

Material Safety Data Sheet

Complies with OSHA's Hazard Communication Standard 29 CFR1910.1200

1. COMPANY – PRODUCT IDENTIFICATION

Manufacturer:

Corporate Office: Fiber Glass Industries
69 Edson Street
Amsterdam, NY 12010-9805
Phone: 518-842-4000
Fax: 518-842-4408

<u>Production Plants:</u>	Fiber Glass Industries	Fiber Glass Industries
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	Amsterdam, NY 12010	Amsterdam, NY 12010
	Phone: 518-842-4000	Phone: 518-843-3533
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Product Identification:

Product Name: GLASS POLYPRO™

Common Names: GLASS POLYPRO™ Roving, GLASS POLYPRO™ Fabric,
GLASS POLYPRO™ Consolidated Sheets

Emergency Contact:

Telephone Number: 518-842-4000

2. HAZARDS COMMUNICATION

GLASS POLYPRO™, a commingled product based on reinforcement glass fibers and thermoplastic filaments, are available in the form of: ROVINGS, FABRICS, or CONSOLIDATED SHEETS

This Material Safety Data Sheet is valid for all these products.

GLASS POLYPRO™ Glass fibers can be considered as ARTICLES, as fibers, woven fabrics and sheets that are defined as articles in the manual of decisions for implementation by TSCA (Toxic Substances Control Act) or EPA 40 CFR 710.2 and DSL in Canada. These articles are mixtures of E GLASS in the form of continuous strands, a SIZE, and a THERMOPLASTIC POLYPROPYLENE RESIN (PP) in the form of commingled filaments. The CAS (Chemical Abstract Service) reference number for glass fibers is 65997-17-3 (corresponding to the oxides used for its production).

The **E GLASS** in **GLASS POLYPRO™** is a glass with a very low alkaline content. Its composition (expressed in oxides) is within the following percentages:

- | | |
|---------------------------------------------------------|--------|
| • SiO ₂ | 52-62% |
| • Alkaline Oxides (Na ₂ O, K ₂ O) | < 2% |
| • Alkaline earth oxides (CaO, MgO....) | 16-30% |
| • B ₂ O ₃ | 0-10% |
| • Al ₂ O ₃ | 11-16% |
| • TiO ₂ | 0- 3% |
| • Fe ₂ O ₃ | 0- 1% |
| • F ₂ | 0- 2% |

Note: The **E GLASS** portion of **GLASS POLYPRO™** is typically 60% of the product by weight but product offerings may range between 50% to 85% glass.

SIZE is a mixture of chemicals applied to the glass strands typically applied between 0.8% and 1.5%. Most of this mixture is made up of non reactive high molecular weight polymers and are generally exempt from registration on TSCA. In some cases, sizes are prepared from polymers with reactive ingredients or containing reactive monomers included on TSCA. Most of the reactive ingredients are polymerized during the manufacturing process. However a very small reactivity may remain which justifies the precautionary measures listed in Section 8 below. A second type of ingredient present in almost all sizes is a member of the organo-silane family. These products account for less than 0.05% of the final weight of sized E glass. These products are included in lists of products requiring 'hazardous product' labeling in a pure state, as toxic if swallowed or inhaled, harmful in contact with the skin, and an irritant for the eyes. The manufacturer considers this risk as negligible as, although listed as dangerous products, the concentration is extremely low and they are polymerized during the production of E glass fibers. Other products can be used in sizes. Usually the content is extremely low (under

0.1% of total weight) and as a general rule such products are not on the dangerous product lists or, as they have reacted, any possible risk has been reduced.

The **THERMOPLASTIC POLYMERS** used for commingling with the glass filaments to produce **GLASS POLYPRO™** are high molecular weight polymers. The thermoplastic component is typically present at 40% volume by weight but product offerings may range between 15% to 50% thermoplastic. The majority of polymers are not listed as dangerous products.

