

MATERIAL SAFETY DATA SHEET



Microsilica EMS 970DA

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DATE PRINTED: March 19, 1998

MSDS No.: EMS-970DA

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Microsilica EMS-970DA

Synonyms/Trade Names: Amorphous Silica; Silica Fume; Condensed Silica Fume.

MANUFACTURER:

Elkem Materials Inc.
P.O. Box 266
Pittsburgh, PA 15230
(412) 299-7200 (800) 433-0535

EMERGENCY TELEPHONE NUMBERS:

CHEMTREC (800) 424-9300

2. COMPOSITION/INFORMATION ON INGREDIENTS¹

	<u>wt. %</u>	<u>CAS Registry #</u>
Silicon Dioxide (SiO ₂) amorphous	>85%	69012-64-2
Carbon (C)	<10%	7440-44-0
Aluminum Oxide (Al ₂ O ₃)	<1%	1344-28-1
Calcium Oxide (CaO)	<1%	1305-78-8
Iron Oxide (Fe ₂ O ₃)	<1%	1309-37-1
Magnesium Oxide (MgO)	<1%	1309-48-4
Sodium Oxide (Na ₂ O)	<1%	1310-73-2
Potassium Oxide (K ₂ O)	<1%	1310-58-3
Silicon Dioxide (SiO ₂) crystalline	<0.5%	14808-60-7

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200):

	<u>EXPOSURE LIMITS (mg/m³)</u>	
	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Silicon dioxide (SiO ₂) Amorphous	15 (total) 5 (respirable)	2 (respirable)
Silicon dioxide (SiO ₂) Crystalline	0.05 (respirable)	0.05 (respirable)

¹ Elemental analysis of the fume. The manufacturer can provide a more detailed analysis, including other trace elements.

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3. HAZARDS IDENTIFICATION

Microsilica is of low toxicity. Handling of microsilica does not represent a health risk when usual safety rules are observed. Microsilica is generally considered to be a nuisance dust. High dust concentrations may cause irritation. Microsilica is unlikely to cause harmful effect when handled and stored as advised. Microsilica may contain trace amounts (<0.5%) of crystalline silica which has been shown to cause silicosis, and has been identified by IARC and NTP as a possible human carcinogen. (See Section 11).

4. FIRST AID MEASURES

INHALATION:

Remove exposed person from dusty area to fresh air.

SKIN CONTACT:

Wash skin with water and/or a mild detergent. Moisturizing cream or lotion may be applied to avoid skin dryness.

EYE CONTACT:

Flush with water/saline solution to ensure no particles remain in eye. See a physician on persistent feeling of discomfort.

INGESTION:

Not applicable.

5. FIRE FIGHTING MEASURES

Microsilica is not combustible and the dust presents no danger of explosion.

Extinguishing media: Not applicable (if involved in fire: cool with water).

6. ACCIDENTAL RELEASE MEASURES

Contain spills or leaks. Transfer spilled material into an appropriate container. Collect spilled material using a vacuum cleaner or wash down with water. Do not use compressed air to maneuver dried material. Avoid generation of airborne dust.

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7. HANDLING AND STORAGE

HANDLING:

Avoid handling that generates airborne dust.

STORAGE:

Store in closed containers. Store away from hydrofluoric acid and fluorides.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection, eye flushing facilities and protective gloves are recommended. Ensure adequate ventilation. Wear an appropriate particulate respirator in accordance with 29 CFR 1910.134 or CSA Standard Z94.4-M1982 for dust exposure that may exceed exposure limits. If adequate ventilation is not possible, a self contained breathing apparatus or an air supplied respirator is recommended.

