



Georgian Bay Reinforcement Fabrics

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MATERIAL SAFETY DATA SHEET

Section 1: Product and Preparation Information

Date: April 2014
Product Name: T0111 – T115 – A00
Synonyms: Glass - Polyester Fiber - Carbon and Resin
Product Use: Fiberglass Textile Reinforcement
WHMIS Classification: Non-Regulated Manufactured Article

Manufacturer: Georgian Bay Reinforcement Fabrics
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Midland, Ontario
L4R 4L3
Telephone: 705-527-5404
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Section 2: Composition and Hazardous Ingredient Information

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

Trace impurities and additional material names not listed above may also appear in Section 15 toward the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

Fiber Glass Continuous Filament:

- Nonrespirable fibers and particulate	65997-17-3	5 mg/m ³ ☒ (Inhalable fraction)	15 mg/m ³ ☒ (Total dust)
- Respirable particulate		3 mg/m ³ ☒ (PNOC*)	5 mg/m ³ ☒ (Respirable dust)
- Respirable particulate with fiber like-dimensions (glass shards)		1 fiber/cc aspect ratio >5:1	None Established

*PNOC = Particles not otherwise classified.

As manufactured continuous filament glass fibers are not respirable. Continuous filament glass products that are chopped, crushed or severely mechanically processed during manufacturing or use may contain a very small amount of respirable particulate, some of which may be glass shards.

Carbon

<u>Ingredient</u>	<u>CAS Registry No.</u>	<u>Weight %</u>	<u>Exposure Limits</u>
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.

Section 3: Physical Data and Chemical Properties

Glass & Polyester

Appearance:	Off-white solid or delustered fiber or clear to greenish resin ; coloured
Physical state:	Solid
Molecular weight:	>30,000
Chemical formula:	(C ₁₀ H ₈ O ₄) _x
Odor:	No specific odor.
Specific gravity	(water = 1.0): 1.3 - 1.4 g/cm ³
Solubility in water (weight %):	Insoluble
pH:	Not Applicable
Boiling Point:	Not Determined
Melting Point:	260°C
Vapour Pressure (mm Hg @ 20°C):	Not Applicable
Vapour Density (Air = 1):	Not Applicable
Evaporation Rate:	Not Applicable Compared To: Not Applicable
% Volatiles:	Not Applicable
Viscosity:	Not Applicable
Flash Point:	Not Applicable
Specific Gravity (Water=1):	2.60
Freezing Point:	Not Applicable

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 4: Fire or Explosion Hazard

All

Flash Point:	Not applicable
Flash Pint Method:	Not applicable
Flammability Limits (%):	Not applicable
Auto Ignition Temperature:	500°C (Layer Ignition Temperature)
Extinguishing Media:	All standard agents may be used; Water, Foam, Carbon Dioxide or Dry Chemical.

Unusual Fire and Explosion Hazards: Glass & Polyester – None Known
Carbon - Under high heat (> 750 °C), this product may react with oxygen to give off carbon oxides and other decomposition products.

Fire Fighting Instructions: Fire fighters should wear appropriate protective equipment including Self Contained Breathing Apparatus (SCBA) meeting NIOSH standards. Avoid excessive inhalation of smoke or potential thermal decomposition products.

Hazardous Combustion Products: Primary combustion products are carbon monoxide, carbon dioxide and water. Other undetermined compounds could be released in small quantities.

Section 5: Stability and Reactivity Data

Glass & Polyester

Stability: Normally Stable

Incompatible Materials and Conditions to Avoid: Tends to dissolve in caustic materials

Hazardous Decomposition Products: Sizings or binders may decompose in a fire. See Section 4 of MSDS for Hazardous Combustion Products statement.
Thermal decomposition products may include CO, ethylene glycol, aldehydes and other C, H and O compounds varying in chemical structure and molecular weights.

Hazardous Polymerization: Will not occur.