The CAS reference numbers of the base polymer Polypropylene (PP) is: 9003-07-0
The thermoplastic portion mainly contains, as is general for all polymers, some **ADDITIVES** intended to improve processing, durability, or the resistance to external agents. They are introduced in very small quantities into the polymers. Known additives, in quantities of less than 1.5% of the polymer have some listed hazards in the pure state, but do not constitute a risk under normal conditions of use of **GLASS POLYPRO™**. The polymers may be colored by the addition of colorants consisting of organic and mineral pigments containing no hazardous substance.

If so requested by medical authorities, the Chemical Abstract Service (CAS) reference numbers for the ingredients used for a given size or binder, the polymers or additives, can be communicated, but must remain confidential to the medical authorities for their use only.

3. HAZARD IDENTIFICATION

GLASS POLYPRO™ products made of continuous strands of E-glass are **not significantly hazardous**.

Details about chemical hazards are given in section 2. Toxicological aspects are developed in detail in section 11. The essential points to remember are that glass filaments are not “respirable” as their nominal diameters are over 9 µm, far over the diameter of 3µm defined by the World Health Organization for “respirable” fibers, and that they have been shown not to cause lung cancer.

Hazards Identified Are:

- Mechanical irritation (itching)
- The formation of respirable dusts and non respirable filaments
- Extremely rare possibilities of allergy.

The organic polymers (Polyolefin homopolymers or co-polymers) present no hazardous risks according to the suppliers' Material Safety Data Sheets and the literature. Antioxidant additives in concentrations from 0.2% to 0.6% are introduced into the polymer. Commercial products, principally the following two products, are used:

- 1) Mixture of 96% of CAS N° 6683-19-8 and 4% of CAS N° 84633-54-5
- 2) CAS N° 106990-43-6 and CAS N° 65447-77-0.

The fact that their concentration is very low, and that they are incorporated into the polymer in the molten state, leads to the consideration that their hazard is negligible during normal **GLASS POLYPRO™** use.

The colorants consist of organic and mineral pigments containing only low hazardous substances according to the suppliers' safety data sheets (CASN°1333-86-4 and 110-30-5).

4. FIRST AID MEASURES

Eye Contact:

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
- Do not rub or scratch eyes
- If eye irritation persists, consult a specialist

Skin Contact: (In case of irritation):

- Wash off immediately with soap and cold water.
- DO NOT use warm water because this will open up the pores of the skin, which will cause further penetration of the fibers.
- DO NOT rub or scratch affected areas.
- Remove contaminated clothing.
- If skin irritation persists, call a physician

Inhalation: (In case of upper respiratory tract irritation)

- Move to fresh air
- If symptoms persist, call a physician

5. FIRE FIGHTING MEASURES

Continuous Filament Glass Fibers (CFGF) products are not flammable, are incombustible and do not support combustion. Only the sizing, packaging (plastic film, paper, cardboard, wood), and the polymers are combustible and could release small quantities of hazardous gas in case of major and prolonged heat or fire. Combustion gases are basically carbon dioxide and water vapor. There may be small quantities of carbon monoxide, oxides of sulphur, aldehydes, and reactive hydrocarbons in small quantities, which make it necessary to use protective equipment in the event of a major fire.

Suitable Extinguishing Media

- Water
- Chemical powder

Protective Equipment and Precautions for Firefighters: Wear self-contained breathing apparatus (SCBA) and full fire fighting protective gear.

6. ACCIDENTAL SPILLAGE

Personal Protection: Avoid contact with the skin and the eyes (See Section 8).

Environmental Protection: In leaching tests glass fiber wastes did not emit any significant quantities of dangerous products. The polymers are not subject to any particular regulations nor do they give any concerns to notable dissolution products. **GLASS POLYPRO™** products can therefore be considered as **Inert Industrial Wastes**, or even **Common Industrial Wastes**, as defined by national and local regulations. All waste and scrap material should be disposed of in accordance with applicable, national, federal, state and local regulations (see Section 13).

