

HUNTSMAN

Composites

MATERIAL SAFETY DATA SHEET

FIBER GLASS PRODUCTS (PPG USA)

Not hazardous according to the criteria of NOHSC

COMPANY DETAILS

SUPPLIER

Company Name: Huntsman Chemical Company Australia Pty. Limited ABN 48 004 146 338
Address: Somerville Road, West Footscray VIC 3012
Telephone Number: (03) 9316 3333
Fax Number: (03) 9314 2170
Emergency Telephone Number: 1800 033051 (STD free - all hours)

MANUFACTURER:

PPG Industries Incorporated
Fiber Glass Products
One PPG Place
Pittsburgh, Pennsylvania
Emergency Phone 304-843-1300
MSDS Information 800-432-7073 ext 302

IDENTIFICATION & ADDITIONAL INFORMATION

The manufacturer's Material Safety Data Sheet is attached:

Product Name: FIBER GLASS PRODUCTS (PPG USA) **Date of Issue:** May 2001 **No. of Pages:** 4

Note: The PPG Fiber Glass products covered by this MSDS are bound fiber glass strands. The products are defined as "Articles" according to the Industrial Chemicals (Notification and Assessment) Act 1989.

NOHSC Exposure Standard: "Dust not otherwise specified": 8-hour TWA: 10 mg/m³ (as inspirable dust).

ADG Code: Not classified as Dangerous Goods for transport or storage.

CONTACT INFORMATION

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Note: NOHSC: National Occupational Health and Safety Commission

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Material Safety Data Sheet (MSDS)

Section 1.1: Identification of Substance

Fiber Glass Product Trade Names:	Fiber Glass Product Descriptions:
	The products are bound fiber glass strands which are:
Chopped Strand	chopped to a specific length
Hybon® Continuous Roving; Roving	wound onto a cylindrical forming package
ChopVantage®	chopped fiber glass
MaxiChop®	chopped fiber glass
DeltaChop®	chopped fiber glass
FIBERlets	cut, chopped and blended filament fiber glass
Continuous Strand	wound onto a cylindrical forming package
Hybon® Woven Roving	woven to a heavy fabric
TufRov™	single end continuous roving
AdFlo™ R Mat	formed into a mat
Needled Mat for Azdel	formed into a mat
MatVantage™ Continuous Strand Mat	formed into a mat for Azdel, Inc.
Needled Mat	formed into a mat
ZetaMat™	needled mat for Azdel, Inc.
Texo ® HTM	needled mat
Combomat® Woven Roving Mat	formed into a combination product consisting of a woven fabric ply and a chopped strand mat ply
Chopped Strand Mat	chopped and formed into a mat
Adflo™ C Mat	chopped and needled mat
Yarn	twisted onto a bobbin or wound onto a warp beam
Hybon® RCY	yarns wound on cylindrical tubes, bobbins, beams or woven fabric
L.E.X.® Yarn	texturized and wound onto a tube
TEXO® Yarn	texturized and wound onto a tube
HercuFlex® Strand HF and HFO lines	coated with an off-white polymeric coating; also called impregnated yarn.

HercuFlex® is a registered trade mark of Hercules, Inc. licensed to PPG Industries

Chemical Name and Synonyms: Continuous Filament Fiber Glass (Fibrous Glass, Glass Fibers, Synthetic Vitreous Fibers)

Chemical Formula: E-glass

Color: Yellow-white to white

Odor: No odor

Note: These products are not glass wool products (as used for home insulation materials). Consult the appropriate manufacturer of these materials for glass wool MSDS.

Section 1.2: Company Address

PPG Industries, Incorporated
Fiber Glass Products
One PPG Place
Pittsburgh, Pennsylvania 15272

Phone/Fax Numbers

Emergency 24 hours/7 days per week: 304-843-1300
MSDS & Technical Information: 800-432-7073 ext. 302
Safety Information: 336-357-8151 ext. 265
(week days 8- 4:00 p.m. eastern time)

Section 2: Composition of Ingredients

Ingredients	% - Weight	Exposure Control Limits
Fibrous Glass (E-type, continuous filament) Composition principally of oxides of silicon, aluminum, and calcium, fused in an amorphous vitreous state	84.5 (Min.)	ACGIH ® -TLVs ® Synthetic Vitreous Fibers: Continuous filament : 5 mg/m ³ inhalable dust ⁴ ; 1 f/cc respirable fiber OSHA PEL- 15mg/m ³ total nuisance dust OSHA PEL - 5mg/m ³ respirable nuisance dust
Surface Sizing (complex mixture; in general, of one or more: starches ^(*) , modified vegetable oils ^(*) , or polymers)	≤1-22 (see pg. 2) (*) (“)	
Surface Binder (complex polymer mixture)	0-6 (“)	
Water	0-15 (“)	

