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No. 1  
Fibrous Glass  
(Silicate Base)  
April 15, 1987

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## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: FIBROUS GLASS (Silicate Base)

DESCRIPTION: This material is fiber manufactured from a melt of  $\text{SiO}_2$  and other oxides that is allowed to cool in fiber form without crystallization. (Amorphous form and the dimensions are primary in defining this material; composition is not considered beyond the above description.) Dust and fine particulate which can become airborne is formed by breakdown of fibers.

OTHER DESIGNATIONS: Glass Fiber; Fiberglass; FIBERGLAS (Trade name); GE Materials A2B1-15, A2B1-A7AB, 11, 13, 14; ASTM D578-D581.

MANUFACTUREX: Material available from many sources.

## SECTION II. INGREDIENTS AND HAZARDS

Fibrous Glass (and dust and particulate, therefrom)

Current OSHA TLV for all particulate not otherwise defined.  
ACGIH (1978) value is 10 mg/m<sup>3</sup> (total dust).

NIOSH (1977) proposed a dual control for fibrous glass:  
1) Fibrous glass <3.5 µm (or 0.000138 inch) in diameter and >10 µm in length shall not exceed 3 fibers/cc of air for 10-hr TWA. 2) Total fibrous glass shall not exceed a 10-hr TWA of 5 mg/m<sup>3</sup> of air. Note that fibrous glass must have an aspect ratio of 3/1 (length at least 3 times diameter).

Z	HAZARD DATA
ca 100	As Nuisance Dust* 8-hr TWA 15 mg/m <sup>3</sup> (total dust) or 8-hr TWA 5 mg/m <sup>3</sup> (respirable fraction)

## SECTION III. PHYSICAL DATA

Specific gravity ----- ca 2.5  
Softens and melts, deg F ----- ca 1000-2000  
Water solubility ----- Negligible

Appearance: Molten glass is extruded at high speed through extremely fine orifices to produce the fibrous structure. The fiber is randomly assembled into bats or sheets, formed into tow, cord, yarn, fabric, chopped fibers, etc. Mechanical abrasion and aging can produce fine particulate and dust from the fibrous glass.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Aautoignition Temp.	Flammability Limits In Air	LOWER	UPPER
N/A	N/A	N/A		

Extinguishing Media: Use that which is appropriate for the surrounding fire. This material is noncombustible and offers no unusual fire or explosion hazards.

Firefighters must wear full protective gear (including eye protection) and use self-contained breathing apparatus where airborne fibrous glass is present.

## SECTION V. REACTIVITY DATA

This is stable material.

The long, manufactured fibers of glass become broken down by aging and by mechanical action in handling or use to form the fine particulate that can become airborne. Glass is inert to many chemicals but reacts with hot, strong alkaline solutions and with hydrofluoric, fluosilicic, and phosphoric acids, but the small diameter of fibers (large surface area) makes them highly subject to aging damage and reduction in strength from moisture and other factors.

**SECTION VI. HEALTH HAZARD INFORMATION**

TLV (See Sect. II)

Skin abrasion and irritation by contact and eye and upper respiratory tract irritation by particulate contact are health effects associated with all fibrous glass use in the workplace. In addition, the smaller diameter fibers (<3.5 µm) are capable of penetrating more deeply into the lungs and, as shown by animal testing, producing fibrotic lung changes when implanted directly on lung tissue. Animal tests have also shown that these small diameter long fibers can produce tumors when directly implanted in the pleura or peritoneum.

The effects from direct implantations in test animals, bypassing the body's defense mechanisms, have not been confirmed by human experience of the past 30-35 years. The animal data are inconclusive, but they do indicate that special caution should be used in handling fibrous glass of <3.5 µm diameter.

**FIRST AID:**

Eye Contact: Flush well with running water for at least 15 minutes. Get medical help if irritation persists.

Skin Contact: Wash with soap and water. Temporary itching, swelling and redness will subside as worker's skin becomes hardened to the fibers. Get medical help to reduce the irritant effects and to detect special sensitivity.

Inhalation: Remove to fresh air. Consult physician for observation and treatment.

**SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES**

Prevent spread of fibrous glass particles and avoid dust generating conditions. Collect by vacuum or wet methods. Those involved in clean up should use protection against skin contact and prevent inhalation of particulate. Notify safety personnel when large amount of particulate is involved.

Disposal - Scrap material can be buried in a sanitary landfill in accordance with Federal State and local regulations.

**SECTION VIII. SPECIAL PROTECTION INFORMATION**

Use local exhaust ventilation, hood, or equipment enclosure to avoid dispersal of fibrous glass particulate into workplace air. Where dust is not controlled, use an approved dust respirator or an approved air-supplied or self-contained respirator for nonroutine or emergency conditions.

Protect the skin with barrier creams and protective gloves; provide clean work clothing or protective clothing to prevent accumulation of fibers in workers personal clothing. Use safety glasses with side shields or safety goggles as required to protect the eyes from particulate.

An eyewash station and hand, arm and face washing facilities should be available near work area. Encourage showering after a day of working with fibrous glass.

Establish good housekeeping practices to prevent accumulations of fibrous glass dust.

Keep waste in covered containers. Caution workers to wash work clothes separately; fibers can be deposited in wash on clothing of other family members.

**SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS**

Store, handle and use fibrous glass in a manner that will prevent airborne particulate in the workplace. Provide adequate ventilation.

Prevent contact with eyes. Avoid inhalation of particulate. Minimize skin exposure. When glass fiber is used as a reinforcement in plastic materials, caution must also be exercised with the resin and curing catalysts employed and the mixing process used to disperse the fiber in the resin. When glass fiber-reinforced material is abraded or machined, control of released fibers must be established.