

SILICA FUME

1. IDENTIFICATION OF MATERIAL AND SUPPLIER

Product Identification

Product Name Silica Fume

Other Names Silica (Silicon Dioxide); Micro Silica

Recommended Uses Production of Refractories, Portland Cement, Ceramics and Glass.

Supplier Identification

Company Doral Fused Materials Pty. Ltd.
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2. HAZARD IDENTIFICATION

Silica Fume is not classified as hazardous according to criteria of Worksafe Australia.

Risk Phases (R-Phrases) None
Safety Phrases (S-Phrases) None

UN Number None Allocated
Class and Subsidiary Risk None Allocated
Hazchem Code None Allocated
Poisons Schedule Number None Allocated

Potential Health Effects

Acute

Swallowed: Can cause severe irritation and damage to gastrointestinal tract.

Eye: Reacts with tears resulting in severe irritation, corrosive burns and risk of permanent damage to eyes.

Skin: Can cause caustic attacks on skin, especially when wet.

Inhaled: Can cause irritations of the respiratory tract.

Chronic

Long term exposure to crystalline silica, in excess of suggested limits, can result in fibrotic lung disease (silicosis).

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients (typical)	CAS Number	Proportion %
Silica (amorphous)	69012-64-2	> 93.0 wt.%)
Zirconium Dioxide	1314-23-4	< 6.0 (wt.%)
Silica (crystalline)	14808-60-7	< 1.0 (wt.%)
U (Uranium)	7440-61-1	100 ppm
Th (Thorium)	7440-29-1	20 ppm

4. FIRST AID MEASURES

Swallowed: Drink large amounts of water. Do **not** induce vomiting.
Consult a doctor immediately.

Eyes: Hold eyelids open and wash continuously with water for 15 minutes.
Do not rub eyes. Seek immediate medical attention.

Skin: Immediately remove clothing and flush affected area with large quantities of water.
Seek medical attention.

Inhaled: Remove from exposure to fresh air. If breathing is laboured or stopped, give artificial respiration. Obtain immediate medical attention.

First Aid Facilities: No special requirements.

5. FIRE FIGHTING MEASURES

Flashpoint	None
Flammability Limits	Non-flammable
General Hazard	This product is not flammable and does not support combustion.
Extinguishing Media	Use media suitable for the material that is burning.

6. ACCIDENTAL RELEASE MEASURES

Spills and disposal	Clean up by sweeping and collection of dry material, avoid dusting. Due to possible leachability, approval from appropriate regulatory bodies is to be obtained for the disposal of Silica Fume.
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Wear safety equipment as for normal handling. Avoid generating dust. Vacuum up if possible, otherwise sweep up and re-cycle. If the spilled product is not suitable for re-use, damp down, collect and where possible return to manufacturer for reprocessing. Any disposal to an approved landfill site and cover with clean fill shall be conducted in accordance with State/Local Council regulations.

7. HANDLING AND STORAGE

Handling	Avoid breathing dust. Suitable dust controls, including wearing a suitable respirator, should be utilised when handling bulk materials. Wash thoroughly after handling. If handling Silica Fume it is advisable to also use gloves and wash hands before eating, drinking or smoking to minimise inhalation or ingestion from hands.
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Storage	Keep dry. Store separate from hydrofluoric acid.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Standards:

Chemical Name	CAS Number	Proportion (wt %)	NOHSC TWA	ACGIH TLV
Silica (amorphous)	69012-64-2	> 85.0	2.0 mg/m ³	2.0 mg/m ³ (respirable dust)
Zirconium Dioxide	1314-23-4	< 10.0	5 mg/m ³ as Zr	5 mg/m ³ as Zr
Silica (crystalline)	14808-60-7	< 1.0	0.1 mg/m ³	0.05 mg/m ³

Radiation Exposure ¹	Occupational exposure should be as low as reasonably achievable, (ALARA principle), but should not exceed a total of 100 milli-seiverts over five consecutive years. (ICRP)
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¹ Denotes recommendation of the International Commission on Radiological Protection, ICRP Publication 60, Annals of the ICRP Vol 21, No 1 – 3 1991

Engineering Controls	Use with adequate ventilation. Limit dust formation as far as possible to meet exposure limits listed above.
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Personal Protection	Use dust respirator and face mask to cover eyes, nose and mouth. The use of impervious gloves and protective clothing is recommended to reduce unnecessary contact with skin.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White amorphous powder
Boiling Point	Not Applicable
Melting Point	1720°C
Vapour Pressure	Not Applicable
Specific Gravity	2.5
Flashpoint	Not Applicable
Flammability Limits	Non-flammable
Solubility	Insoluble in water, soluble in concentrated acids and alkalis
Bulk Density	200 - 300 kg/m ³
pH	2 - 4 (10 wt.% in distilled water)
Reactivity	Reacts with hydrofluoric acid (HF) to produce toxic, gaseous silicon tetrafluoride (SiF ₄)

Additional Information

Radioactivity	Silica Fume contains low levels of U and Th (U + Th ~ 120 ppm, ~1Bq/g). When following recommended safe handling practices radiation exposure is unlikely to exceed 0.5 mSv/year (whole body average).
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