E-GLASS FIBER TEXTILES

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Identification of the suppliers

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Product Identification

Glass yarns for textiles.

2. COMPOSITION / INFORMATION OF INGREDIENTS

E- glass fiber Textiles are basically sold as; Twisted ropes, braided and knitted packings, woven and knitted tapes, fibre ropes and cloths.

E-glass fiber textiles are not substances but preparations within the meaning of EEC Directive 67/548/ dated June 27th, 1967, corresponding to a mixture of E-Glass in the form of continuous strands and a Size. It is exactly the same for the American TSCA (Toxic Substances Control Act) legislation in which glass fibre are considered as items. The CAS number of glass fibre is 65997-17-3 (corresponding to the oxides used for production).

E Glass is a glass with a very low alkaline content. Its composition (expressed in oxides) is within the following percentages:

SiO_2	52-56%
Alkaline Oxides (Na_2O, K_2O)	0- 2%
CaO	16-25%
MgO	0- 5%
B_2O_3	5-10%
Al_2O_3	12-16%
TiO_2	0-0.8%
Fe_2O_2	0.05-0.4%
F_2	0- 1%

Size is a mixture of chemicals applied to the glass strands in a maximum quantity of 3% - more generally between 1% and 1.5% by weight.

3. HAZARD IDENTIFICATION

E-Glass fiber textiles are **not significantly hazardous**.

Details about chemical hazards are given in paragraph 2. Toxicological aspects are developed in detail in chapter 11. The essential point to remember is that glass filaments are not 'respirable' as they are over 3μm in diameter and have been shown not to cause lung cancer.

Hazards identified are:
- Mechanical irritation (itching)
- The formation of respirable filaments
- Extremely rare possibilities of allergy

4. FIRST AID

Inhalation	:	remove from the scene of exposure
Skin contact	:	wash copiously with lukewarm soapy water without rubbing excessively
Eye contact	:	flush in running water (for at least 10 minutes) and consult if necessary a doctor

5. FIRE FIGHTING

In case of fire, E-Glass Fibre Textiles are not flammable, are incombustible and don't support combustion.
Only the packaging (plastic film, paper, cardboard, wood) and the small amounts of size or binder are likely to burn. Combustion gases are basically carbon dioxide and water vapour. There may be small quantities of carbon monoxide and other substances which make it necessary to use protective devices in the event of a major fire.

Recommended extinguishing media
Water or powder.

6. ACCIDENTAL SPILLAGE

Personal protection
See chapter 8.

Environmental Protection
In leaching tests E-Glass Fibre Textiles wastes did not emit any significant quantities of dangerous products and they can therefore be considered as **Inert Industrial Wastes,** or even **Common Industrial Wastes**, as defined by national and local regulations. All waste and scrap materials should be disposed of in accordance with applicable national, federal, state and local regulations.

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

7. HANDLING & 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 leggings 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 CONTROL – PERSONAL PROTECTION

Technical measures
Use every appropriate means (suction, modification of manufacturing methods to reduce fibre dust) to try to reduce the concentration of fibres likely to cause irritation.

Test parameters
Test ambient atmosphere in which glass fibre is used regularly to determine levels of
- "non respirable" and "respirable" filaments
- "non-respirable" and " respirable" dust

Legal requirements for respirable and non-respirable dusts and fibres vary from country (or do not even exist). The table below (prepared using the knowledge we currently possess) shows the limits applicable in different countries for Time-Weighted Average (TWA) exposure.
It is recommended to identify the chemical nature of the fibres found in working atmospheres correctly, in particular in insulation wools and mineral fibres like asbestos which are sometimes present and can be confused with continuous glass strands.

