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## MATERIAL SAFETY DATA SHEET

### 1 SUBSTANCE/PREPARATION AND COMPANY NAME

COMPANY: Changshu Jiangnan Glass Fiber Co.,Ltd.

Emergency information

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### 2 - COMPOSITION – INFORMATION CONSTITUANT PARTS

Glass woven fabrics produced with continuous glass filaments, either yarns or strands coated with a surface finish. They are basically sold as rolls of:

**Mesh Fabrics**

**Glass wall covering**

**Glass fibre scrims**

**Glass fibre woven cloth(including fire blanket cloth)**

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

Glass woven fabrics can be considered as ARTICLES, woven by E or C glass fiber yarn or direct roving. These articles are mixtures of E or C GLASS in the form of continuous strands and a SIZE with, in addition, SURFACE FINISH PRODUCTS in some cases.

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

SiO<sub>2</sub> 52-62%

Alkaline Oxides (Na<sub>2</sub>O, K<sub>2</sub>O) < 2%

Alkaline earth oxides (CaO, MgO) 16-30%

B<sub>2</sub>O<sub>3</sub> 0-10%

Al<sub>2</sub>O<sub>3</sub> 11-16%

TiO<sub>2</sub> 0-3%

Fe<sub>2</sub>O<sub>3</sub> 0-1%

HF 0-2%

**C GLASS** composition is within the following percentages:

SiO<sub>2</sub> 67.3%

Alkaline Oxides (Na<sub>2</sub>O, K<sub>2</sub>O) < 12%

Alkaline earth oxides (CaO, MgO) 13.7

Al<sub>2</sub>O<sub>3</sub> 7%

TiO<sub>2</sub> 0-3%

Fe<sub>2</sub>O<sub>3</sub> <0.5%

**SIZE** is a mixture of chemicals applied to the glass strands in a maximum quantity of 2.5% -more generally less than 1.5%.

Most of this mixture is composed of basically non-reactive high molecular weight polymers not listed as substances in the 1981 European Inventory of Existing Commercial Substances (EINECS), nor in the ELINCS appendices (European List of Notified Chemical Substances), and are generally exempt from registration on the American TSCA lists.

The **SURFACE FINISH PRODUCTS** used to protect, discolour or maintain the glass fibres together are generally water based products (emulsion of polymers, lubricants, plasticizers, colouring

agents). For example polyvinyl acetate, styrene butadiene latex, acrylate copolymers, starch based products, or blends of these binders are currently used. They are polymerised by thermal treatment. Their content on the glass woven product is between 11 and 30% by weight. When cross-linked, they are high molecular weight polymers and as such are not listed as dangerous substances. Some of the monomers used for the production of these polymers may be listed in the dangerous products of the European Directive 67/548 and subsequent amendments, but remain only as traces in the end products.

Some of the chemicals used for additional properties are more reactive, but we never use very dangerous products (no carcinogenic, mutagenic or dangerous for reproduction) and if small amounts of irritating products are used, they are blended and in a very low amount.

If so requested by medical authorities, the Chemical Abstract Service (CAS) reference numbers for the ingredients used for a given size or surface finishing mixture can be communicated, but must remain for the confidential use of medical authorities.

### - HAZARD IDENTIFICATION

Glass woven products made with E or C continuous filament glass **are not significantl haardous**. Details about chemical hazards are given in paragraph 2. Toxicological aspects are developed in detail in chapter 11. The essential point to remember are that glass filaments are not "respirable" as their nominal diameters are over 9 µm, far over the diameter of 3 µm defined by the World Health Organisation for "respirable" fibres, and that they have been shown not to cause lung cancer.

Hazards identified are:

- mechanical irritation (itching)
- dusts particles which can be inhaled i.e. able to be breathed in the upper respiratory tract
- as differentiated from respirable products which can penetrate the far lung extremities.
- Allergies in rare instances

### - FIRST AID

INHALATION: remove from the scene of exposure to fresh air

SKIN CONTACT: wash copiously with lukewarm soapy water without excessive rubbing

EYE CONTACT: flush in running water (for at least 10 minutes), and consult a doctor as necessary

### - FIRE FIGHTING

In case of fire, glass fibres are not flammable, are incombustible and don't support combustion. The packaging (plastic film, paper, cardboard, wood) is likely to burn. The binders, from their organic nature, can also burn. Combustion gases are basically carbon dioxide and water vapour. There may be small quantities of carbon monoxide and other unknown substances that make it necessary to use protective devices in the event of a major fire.

RECOMMENDED EXTINGUISHING MEDIA: water or chemical powder

### - ACCIDENTAL SPILLAGE

PERSONAL PROTECTION: See Chapter 8.

ENVIRONMENTAL PROTECTION, glass fibre 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 material should be disposed of in accordance with applicable national, federal, state and local regulations (see paragraph 13).

CLEANING:

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

### - HANDLING STORAGE

**HANDLING (Technical measures / Precautions / Safe handling advice):**

It is preferable to avoid prolonged contact with the skin: wear gloves, garments with long 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. □ ash 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 either the product and to the packing materials which could lead to storage safety problems.  
Incompatible material: not relevant.

**- EPOSURE CONTROL – PERSONAL PROTECTION****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: use approved safety goggles, masks or safety glasses as required.

**- PHYSICAL AND CHEMICAL PROPERTIES**

**PHYSICAL STATE:** solid

**FORM:** rolls or strips

**COLOUR:** white, or colored as requested by the customers needs.

**ODOUR:** none

**PH:** not applicable

**SPECIFIC TEMPERATURE AT □ HIGH CHANGES IN PHYSICAL STATE OCCUR:**

**Softening point:** Littleton point (defined as the temperature for which the viscosity of glass is 107.65 Poises): approximately 850°C

**Melting point:** Not applicable. Glass does not melt, but the viscosity decreases by elevation of temperature and is 10<sup>3</sup> for E glass in a range of temperature between 1150°C and 1250°C (fiberizing temperature).