Environmental Precautions: Prevent further leakage or spillage if safe to do so.

Methods for Clean-up:

- Pick up and transfer to properly labeled containers
- Avoid dry sweeping
- Shovel the major part of spilled material into a container
- Use an industrial vacuum cleaner with a high efficiency filter to clean up dust and residual spilled material.

7. HANDLING AND STORAGE

Handling (Technical measures / Precautions / Safe handling advice):

It is preferable to avoid prolonged contact with the skin: wear gloves, garments with sleeves and long leg pants or protective overalls, goggles, and dust masks. Glass filaments and dusts must be removed from work garments with a vacuum cleaner and not blown off with compressed air jets. Wash work garments separately from other clothes.

Storage:

- Technical measures: respect the stacking procedure recommended for each type of product.
- Storage conditions: store away from excessive humidity to prevent damage to the product and to the packing materials which could lead to storage safety problems.
- Incompatible material: not relevant.

8. EXPOSURE CONTROLS – PERSONAL PROTECTION

Continuous Filament Glass Fibers (CFGF) are not respirable however certain mechanical processes might generate airborne dust or fiber (See section 11). The occupational exposure limits below are applicable to airborne fiber exposure and/or to dust exposure.

Exposure limit(s) NOTE: The user of CFGF products has to comply with the national regulation in term of health worker protection.

Test Parameters:

Test ambient atmospheres in which glass fiber is used regularly to determine levels of

- “non respirable” and “respirable” filaments
- “non-respirable” and “respirable” dusts.

Legal requirements for respirable and non-respirable dusts and fiber vary from country to country (or do not even exist). The table below (prepared using currently available knowledge) shows the limits applicable in the US. For Time-Weighted Average (TWA) exposure. It is recommended to identify the chemical nature of the fiber found in working atmospheres correctly so that as not to confuse insulation wools and/or mineral fibers which are sometimes present with continuous glass strand.

Country	Dusts	TWA (Time- Weighted Average concentration) (mg/cu.m. for 8 hours work)	Fibers	TWA (Time- Weighted Average concentration) (Fibers/ml for 8 hours work)
USA	Respirable Total	5 (OSHA)* 15 (OSHA)*	Total	1 (ACGIH)**

* OSHA = Occupational Safety and Health Administration

** ACGIH = American Conference of Governmental Industrial Hygienists

Engineering Controls: Provide local exhaust and/or general ventilation system to maintain low exposure levels. Dust collection systems must be used in transferring operations, cutting or machining or other dust generating processes. Vacuum or wet clean-up methods should be used.

Personal Protective Equipment (PPE):

Respiratory protection: during occasional operations releasing high quantities of dust, wear minimum FP1 or preferably FP2 EEC approved dust masks. Type 3M 8710 or 3M 9900 respirators approved according to American National Institute for Occupational Safety and Health (NIOSH) directives, can be used, for example. Protection of hands and other exposed parts of the body: gloves for the hands, long-sleeved garments to prevent irritation. People with delicate skin should apply barrier cream to exposed skin areas.

Eye/face Protection

- Safety glasses with side-shields, safety goggles, and or/face shields.

Skin Protection

- Protective gloves
- Long sleeved shirt and long pants

General Hygiene Considerations

- Wash hands before breaks and immediately after handling the product
- Avoid contact with skin, eyes and clothing
- Avoid getting dust into boots and gloves through wrist bands and pant tucks
- Remove and wash contaminated clothing before re-use

Technical Measures

Use every appropriate means (suction, modification of manufacturing methods to reduce fiber dust...) to try to reduce the concentration of fibers likely to cause irritation. For consolidated sheets, handling with gloves is recommended, and the precautions detailed above should be taken into account during cutting and rubbing down operations.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Natural color (color of the pure polymer) or modified by colorants (Black) for standard products.