Carbon

Stability: Stable

Conditions to Avoid: None

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

Hazardous Decomposition Products: 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.
Sizings or binders may decompose in a fire. See Section 4 of MSDS for Hazardous Combustion Products statement.

Hazardous Polymerization: Will not occur.

Section 6: Toxicological Properties (Health Hazards)

Acute Effects:

Glass & Polyester:

Inhalation: Fiber glass continuous filament is a mechanical irritant. Breathing dusts and fibers may cause short term irritation of the mouth, nose and throat.

Skin: Skin contact with dust and fibers may cause itching and short term irritation.

Eyes: Eye contact with dust and fibers may cause short term mechanical irritation or damage.

Ingestion: Ingestion may cause short term mechanical irritation of the stomach and intestines. Observe individual, if symptoms develop, consult a physician.

Chronic Effects: The International Agency for Research on Cancer (IARC) has classified Continuous Filament Fiber Glass under Group 3: Not Classifiable with respect to Human Carcinogenicity.

Carbon:

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

Eye Irritation Data: No data are available.

Skin Irritation Data: No data are available.

Skin Sensitization Data: No data are available.

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.

Reproductive Toxicity: No data are available.

Teratogenicity (birth defects): No data are available.

Mutagenicity: 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.

Chronic Effects/Carcinogenicity: No data are available.

Section 7: Preventive Measures (Personal Protection)

All

Respiratory Protection: Normal use and processing of this product are not expected to generate carbon fiber dust. Respirable fibers of this product under certain very limited circumstances can be generated. In such circumstances, HEPA respiratory

- protection should be used to prevent exposure. Where dust levels exceed the TLV, use an NIOSH/MSHA approved disposable dust respirator. Use respiratory protection in accordance with your company's respiratory protection program.
- Ventilation:** General dilution ventilation and/or local exhaust ventilation should be provided as necessary to maintain exposures below occupational exposure limits.
- Skin Protection:** Latex gloves should be worn when handling this product. Rinse and remove gloves after use, and wash hand thoroughly with soap and water. Gloves should be removed and replaced if there are any signs of degradation or breakthrough.
- Protective Clothing:** Wear protective clothing to minimize the potential for skin contact. An emergency shower should be readily accessible. Discard any clothing that has become contaminated.
- Eye Protection:** Wear safety goggles or glasses when handling or processing this product in any form.
- Air Monitoring:** No information is available.
- 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 8: First Aid Measures

All

- Inhalation:** If there is inhalation exposure to the fibers of this product, remove source of exposure and move victim to fresh air. If not breathing give artificial respiration. If there is breathing difficulty, give oxygen. Get immediate medical attention for any respiratory problems.
- Eye Contact:** Flush eye with running water for at least 20minutes. Washing immediately after exposure is expected to be effective in preventing damage to the eyes. Seek medical attention if irritation persists.
- Skin Contact:** Wash with mild soap and running water. Use a washcloth to help remove fibers. If fibers are imbedded in the skin, remove with tweezers. Do not rub or scratch affected areas. Discard clothing that may contain imbedded fibers. Get medical attention if exposure results in adverse effects.
- Ingestion:** 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 9: Release and Disposal Procedures

All

- RCRA Classification:** If discarded in its manufactured form, this product is not expected to be a characteristic

or specifically listed hazardous waste under RCRA. However, it is the responsibility of the user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste.

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.

Waste Disposal: Dispose of Fiberglass as dry garbage as per local, provincial/state and federal regulations.

Release (Spill/Leak): Use a vacuum cleaner to clean up glass fibers. Do not use an air hose.

