

SAFETY DATA SHEET

Section 1: Product and Preparation Information

Date: January 1st, 2023
Product Name: Glass – Polyester Fiber – Carbon
Custom Carbon-Glass tapes
Synonyms: None
Product Use: Fiberglass Textile Reinforcement
WHMIS Classification: Non-Regulated Manufactured Article

Manufacturer: Georgian Bay Reinforcement Fabrics
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Section 2: Hazards Identifications

With regard to its composition, **the products are not classified as hazardous** according to European Directive 67/548/EEC and its latest amendments.

Details about chemical hazards are given in Section 3. Toxicological aspects are developed in detail in chapter 11.

Glass filaments are over 3 μ m in diameter. So, they do not reach the lower respiratory tract and, therefore have no possibility of causing serious pulmonary disease.

Hazards identified are:

- Mechanical irritation (itching),
- Formation of respirable filaments (in case of high mechanical overload i.e. milling, grinding ...)
- Extremely rare possibilities of allergy.

Section 3: Composition and Hazardous Ingredient Information

Glass

Glass yarn products are articles in the meaning of REACH (1907/2006/EC).

These articles are mixtures of E GLASS in the form of continuous strands. The CAS number of glass filaments 65997-17-3 (corresponding to the oxides used for production).

E- GLASS is a glass with a very low alkaline content.

Glass compositions (expressed in oxides) are within the following percentages:

	E glass
SiO ₂	52-56%
CaO	16-25%
Al ₂ O ₃	12-16%
B ₂ O ₃	5-10%
F ₂	0-1%
Alkaline oxides (Na ₂ O, K ₂ O)	0-1%
TiO ₂	0-0,8%
Fe ₂ O ₃	0,05-0,4%
MgO	0-5%
Alkaline earth oxides (CaO,MgO)	-----
P ₂ O ₅	-----

Size is a mixture of chemicals applied to the glass filaments in a maximum quantity of 2% more generally between 0,5% - 1,5% by weight.

Most of this mixture is made up of basically non-reactive high molecular weight polymers, often natural ingredients (starches) with no reactive sites, which are not listed as substances in the EINECS nor ELINCS appendices.

In some cases, sizes are prepared from polymers with reactive sites or containing reactive monomers included in these lists. Most of the reactive sites are polymerised during the manufacturing process of E glass yarns.

A second type of ingredient (sometimes 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' labelling in a pure state (for example in Europe R23/25 - H301/H331 toxic if swallowed or inhaled, R21 - H315 harmful in contact with the skin, R36 - H319 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 polymerised during the production of E glass filaments.

Other products can be used in sizes often acting as lubricants. 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.

Our glass yarn products do not contain any of SVHC (substances of very high concern).

Carbon

Ingredient	CAS Registry No.	Weight %	Exposure Limits
Carbon fiber	7440-44-0	99%	See Note 1 below
Epoxy resin	25068-38-6	≤ 1.2%	NE

Notes on Composition and Information on Ingredients

NE = Not Established

1 OSHA and ACGIH have not established air contaminant limits for carbon fibers. Under certain conditions, this substance may be a nuisance dust. OSHA has an established standard for particulates not otherwise regulated (nuisance dust) set at 5 mg/m³ (respirable fraction) and 15 mg/m³ (total dust). ACGIH has established an exposure value of 3 mg/m³ (respirable fraction) and 10 mg/m³ (inhalable fraction) for particulates not otherwise classified.

2 This product contains trace impurities of bisphenol A-(epichlorohydrin), Regulatory information can be found in Section 15.