Physical State: Solid

Form: Rovings, fabrics, consolidated sheets based on glass strands and consisting of continuous glass filaments, commingled with polymer filaments (possibly previously melted in the case of granules or consolidated sheets).

ODOR: None

pH: Not applicable

Glass Softening Point: >800°C

Melting Point for Polymers: Polypropylene around 160°C

Decomposition Temperature: The polymers begin to decompose at 280°C for Polypropylene.

Flash Point: None

Explosive Properties: None

Density: Depends on the glass content by weight (specific gravity: 2.6 g/cm³) and of the polymer (specific gravity 0.9 to 1.34g/cm³ according to the product).

Solubility: Insoluble in water; sizes and polymers are partially (or even totally) soluble in most

organic solvents.

10. STABILITY AND REACTIVITY

Chemical Stability:

The polymer components of **GLASS POLYPRO™** may undergo a slight thermal degradation under normal conditions of use. The gases released may cause a certain irritation of the eyes, the nose and the throat. However, none of the polymers are classified in the list of hazardous substances, and the toxic risks are limited. To ensure comfortable working conditions and above all in the case of prolonged exposure, it is recommended to install fume extraction devices at the points of heating of **GLASS POLYPRO™**.

Hazardous decomposition products:

GLASS POLYPRO™ product is stable and never generates hazardous chemical reactions. See Section 5 for hazardous decomposition products during a fire.

Possibility of Hazardous Reactions In conditions of a sustained fire there may gases of water vapor and CO₂ released and it is possible to generate small quantities of carbon monoxide, oxides of Sulphur, aldehydes, reactive hydrocarbons and low concentrations of phosphorous compounds.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: not relevant

Localized effects:

Dusts and fibers may cause mechanical irritation to eyes and skin. The irritation disappears when the exposure ceases. Mechanical irritation is not considered as a health hazard. Continuous filament glass fibers do not require a classification as an irritant. Inhalation may cause coughing, nose and throat irritation and sneezing. High exposures may cause difficult breathing, congestion and chest tightness.

Long term health effects:

Continuous filament glass fibers are not respirable according to the World Health Organization (WHO) definition. Respirable fibers have a diameter (d) smaller than 3µm, a length (l) larger than 5µm and an l/d-ratio larger than or equal to 3. Fibers with diameters greater than 3 microns, which is the case for continuous filament glass fiber, do not reach the lower respiratory tract and, therefore have no possibility of causing serious pulmonary disease. Continuous filament glass fibers do not possess cleavage planes which would allow them to split length-wise into fibers with smaller diameters, rather they break across the fiber, resulting in fibers which are of the same diameter as the original fiber with a shorter length and a small amount of

dust. Microscopic examination of dust from highly chopped and pulverized glass demonstrated the presence of small amounts of respirable dust particles. Among these respirable particles, some were fiber-like in terms of l/d ratio (so called "shards"). It can be clearly observed however that they are not regular shaped fibers but irregular shaped particles with fiber-like dimensions. To the best of our knowledge, the exposure levels of these fiber-like dust particles measured at manufacturing plants are of the order of magnitude of between 50 to 1000 which is below existing applicable limits. Continuous filament glass fibers are not carcinogenic. (See section 15)

OSHA (Occupational Safety and Health Administration) and NTP (U.S. National Toxicology Program), official American organizations, have not listed continuous strand glass fibers as hazardous substances and the ACGIH (American Conference of Governmental Industrial Hygienists) has classified them as A4 (not classified as carcinogenic for Man). They are not listed by the Canadian Controlled Products regulations (CPR). No new studies have led the organizations to revise their position on this subject. Most laws and studies concerning respirable fibers do not apply to continuous filaments reinforcement fibers.