Work and Hygienic Practices: Handle using good industrial hygiene and safety practices. Avoid unnecessary exposure by using adequate local exhaust ventilation. Remove material from the skin and eyes after contact. Remove material from clothing using vacuum equipment (never use compressed air). Always wash work clothes separately from other clothing. Wipe out the washer or sink to prevent loose glass fibers from getting on other clothing. Keep the work area clean of dusts and fibers released during processing or fabrication. Use vacuum equipment to clean up product. Avoid dry sweeping or using compressed air as these techniques re-suspend dusts and fibers into the air. Have access to safety showers and eye wash stations

Section 10: Handling and Storage

All

Normal Handling: (Always wear recommended personal protective equipment.)

No special handling requirements.

Storage recommendations:

No special storage requirements.

Section 11: Exposure controls/Personal protection

All

Engineering Controls:

Mechanical ventilation should be used during processing to remove any dusts, mists, or vapors which may be generated.

Personal protective equipment

Skin protection:

Protect against potential physical hazards such as contact with yarn moving at high speed, etc.

Eye protection:

Safety glasses are recommended during processing.

Respiratory protection:

None normally required. An approved dust respirator meeting 42 CFR Part 84 standards should be worn if dusty conditions exist.

Additional recommendations:

None required.

EXPOSURE GUIDELINES (Guidelines exist for the following ingredients.)

<u>Ingredient name</u>	<u>acgih tlv</u>	<u>osha pel</u>	<u>other limit</u>
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* No ingredients listed in this section *

* = Limit established by Performance Fibers, Inc.

** = Workplace Environmental Exposure Level (AIHA).

*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Dust should be considered a nuisance dust:

ACGIH TLV: 10 mg/m³ total dust

OSHA PEL: 15 mg/m³ total dust; 5 mg/m³ respirable dust

Section 12: Ecological Information

No data available.

13. Disposal considerations

All

RCRA

Is the unused product a RCRA hazardous waste if discarded? No

If yes, the RCRA ID number is:

Not applicable

Other disposal considerations: Dispose of as non-hazardous waste in accordance with local, state and federal regulations. The information offered here is for the product as shipped. Use and/or alterations to the product, such as mixing with other materials, may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

Section 14: Transport Information

All

Proper Shipping Name:

Material is non-regulated

TDG Hazard Classification:

Primary – None

Secondary - None

Us dot proper shipping name:

Us dot hazard class: Not regulated

RID/ADR/AND: Not classified

Us dot id number: Not applicable

UN Classification: Not classified

IATA: Not regulated

IMDG: Not regulated

This product is not regulated as dangerous or hazardous goods under DOT, IMO, ICAO, IATA, or UN shipping regulations.

15. Regulatory Information

Glass & Polyester

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Polymer is listed on the TSCA Inventory.
OTHER TSCA ISSUES: None

SARA TITLE III / CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>Ingredient Name</u>	<u>SARA/CERCLA RQ (lb.)</u>	<u>SARA EHS TPQ (lb.)</u>
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No ingredients listed in this section.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: No ingredients listed in this section.

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals." CAS numbers and weight percents are found in Section 2.

<u>Ingredient Name</u>	<u>Comment</u>
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No ingredients listed in this section

State Right-To-Know

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>Ingredient Name</u>	<u>Weight %</u>	<u>Comment</u>
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No ingredients listed in this section

Additional Regulatory Information:

None.

WHMIS Classification (Canada):

Not a controlled product.

Foreign Inventory Status:

Australia (AICS): Yes	Japan (ENCS): Yes
Canada (DSL): Yes	Korea (KECI) Yes
China (IECSC): Yes	New Zealand Yes
Philippines (PICCS): Yes	

EU (EINECS/ELINCS/NLPL): Polyester fiber is not classified as a hazardous substance under EU regulations. The polymer is exempted from listing on EINECS.

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 phenylglycidyl 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 Grafil for additional information on this requirement.

16. Other Information

Other Information: Polyester fibers are coated with minor quantities of finish oils. Textile processes may volatilize portions of these finishes and produce visible misting in the workplace. Ventilation is recommended to minimize exposure to such finish mists which should not exceed a concentration of 5 mg/m³ (ACGIH TLV for mineral oil).

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