Country	Dusts	TWA (Time-Weighted Average concentration) (mg/cu.m. for 8 hours work)	Fibres	TWA (Time Weighted Average concentration) (Fibres/ml for 8 hours work)
Austria	fine	6	total	0.5
Belgium	total	10	No regulation	
Denmark	respirable total	5 10	total	1
Finland	total	10	total	1
France	total	10	respirable	1
Germany	respirable	3	respirable	0.25
Great Britain	respirabe total	5 10	respirable	2
The Netherlands	respirable total	2 10	total	1
Ireland	respirable	5	respirable	2
Italy	respirable total	3 10	total	1
Norway	respirable total	5 10	total	1
Portugal	total	4	total	1
Spain	total	10	total	1
Sweden	respirable total	5 10	total	1
Switzerland	total	6	respirable	0.5
USA	total	5	total	1

Personal protection equipment

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 and long leggings to prevent irritation. People with delicate skin should apply barrier cream to exposed skin areas.
Eye protection: safety goggles (or masks) or safety glasses.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	:	solid
Form	:	E-Glass Fiber Textiles in the form of twisted ropes, braided and knitted packings, woven and knitted tapes, fibre ropes and cloths.
Colour	:	white
Odour	:	none
pH	:	not applicable

Specific temperature at which changes in physical state occur:

Softening point (littleton point)	:	approximately 850° C
Melting point	:	approximately 1200° C
Decomposition temperature	:	Only size products start to decompose at 200° C
Flash point	:	none
Explosive properties	:	none
Density (molten glass)	:	2.6 g / cu. cm.
Solubility	:	very low solubility in water. Sizes can be partially (and even totally) dissolved in most organic solvents.

10. STABILITY AND REACTIVITY

Stability
Stable in normal use and storage conditions, and in normally foreseeable usage conditions.

Hazardous reactions
No chemical hazardous reaction is foreseeable.

Hazardous decomposition products
In continuous combustion conditions, in addition to water vapour and CO_2, small quantities of CO and Nox may be released from the combustion of the size. Other products may be released in limited quantities, depending on combustion conditions. This is why it is recommended to use high-performance gas masks, when fighting intense fires.

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Not relevant

Localized effects Possible temporary irritations
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 strand glass fibres (which in this Directive only apply to insulation glass wool's in some circumstances).

Sensitization some **allergies** to continuous strand
Glass fibres have been declared. All sizing mixtures are tested for their wet state sensitising properties when developed by the manufacturer and are only adopted if they have no or a very low sensitisation level. In case of the allergy is confirmed, remove the person from the scene of the exposure.

Long term toxicity carcinogenic risks
Continuous strand glass fibres are not respirable (i.e. do not penetrate the lung alveoli). This is because fibres are over 3μm in diameter. Even after handling, the length of the finest dusts is also well over 5μm and the length / diameter ratio is greater than 3 : 1. These are the values determined by the World Health Organisation (WHO) for the definition of respirable fibres.

Regulatory situation
None of the following official organisations have attributed any risks of cancer during the production and use of continuous filament glass fibres:

During its congress in June 1987, World Health Organisation (WHO) through the IARC (International Agency of Research on Cancer) examined all laboratory studies using animals and epidemiological studies carried out on glass yarns for textiles.

The conclusion was that **glass filaments are not classified as to their carcinogenicity**. They belong to the **Group 3 of IARC**. This conclusion was confirmed by the IARC Working Group in October 2001.

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 fibres as having carcinogenic risks.

Most European Union member nations have transposed this Directive into their national law and adopted the same conclusions:

Country	Reference of transposition documents of Directive 97/69/EC
Austria	Chemikalienverordnung 1999
Belgium	French implementation by < Koninklijk Besluit> of 15/1/99 published on 24/2/99
Denmark	BEK N° 11/1999.01.09 (Ministery of Environment)
Finland	Landskapforordning 23/04/98 and 24/02/98 and List of Hazardous Chemicals 16.12.98
France	Arrëté ministériel du 28/08/98, Circulaire DRT 99/10 du 13/8/99
Germany	4th adaptation of the German Gefahrstoffverordnung 1999
Great Britain	The chemicals (Hazard Information and packaging for supply) (amendment) Regulations 1998. 6/1/99
Greece	Not available
The Netherlands	Wijzigingsbesluit (Stb. 217,2001)
Ireland	Statuary Instruments S.I. N° 513 of 1998. European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Amendment N° 2 Regulation 1998. Effect on December 22nd 1998.
Italy	Decreto ministeriale del 01/09/98, Gazzetta Ufficiale-Serie generale-del 19/11/98 n271 pag. 16, decretto del 2 feb 2000, circolare n° 4 del 15/03/99
Luxembourg	Règlement Grand Ducal du 31/10/98
Portugal	Not available
Spain	Bulletin Official del Estada (11/09/98)
Sweden	KIFS 1998:7