Section 2: Composition of Ingredients (continued)



Product Name	% Fibrous Glass	Surface Sizing(*)	Surface Binder	Water
Chopped Strand	84.5 - 99.1%	<2.5%	---	0-15%
ChopVantage®; MaxiChop® DeltaChop®	≥ 97.5	<2.5%	---	---
Hybon® Continuous Roving; Roving FIBERlets	≥99%	≤1%	---	---
Continuous Strand	≥99%	≤1%	---	---
Hybon® Woven Roving	≥99%	≤1%	---	---
AdFlo™ R Mat	≥97%	≤2%	---	≤ 0.1%
TufRov™	≥99%	≤1%	---	---
Needled Mat for Azdel, Inc.	≥99%	≤1%	---	---
ZetaMat™ Needled Mat for Azdel, Inc.	≥99%	≤1%	---	---
MatVantage™ Continuous Strand Mat	≥95%	≤1%	≤4% (polyester)	---
TEXO® HTM Needled Mat	≥98%	≤2%	---	---
Combomat® Woven Roving Mat	≥96.5%	≤1%	≤2.5% (polyester)	---
Chopped Strand Mat	≥93%	≤1%	≤6% (polyester)	---
AdFlo™ C Mat	≥98%	≤1%	---	≤1%
Yarn	≥98%	≤2%	---	---
L.E.X.® Yarn	≥98%	≤2%	---	---
Hybon® RCY	≥98%	≤2%	---	---
TEXO® Yarn	≥96.5%	≤3.5%	---	---
HercuFlex® Strand HF and HFO Lines	≥87%	≤13%	---	---

Section 3: Hazards Identification

Emergency Overview:	Stable and nonflammable under normal industrial conditions.
Primary Route(s) of Entry:	Inhalation.
Symptoms of Overexposure:	Rash, itching, conjunctivitis, coughing, sneezing.
Immediate (Acute) Health Hazards:	Mechanical skin, eye, nose & throat irritant. Typically, skin irritation experienced by most persons newly exposed to fiber glass. The Texo® HTM product may release small amounts of acetic acid at elevated temperatures.
Long Term (Chronic) Health Hazards:	None currently known; see Section 11.

Section 4: First-Aid Measures

Medical Conditions Aggravated by Exposure: None known.

Eye Contact: Flush eyes with water for at least 15 minutes - seek medical attention.

Skin Contact: Rinse contact areas with room temperature to cool water, then wash gently with mild soap. If glass fiber becomes embedded, seek medical attention.

Inhalation: If irritation persists, seek medical attention. **If Swallowed:** Seek medical attention.

Section 5: Fire-Fighting Measures

Flash Point, Flammable Limits, Extinguishing Media: Water is the preferred extinguishing media. Non-burning; *except for MatVantage™ Mat and Needled Mat for AZDEL, Inc.*, which will support combustion and have Flash Points >200°F. Exposing both products to an ignition source will burn-off surface binder leaving a bare glass residual similar to the initial product.

Unusual Fire and Explosion Hazards: Not applicable *except for Needled Mat for AZDEL, Inc., which has a surface binder containing an organic peroxide and may burn in the absence of oxygen.*

Fire Fighting Procedures: In any sustained fire, wear self-contained breathing apparatus (SCBA). Every company should have a written fire/evacuation policy including training that is compliant with governmental regulations (e.g., NFPA/OSHA).

Special Exposure Hazards From Fire: Hazardous decomposition products of combustion from sizing and binders may be released in a sustained fire. The larger part of the product is nonflammable E-glass. In a sustained fire, sizing and binders may decompose, releasing combustion products including carbon dioxide, carbon monoxide and water. Additionally, there are many chemicals that can evolve during any partial decomposition of chemical products. The amounts or identities cannot be predicted and can differ in each situation.

Section 6: Accidental Release Measures

Steps to be Taken upon Release or Spill: Use vacuuming or wet sweeping methods instead of dry sweeping.

Waste Disposal Method: Dispose in accordance with government regulations. Keep debris minimal by locating waste disposal equipment near work areas. See Section 12.

Section 7: Handling and Storage



Precautions: Keep airborne dust concentrations below regulated levels. For optimum performance, store at 25°C or less and relative humidity less than 65%. Not an electrical conductor. Can accumulate static charge.

Section 8: Exposure Controls/Personal Protection

Respiratory Protection: If high dust levels are encountered, airborne fibrous glass concentrations exceed regulatory limits, or irritation occurs, a properly fitted NIOSH (government) approved respirator is required/recommended. Use respiratory protection in accordance with applicable regulations and your company's respiratory protection policy.

