification: Materials as manufactured are not classified as a hazardous waste according to Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste. Disposal regulations vary. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

Empty Containers: Empty containers may contain product dust or residue. Do not re-use. Disposal regulations vary. Consult with all applicable regulations prior to disposal. Refer to Section 8 for instructions regarding Exposure Controls/Personal Protection.

Section 14: Transportation Information

Materials are not regulated hazardous substances, no specific regulations apply.

Section 15: Regulatory Information

SARA Title III Constituent: listed none

OSHA: Complies with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.

TSCA: All substances contained in this product are listed, if required, in the TSCA Chemical Inventory.

States: None known.

Canadian WHMIS Status: Not a controlled product.

Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

Section 16: Other

Disclaimer:

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