OSHA (Occupational Safety and Health Administration) and NTP (U.S. National Toxicology Program) , official American organisations, have not listed glass yarns for textiles as hazardous substances and the ACGIH (American Conference of Governmental Industrial Hygienists) has classified them as A4 (not classified as carcinogenic for Man).

No new studies has led the organisations to revise their position on this subject.

Most laws and studies concerning respirable fibres do not apply to continuous filaments glass yarns for textiles.

For example,

- The concentration of respirable fibres in the atmosphere (1.5 fibres / cu.m) fixed by French circular 95/04 dated 12/01/1995 (in addition to that dated 19/07/1982) from the French Ministry of Work does not apply to glass yarns.
- Cancer risk index KI defined in German TRGS 905 does not apply to non-respirable continuous filament glass fibres

Epidemiological and laboratory studies
No epidemiological and laboratory studies carried out up until now demonstrate in a scientifically significant way any risk of cancer related to reinforcement fibres.

Several recent epidemiological studies (Chiazze 1997, Boffeta 1997) confirmed the absence of excessive mortality due to cancer in people working in glass fibre manufacturing facilities vs. control populations.

12. ECOTOXICOLOGICAL INFORMATION

E glass is not biodegradable.
Sizes or binders are organic materials slowly and only partial dissolved by natural agents like water. As the concentration of the ingredients in the mixture and ingredient solubility are low and as they have not been classified as hazardous, glass yarns are considered to have no adverse eco-toxicological effects.

Glass fibres and sizing products **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 EC Regulation n° 3093/94 and in section VI of amendments to the "Clean Air Act" by the American Environmental Agency (EPA).

Glass fibre sizes **do not contain PCB** (Polychlorinated biphenyl) or and other polyaromatic products of the same type.

13. WASTE DISPOSAL

Depending on local regulations, glass fibre 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.

Glass fibres 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

International Regulations

Glass yarns are not considered as hazardous goods by transport regulations. They are part of one of the 13 hazardous classes listed in international regulations.

They do not need special procedures under any regulations. For international transport in Europe by land (ADR, RID, ADNR), sea (OMI) or air (OAC/IATA) or to the USA (DOT) or Canada (TDG), they are not shown as a risk category nor qualified by a UNO number or a packing group.

15. REGULATORY INFORMATION

Continuous filaments glass yarns do not require hazardous product labelling (see Chapter 11).

General hygiene and work safety regulations apply (See Chapter 8).

Continuous filament glass yarns are preparations and for this reason are not listed as such in substance lists in several countries (EINECS in Europe, ELINCS, TSCA for the USA, DSL and NDSL for Canada, MITI for Japan, PICS for the Philippines, KECI for Korea, AICS for Australia).

16. OTHER INFORMATION

Food Environments:
Appendix III of European Directive 90/128/CEE and its most recent amendment 96/11/EC dated 5/3/96 defines the compatibility of pure glass fibres with food environments as additives to plastics. However the fact that sizing products should be shown on the current list in European Commission approved products, the BGVV LII list in Germany or the Food and Drugs Administration lists (FDA) in the USA means that a case by case study must be made if a product is used to reinforce a plastic material in contact with food. Consult the Manufacturer for further information.

Contact with potable water
As differ from country to country, every question must be examined individually with the manufacturer.

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