



Loss Control Department
Technical Information Paper Series

Working Safely With Fiberglass

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TIPS Series S 580.483 Printed in U.S.A.

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Working Safely With Fiberglass

Fiberglass is a man-made material that has an extensive range of uses, including insulation, boat hulls, bathroom furnishings, decorative panels, and ceiling tiles.

Fiberglass is one member of a family of products collectively known as *man-made vitreous fibers*. These fibers are all created from molten masses of raw materials under highly controlled conditions.

Generally, fiberglass is supplied in two basic forms:

Wool type fibers, which are used for applications such as insulation, are produced by spinning molten glass. This results in fiber diameters that are very small (generally 2 to 9 microns in diameter); this contributes to their good insulation values.

Textile fibers, which are used in boats and other structural type products, are produced as twine or fabric matting. They are drawn or extruded, in a continuous process, from holes in the base of a container. This results in fairly large diameter strands (usually 3 to 25 microns in diameter).

Since fiberglass was first developed in the 1930s, there has been concern for the safety of workers who are exposed to this material, as it has a potential to shed particles or fibers which could be inhaled.

In the past 50 years, tens of thousands of workers employed in fiberglass manufacturing plants have been studied for unusual or unexpected patterns of diseases or symptoms. These studies have not revealed any significant increase in lung cancer or non-malignant respiratory disease.

Nonetheless, researchers did conduct a study in which they surgically implanted fibrous glass with diameters less than 1.5 microns into the chest, and injected fibers directly into the tracheas, of laboratory animals. The results showed scarring of the animals' lungs. As a result, researchers hypothesized that biological activity is associated with "long thin fibers."

Based on these findings, the International Agency for Research on Cancer (IARC) classified fiberglass as "possibly carcinogenic to humans" (Group 2B). At the same time, the IARC classified continuous filament fiberglass as Group 3; that is, "not classifiable as a human carcinogen."

A number of standards address fiberglass exposure and may apply in a given situation:

The Occupational Safety and Health Administration (OSHA) applies the “nuisance dust standard” (also known as the PNOR, or “particulate not otherwise regulated”) of 15 Mg/M³ total dust and 5 Mg/M³ as respirable dust.

The National Institute for Occupational Safety and Health (NIOSH) has a recommended standard of 3 fibers/cc.

The American Conference of Governmental Industrial Hygienists (ACGIH) has published a Threshold Limit Value (TLV) of 1 fiber/cc and 5 Mg/M³ as *inhalable dust* for the continuous filament types, and 1 fiber/cc for the wool types.

The absence of disease in the vast majority of workers who have been exposed to fiberglass during the last 50 years suggests that fiberglass product pose little, if any, health risk to humans.

Nonetheless, because of their physical characteristics, certain types of glass fiber may cause temporary skin, eye and upper respiratory irritation in some workers. Such irritation can be effectively controlled by following the simple work practices described in the accompanying checklist.

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Checklist for Working Safely With Fiberglass

Wear Loose Clothing That Covers All Exposed Areas

- Wear long sleeved shirts and blouses which are loose at the neck and wrists, long pants, and caps to protect skin from coming in contact with glass fiber.
- Keep clothing loose to prevent fibers from rubbing into the skin.
- Wear gloves as needed, depending on the job.

Prevent Accumulation Of Dust.

- Use dust collection systems whenever fiberglass exposures may exceed established particulate standards. Operations such as sawing, grinding and sanding have potentials for high exposure levels.

Protect Eyes.

- Wear safety glasses goggles or face shields whenever fiberglass materials are applied or manipulated.

Don't Rub Or Scratch Skin.

- Do not rub or scratch skin if fiberglass particles or fibers accumulate on exposed skin areas.
- Remove the fiberglass material by washing thoroughly with warm water and mild soap.
- Use a good commercial skin cream after washing.

Wash Work Clothing Separately.

- Wash work clothing separately from other household laundry to prevent fibers from being transferred to other clothing.
- Rinse the washing machine thoroughly before it is used again.
- If there is a lot of fiber on the clothing, presoak and rinse the garments prior to washing them.

Keep Work Areas Clean.

- Avoid unnecessary handling of scrap materials.
- Follow an organized housekeeping program at all times.
- Keep waste disposal equipment as close to the work area as possible.
- Don't let scrap material and debris pile up on floors and other surfaces.