OCCUPATIONAL EXPOSURE LIMITS (OSHA and ACGIH):

	8hr TWA mg/m ³	
	OSHA PEL	ACGIH TLV
Total inhalable dust	15	10
Respirable dust	5	3
Silicon Dioxide, Amorphous	15 (total)	2 (respirable)
Silicon Dioxide, Crystalline	0.05 (respirable)	0.05 (respirable)

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Ultrafine amorphous powder (respirable dust), dust forms agglomerates
Color:	Light to dark gray
Odor:	Odorless
Solubility (Water):	Insoluble to slightly soluble.
Melting Point (°C):	Approx. 1230
Solubility (Organic solvents)	Insoluble to slightly soluble.
Specific Gravity (water=1)	2.2-2.3
Bulk density (kg/m ³) approx	150-700 (10-45 lb/ft ³)
Particle size (µm)	Approx 0.5

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10. STABILITY AND REACTIVITY

STABILITY:

Microsilica is stable and does not react with water.

MATERIALS TO AVOID:

Avoid contact with hydrofluoric acid and fluorides

HAZARDOUS REACTIONS:

Microsilica reacts with hydrofluoric acid (HF) forming toxic gas (SiF₄).

HAZARDOUS DECOMPOSITION PRODUCTS:

Prolonged heating above 500°C (930°F) will convert amorphous silica to the crystalline phases. See Section 11.

11. TOXICOLOGICAL INFORMATION

ACUTE EFFECTS:

INGESTION: Dust from Microsilica may irritate and dehydrate mucous membranes.

INHALATION: Dust from Microsilica may irritate and dehydrate mucous membranes.

SKIN CONTACT: Dust from Microsilica may cause irritation and dehydration.

EYE CONTACT: Dust from Microsilica may cause irritation and dehydration.

CHRONIC EFFECTS:

Microsilica dust may contain impurities of crystalline quartz (<0.5%). Inhalation of Microsilica dust is considered to entail minimal risk of pulmonary fibrosis (silicosis). Cases of lung fibrosis have been reported among workers exposed to amorphous silica in the ferrosilicon industry. The lung changes have either been transient or may have been caused by simultaneous exposure to crystalline silica (quartz).

Heating Microsilica above 500°C can result in the formation of crystalline SiO₂-modifications (Cristobalite/Tridymite) which may cause silicosis. The formation rate increases with increasing temperature.

Periodic health examinations of persons exposed to the dust are recommended to include: pulmonary examination, spirometry and possibly x-ray.

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12. ECOLOGICAL INFORMATION

Microsilica is not characterized as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS

Reuse all product when possible. Dispose of waste Microsilica according to applicable federal, state and local rules for non-hazardous solid waste materials. No special precautions are necessary during repacking. Microsilica is not a listed RCRA Hazardous Wastes (40 CFR 261).

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION):

Proper Shipping Name: Not regulated

Hazard Class: Not regulated

I.D. Number and Initials: Not regulated

Packing Group: Not regulated

Label(s): Not regulated

15. REGULATORY INFORMATION

OSHA - Hazardous by definition of hazardous communication standard (29 CFR 1910.1200)

TSCA (Toxic Substance Control Act):

Components of this product are listed on the TSCA Inventory

CERCLA (Comprehensive Response Compensation, and Liability Act):

Microsilica is not listed in 40 CFR 302.4

RCRA (Resource Conservation/Recovery Act):

Microsilica is not a listed hazardous waste.

SARA TITLE III (Superfund Amendments and Reauthorization Act):

311/312 Hazard Categories:

Immediate Health, Delayed Health.

313 Reportable Ingredients:

None.

CALIFORNIA PROPOSITION 65:

This product contains chemical(s) known to the State of California to cause cancer:

Silica, crystalline

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16. OTHER INFORMATION

APPLICATION OF MICROSILICA:

For use in refractory compositions, concrete and other systems containing hydraulic cement.

Literature references are available upon request from the manufacturer.

Elkem Microsilica® is a registered trademark owned by Elkem ASA.

THE INFORMATION RELATES TO THIS SPECIFIC MATERIAL. IT MAY NOT BE VALID FOR THIS MATERIAL IF USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY ONESELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OWN PARTICULAR USE.