Polyester

<u>Ingredient</u>	<u>CAS#</u>	<u>ACGIH TLV</u> (8-hr TWA)	<u>OSHA PEL</u> (8-hr TWA)
Polyester Polyethylene terephthalate	25038-59-9		

Trace impurities and additional material names not listed above may also appear in Section 11 toward the end of the SDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

Section 4 First Aid Measures

General Information	No specific measures required
After Excessive Inhalation	Supply fresh air, consult a doctor in case of complaints once exposed to dusty environment
After Skin Contact	In case of exposure to dust and consequent irritation immediately wash under running water and soap and rinse thoroughly. If fibers are imbedded in the skin, remove with tweezers. Do not rub or scratch affected areas. If skin irritation continues, consult a doctor.
After Eye Contact	Once a dust particle enters into eyes, rinse opened eye for several minutes under running water, keeping eyelids open and consult a doctor if necessary. Do not rub or scratch eyes
After Swallowing	Not expected to occur since ingestion is not a likely route of exposure for this product. If ingestion does occur, do not induce vomiting. Nothing by mouth if unconscious. Get immediate medical attention.

Section 5: Fire Fighting Measures

In case of fire, glass yarns & carbon are not flammable, are incombustible and don't support combustion.

Only the packaging (plastic film, paper, cardboard, wood) and the small amounts of size are combustible and could release small quantities of hazardous gases.

Suitable extinguishing agents: CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Unusual fire and explosion hazards: Under high heat (> 750 °C), this product may react with oxygen to give off carbon oxides and other decomposition products.

Protective equipment: Mouth respiratory protective devices.
Do not inhale explosion gases or combustion gases.
Wear fully protective suit.

Other information: Carbon is not expected to burn. Do not incinerate carbon fibers since airborne carbon fibers may cause electrical malfunctions. See Section 13 – Disposal Considerations for additional information.

Section 6: Accidental Release Measures

Personal protection:

Just in case of dusty environment avoid contact with the skin and the eyes. See section 8 for other instructions.

Environmental protection:

No special measures required – all sorts of glass & carbon wastes are considered as **Common Industrial Wastes**, or even **Inert Industrial Wastes**.

Cleaning:

Vacuum clean, sweep or shovel into containers normally used for glass waste (selective collection).

Section 7: Handling & Storage

Handling:

It is preferable to avoid prolonged contact with the skin: wear the protective equipment as indicated in chapter 8.

Prevent and minimize dust formation during the processing of the products. Provide local exhaust ventilation if dust is formed on the processing machinery.

Ensure that suitable extractors are available on processing machines.

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. Store in a good ventilated area and keep away from direct sunbeam.

Section 8: Exposure Control – Personal Protection

Ingredients with limit values that require monitoring at the workplace:

Continuous glass filaments & carbon filaments are not respirable however certain mechanical processes might generate airborne dust or filaments (see chapter 11).

Engineering controls:

Provide local exhaust and/or general ventilation system to maintain low exposure levels.

Personal protective equipment:

Respiratory protection:

During operations releasing high quantities of dust, wear minimum FPI or preferably FP2 EEC approved dust masks.

Protection of hands and other exposed parts of the body:

Protective gloves for the hands, long-sleeved shirts and long pants to prevent irritation. People with delicate skin should apply barrier cream to exposed skin areas.

Eye protection: safety goggles (or masks) or safety glasses.

Exposure guidelines: OSHA and ACGIH have not established air contaminant limits for carbon fibers. Under certain conditions, this substance may be a nuisance dust. OSHA has an established standard for particulates not otherwise regulated (nuisance dust) set at 5 mg/m³ (respirable fraction) and 15 mg/m³ (total dust). ACGIH has established an exposure value of 3 mg/m³ (respirable fraction) and 10 mg/m³ (inhalable fraction) for particulates not otherwise classified.

Section 9: Physical and Chemical Properties

Glass & Polyester

Physical State	Solid
Form	Woven fiberglass
Colour	White or Yellowish white; polyester is coloured
Odour	None
Softening Point	Approx. 850°C
Melting Temperature	Not applicable
Decomposition Temperature	Sizing on product starts to decompose at 200°C
Flash Point	None
Explosive Properties	None
Density (molten glass)	2,6g/cm ³



Georgian Bay Fabrics

Solubility	Insoluble in water. Sizes can be partially (and even totally) dissolved in most organic solvents
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Carbon

Appearance:	Black continuous fiber
Odor:	None
Specific Gravity:	1.75 - 1.85
Vapor Pressure:	None
Melting Point:	Not applicable
Solubility in Water:	Insoluble

Section 10: Stability and Reactivity

Chemical stability

Stable in normal use and storage conditions, and in normally foreseeable usage conditions. As already identified, some substances may be released during hot processes or storage.