**DECOMPOSITION TEMPERATURE:** Polymers finishes start to decompose at 230°C to 250°C

**FLASH POINT:** None

**E□PLOSIVE PROPERTIES:** None

**DENSITY (molten glass):** Depending on glass strands and finishes rates (density of glass: 2.6 g/cm<sup>3</sup> □ density of polymer: 1.0 to 1.2g/cm<sup>3</sup>).

**SOLUBILITY:** □ery low solubility in water. Size and finishes can be partially (and even totally) dissolved in most organic solvents.

**1 - STABILITY AND REACTIITY****STABILITY**

If the normal temperature range of use is high, the finishes used for glass woven products can be slightly degraded by heat in normal high temperature of use. Evolving gases may irritate the eyes, throat or nose. Toxic risks are low. To improve working conditions, and particularly if exposure to these gases is long, it is recommended to install smoke evacuation devices near the heating points or to wear masks.

## HAZARDOUS REACTIONS

Glass woven products are stable and never generate hazardous chemical reactions.

## HAZARDOUS DECOMPOSITION PRODUCTS

In continuous combustion conditions, in addition to water vapour and CO<sub>2</sub>, small quantities of carbon monoxide or other products may be released from the combustion of the size and/or finishes. 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 (see paragraph 5)

## 11 - TOICOLOGICAL INFORMATION

ACUTE TOXICITY: not relevant

LOCALISED EFFECTS: **ossible temorar irritations**

This irritation is of a purely mechanical and temporary nature. It disappears when exposure is ended. It can affect the skin, eyes and 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 a Xi (irritant) label nor a classification for continuous strand glass fibres (which in this Directive only applies to insulation glass wools in some circumstances).

SENSITIZATION: some **allergies** to continuous strand glass fibres have been declared. In case of a confirmed allergy, remove the person from the scene of exposure.

LONG TERM TOXICITY: CARCINOGENIC RISKS

**Continuous strand glass fibres are not respirable** (i.e. do not penetrate the lung alveoli).

This is because fibre is over 3 µm in diameter (and, mostly, over 9 µm). Even after handling, the length of the finest dusts is also well over 5 µm 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.

### Eidemiological and laborator studies

Epidemiological and laboratory studies carried out to date do not 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 rates due to cancer in people working in glass fibre manufacturing facilities vs. control populations.

A recent study published in 2000 by the IOM (Institute of Occupational Medicine in Edinburgh) addressed the inhalation of E-glass microfibres (diameter very lower than 3 µm) by animals at concentrations at least 1000 times higher than those normally encountered by humans when using glass fibres under work conditions, did demonstrate a carcinogenic risk to these animals. These microfibres are not part of the product range produced and sold by Saint-Gobain Intertex and these findings are not likely to change current opinions for the glass fibres described in this MSDS.

### Handling glass fibres

When glass fibres are chopped, milled or sanded, they are cut perpendicular to strand length and no smaller diameters filaments are generated. Conversely, significant quantities of dust can be generated - which is why use of personal protection equipment is recommended when handling glass fibres. In dusts also present in some products (chopped strands, crushed fibres) some studies have shown very low quantities of particles with short fibrous aspects ( $l/d \geq 3$ ), but nevertheless longer than 5 µm, and with an apparent diameter of under 3 µm. Quantities of this dust measured in work atmospheres are 50 to 100 times lower than all the limits fixed for respirable fibres. However when there is a high risk of dust generation, wearing of masks is strongly recommended. It is not a risk to be considered for woven glass products.

MUTAGENIC RISKS, TERATOGENIC RISKS, RISKS FOR REPRODUCTION: continuous

strand glass reinforcement fibres have no known risks.

## 12 - ECOTOXICOLOGICAL INFORMATION

E glass is not biodegradable.

As the concentration of the ingredients in the size mixture or finish products and as ingredient solubility are low, glass woven products are considered to have no adverse eco-toxicological effects.

Glass fibres sizing products, polymers and additives are not likely to destroy the **ozone layer** and are not listed in the 1987 Montreal Protocol (Class 1 or Class 2).

Glass strands, sizing polymers and finishes do **not contain PCB** (Polychlorinated biphenyl) or/and other polyaromatic products of the same type.

## 1 - WASTE DISPOSAL

Depending on local regulations, glass woven products wastes can either be considered as **inert waste** or as **common industrial waste**

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).

## 1 - TRANSPORT

INTERNATIONAL REGULATIONS:

Glass woven products are not considered as hazardous goods by transport regulations.

They are not part of one of the hazardous classes listed in international regulations.

They do not need special procedures under any regulations.

## 1 - REGULATORY INFORMATION

Glass woven products do not require hazardous product labelling.

General hygiene and work safety regulations apply.

Glass woven products are articles and for this reason they have not to be listed in most of the countries for instance in the lists EINECS in Europe, ELINCS, TSCA for the USA, DSL and NDSL for Canada,

## 1 - OTHER INFORMATION

When exposed to moisture of the air in its packaging for a long period, some odor may be present on opening of the packaging. This odor may come from a small degradation of some polymeric components and is due to trace amounts and does not generate any risk.

This Material Safety Data Sheet is in addition to the Product Specification file and other technical document issued by CHANGSHU JIANGNAN GLASS FIBER CO., LTD, but does not replace them. The information contained herein is based on the present state of our knowledge and does not therefore guarantee certain properties. Recipients of our product must take responsibility for observing existing laws and regulation