Handling glass fibers:

When glass fibers are chopped, milled or sanded they are cut perpendicular to strand length and no smaller diameter filaments are generated. Conversely, significant quantities of dust can be generated which is why it is recommended to use personal protection. In dusts, also present in some products (chopped strands, crushed fibers) some studies have shown very low quantities of particles with fibrous aspects ($l/d > 3$), short (but nevertheless longer than $5\mu\text{m}$) and with an apparent diameter of under $3\mu\text{m}$. Quantities measured in work atmospheres are 50 to 100 times lower than all the limits fixed for respirable fibers, but when there is a high risk of dust generation it is strongly recommended to wear masks.

MUTAGENIC RISKS, TERATOGENIC RISKS, RISKS FOR REPRODUCTION: products made with **GLASS POLYPRO™** have no known risks.

12. ECOTOXICOLOGICAL INFORMATION

E glass is not biodegradable. The polymers, by virtue of their molecular weight and their nature, are without ecotoxicological effects. Sizes and additives are organic materials slowly and only partial dissolved by natural agents like water. Their low concentration, and their very low solubility, leads to the conclusion that **GLASS POLYPRO™** is without ecotoxicological effects. Glass fibers, sizing products, polymers and additives, **were not listed as products** likely to destroy the **ozone layer** by the 1987 Montreal Protocol (Class 1 or Class 2). These lists are included in section VI of amendments to the "Clean Air Act " by the American Environmental Agency (EPA). Glass strands, sizings, polymers and additives, do **not contain PCB** (Polychlorinated biphenyl) or and other polyaromatic products of the same type. **GLASS POLYPRO™** is not expected to cause harm to animals, plants or fish.

13. WASTE DISPOSAL

Depending on local regulations, **GLASS POLYPRO™** waste can either be considered as an **inert waste** or as a **common industrial waste**. As such it can be buried in landfills approved for these categories. It may also be used to increase the value of recycled technical plastics, because it contains glass fibers, and will increase product performance when reprocessed with such recycled waste. Glass fiber waste cannot be destroyed by incineration and can damage incinerators by the formation of a vitrified mass. Clean cardboard, wood, plastic (film or bags) and packaging can be eliminated in units specific to these products (i.e. for recycling or use as fuels).

14. TRANSPORT INFORMATION

International Regulations:

GLASS POLYPRO™ products are not considered as hazardous goods by transport regulations. They are not part of the hazardous classes listed in international regulations. They do not need special procedures under any regulations. For international transport in the USA (DOT) by land, sea, or air or to Canada (TDG), they are not shown as a risk category nor qualified by a UNO number or a packing group.

15. REGULATORY INFORMATION

GLASS POLYPRO™ products do not require hazardous product labeling (see Chapter 11). General hygiene and work safety regulations apply (see Chapter 8).

Information on non carcinogenicity

The International Agency for Research on Cancer (IARC) in June, 1987, and in October, 2001, categorized continuous filament fiber glass as not classifiable with respect to human carcinogenicity (Group 3). The evidence from human, as well as, animal studies was evaluated by IARC as insufficient to classify continuous filament fiber glass as a confirmed, probable or even possible cancer causing material.

National Chemicals Inventories:

GLASS POLYPRO™ continuous filament glass fiber products are **articles** under the chemicals inventories listed below and consequently are exempt from listing on these inventories:

- The US EPA Toxic Substance Control Act: TSCA,
- The Canadian Chemical Registration Regulations: NDSL/DSL,

16. OTHER INFORMATION

This Material Safety Data Sheet is available in addition to the Standard Product Specification (SPS) and other technical document issued by FIBER GLASS INDUSTRIES, but does not replace them. The information given by this document is based on the best knowledge at the date shown. It is given in good faith. Furthermore, the end users attention is drawn to the possible risks when the product is used for any purpose other than the one for which it was designed. This MSDS does not exempt users from knowing and applying the rules regulating their activities. Users assume full responsibility for applying the appropriate safety measures when the product is used. For all additional information, users should contact FIBER GLASS INDUSTRIES.

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