Hazardous reactions

Glass - No chemical hazardous reaction is foreseeable.

Carbon - Do not expose to strong oxidizing agents such as fluorine. Carbon fiber can react violently with such compounds.

Hazardous decomposition products

Carbon - Not expected under normal conditions of processing and use.

Thermal decomposition of sizing may begin to occur at high temperatures (> 120 °C) resulting in the release of small amounts of nitrogen oxides, carbon monoxide, organic compounds, and other potentially hazardous substances.

Glass - Chapter 5 for hazardous decomposition products during fire.

Hazardous polymerization

Will not occur.

Section 11: Toxicological Information

Acute toxicity:

There are no acute toxicological data available on this product. The oral, dermal, and inhalation acute toxicity are expected to be very low.

Localised effects:

Possible temporary irritation

This irritation is of a purely mechanical and temporary nature. It disappears when exposure is ended. It can affect the skin, the eyes and the upper respiratory tracts. In Europe, mechanical irritation is not considered to be a health hazard within the terms of European directives 67/548/EEC for hazardous products

This is confirmed by the fact that EC Directive 97/69/EC for mineral fibres does not stipulate the need to use an Xi (irritant) label nor a classification for continuous glass filaments.

Sensitisation:

Some allergies to continuous glass filaments have been declared.

Subchronic toxicity: Two subchronic inhalation tests in rats exposed to carbon fibers have been conducted. In one test, rats were exposed to fibers for 16 weeks. Pulmonary function tests performed on the test animals before necropsy did not show any significant or consistent changes. The only pulmonary finding related to exposure was the occurrence of phagocytosis by alveolar macrophages. No inflammation or fibrosis was observed. In the second study, rats were also exposed to carbon fibers for 16 weeks. Based on clinical signs, no effects due to exposure were observed. Histopathological evaluation revealed non-fibrous particles in the pulmonary lymphoid clearance system and in alveolar macrophages. There were no signs of fibrosis.

Long term toxicity:

Continuous glass filaments are not respirable according to the World Health Organisation (WHO) definition. Respirable fibers have a diameter (d) smaller than $3\mu\text{m}$, a length (l) larger than $5\mu\text{m}$ and a l/d ratio larger than or equal to 3.



Fibers with diameters greater than 3μ , which is the case for continuous filament glass fibre, do not reach the lower respiratory tract and therefore have no possibility of causing serious pulmonary disease.

Regulatory situation:

Following the IARC (International Agency for Research on Cancer) conclusion, **glass filaments are not classified as to their carcinogenicity**. They belong to the **Group 3 of IARC**. This classification has been confirmed by the IARC Working Group during his meeting of October 2001 and in the latest issue of the IARC monographs on the evaluation of carcinogenic risks to Humans volume 81 on man-made vitreous, published in 2002. The International Labour Office (ILO) and the CSIP (Chemical Safety International Program) came to the same conclusions in a congress held in 1987.

European Commission Directive 97/69/EC dated 5/12/97, the 23rd amendment to Directive 67/548/EEC which concerns classification, packing and labelling of hazardous substances did not think it necessary to include glass filaments as having carcinogenic risks.

OSHA (Occupational Safety and Health Administration) and NTP (U.S. National Toxicology Program), official American organisations, have not listed glass filaments products 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 concerned by the Canadian Controlled Products regulations (CPR).

Mutagenic risks:

Glass - No known risks

Carbon - Several in vitro mutagenicity tests have been performed on carbon fibers. Carbon fibers have been found to be negative in the gene mutation assay in bacteria (Ames test), did not cause sister chromatid exchanges in Chinese hamster ovary (CHO) cells, and did not cause unscheduled DNA synthesis in rat liver cells or forward mutations in studies with CHO cells.

Terratogenic risks

No known Risks



Utagenic risks

No known Risks

Risks for reproduction

No known Risks

Section 12: Ecotoxicological Information

The products are not expected to cause harm to animals, plants nor fish.

Section 13: Disposal Consideration

Depending on local regulations, glass filament & carbon fiber wastes can either be considered as **inert waste** or as **common industrial waste**. As such they can be buried in landfills approved for these categories. Smaller quantities can be disposed of with household waste.

Our products are not regarded as hazardous waste, as defined by EU directive 91/689/EEC.

Special instructions: Do not incinerate carbon fibers since airborne fibers may cause electrical malfunctions. Any disposal practices must be in compliance with federal, state, and local requirements.

Section 14: Transport Information

International regulations:

Glass products are not considered as hazardous goods by transport regulations (IMDG, ADR/RID, ICAO/ IATA, DOT, TDG, MEX)

Section 15: Regulatory Information



Glass

Continuous glass filament products do not require hazardous product labelling (see Chapter 11).

Glass yarn products are articles and for this reason they have not to be listed in most of the countries, for instance in the list EINECS in Europe, ELINCS, TSCA for the USA, DSL and NDSL for Canada, CSCL for Japan, AICS for Australia, PICCS for Philippine, KECL for South Korea, etc.

Carbon

Regulatory status: This product, as well as its impurities, may trigger specific reporting, recordkeeping, and testing requirements under TSCA, EPCRA/SARA III, RCRA, CERCLA, CAA, SDWA, and CWA.

California proposition 65: This product contains epichlorohydrin, a substance known to the State of California to cause cancer and reproductive toxicity. The maximum level of epichlorohydrin in this product is 2 ppm. This product also contains phenyl glycidyl ether, a substance known to the State of California to cause cancer. The maximum level of phenyl glycidyl ether in this product is 6 ppm. This information is provided to assist users of this product that conduct business in California in discharging any warning obligations that that person may have under California Proposition 65.

Other state chemical lists: This product contains epichlorohydrin and phenyl glycidyl ether at maximum levels of 2 ppm and 6 ppm, respectively. These chemicals are identified on several state chemical lists.

EPCRA/SARA TITLE III SECTION 313: This compound contains no toxic chemicals at or above the de-minimus threshold subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

EU: This product contains a branched nonylphenol ethoxylate sulfated ammonium salt [CAS RN 68649-55-8] which may be present at levels in excess of 0.1% in this product. EU Directive 2003/53/EC



establishes certain use and threshold restrictions for nonylphenol and nonylphenol ethoxylates in nine specified sectors. Nonylphenol and nonylphenol ethoxylates may not be placed on the market or used as a substance or constituent of preparations in concentrations equal to or greater than 0.1% by mass for the nine sectors identified under this EU Directive. See EU Directive or applicable national legislation for the nine use sectors.

These regulations do not apply to nonylphenol or nonylphenol ethoxylates for research and development or analytical purposes. Contact Grafil for additional information on this requirement.

Canada: This product contains a branched nonylphenol ethoxylate sulfated ammonium salt [CAS RN 68649-55-8] which may be present at levels in excess of 0.1% in this product. Environment Canada published on December 4, 2004 rulemaking to reduce discharges and use of nonylphenol and nonylphenol ethoxylates in certain use sectors. Canada Gazette Vol. 138, No. 49. See Canadian regulations for the specific use sectors. Companies subject to this rule are required to track their volumes, make threshold calculations, and reduce their use of nonylphenol and nonylphenol ethoxylates. Contact Georgian Bay Reinforcement Fabrics for additional information on this requirement.

Section 16: Other Information

The information given by this document is based on the best knowledge at the date shown.

Furthermore, users' attention is drawn to the possible risks run when the product is used for any purpose other than the one for which it was designed.