Ventilation: Local exhaust ventilation (if needed) should be provided as necessary to minimize airborne dust levels.

Skin/Eye Protection: Good personal hygiene and the use of barrier creams, caps, protective gloves, cotton coveralls, or long sleeved loose fitting clothing will maximize comfort. Vacuum equipment may be used to remove fibers from clothes. Work clothing should be laundered separately from other clothing before reuse. Wear appropriate eye protection which may be safety glasses/side shields if there is a chance of airborne glass fibers contacting eyes.

Exposure Limits: The American Conference of Governmental Hygienists (ACGIH) has adopted a Threshold Limit Value (TLV) of 5 mg/m³ for an 8 hour time weighted average (TWA) exposure for inhalable fibrous glass dust (inhalable fraction⁴) and 1 fiber per cubic centimeter of air (1 f/CC) 8hr-TWA respirable fibers. The Occupational Safety and Health Administration (OSHA) does not prescribe a Permissible Exposure Limit (PEL) for fibrous glass but relies on the PEL-TWA's for nuisance dust of 15mg/m³ (total) and 5mg/m³ (respirable). Available air sampling/analytical methods: Gravimetric total dust NIOSH Sampling & Analytical Method 0500; the Gravimetric respirable dust NIOSH Method 0600 and the NIOSH 7400 B Fiber Counting Rules; and IOM Sampler for meeting ACGIH criteria for inhalable particulate mass.

Section 9: Stability and Reactivity

Stability:	Stable	Conditions to Avoid:	None known.
Incompatibility (Materials to Avoid):	None known.	Hazardous Polymerization:	Will not occur.

Section 10: Physical and Chemical Properties

Appearance/Odor: See Section 1.1

pH: Not applicable

Electrical Conductivity: E-glass is an electrical insulator

Boiling/Freezing Points: Not applicable.

Specific Gravity (bare glass): 2.6 - 2.7 (Water=1)

Melting Point (softening): > 800° C

Vapor Pressure/Density/Oxidation Risk: Not applicable

Octanol/Water Partition Coefficient: Not applicable.

Flash Point/Flammability/Explosion Limits: See Section 5.0

Percent Volatile (volume): None

Solubility: Insoluble in water. For some applications (e.g. paper reinforcement) fibers are wetted and made water dispersible through their special sizing. Most other types disperse to some extent in organic solvents depending upon the application.

Section 11: Toxicological Information

Factors in fiber toxicity include: **fiber dimensions and durability and degree of exposure.**

Fiber Dimensions Fibers are either non-respirable or respirable. Respirable fibers can penetrate to the "deep" lung. According to the World Health Organization (WHO), man made-mineral fibers with diameters equal to or greater than (\geq) 3.0 microns (um) are non-respirable.⁽¹⁾ According to the National Institute for Occupational Safety and Health (NIOSH), fibers with diameters \geq 3.5 um are non-respirable⁽²⁾. The narrow, bending passages of the human respiratory system, do not permit the relatively larger, non-respirable fibers to enter the "deep" lung. Instead, they deposit on the surfaces of the upper respiratory tract, nose or pharynx. They are then cleared through normal physiological mechanisms. As manufactured, **PPG continuous filament glass fibers are not respirable (> 3.5 micrometers in diameter)**. Continuous filament glass products that are chopped, crushed or severely mechanically processed during manufacture or use may contain a very small amount of respirable particulate, some of which may be respirable fibers. Mechanical processing may cause the filaments to fracture producing small pieces (fibers and particles) of the larger continuous filaments. There is no evidence that these fibers break longitudinally into smaller diameters. Upon breakage, the fibers may break horizontally into smaller lengths but not longitudinally into smaller diameters. As with any sanding/grinding activity, respirable and non-respirable particles may be generated.

Durability means how long a fiber will remain in the lung. E-glass composition has been found to be durable in the human lung; however, if fibers are non-respirable their durability is unimportant.

Degree of Exposure: According to Johnson et. al., in a 1969 US study of four fibrous glass production plants, "the results in terms of airborne concentrations of glass fibers and total dust would indicate that the workmen's exposure to these materials is negligible".⁽¹⁾

Carcinogenicity: The International Agency for Research on Cancer (IARC) is part of the World Health Organization (WHO). IARC concludes that continuous fiber glass filaments are not classifiable as to their carcinogenicity in humans (Group 3) because there is inadequate evidence on the carcinogenicity of these materials in humans or experimental animals.⁽¹⁾ In addition, the American Conference of Governmental Industrial Hygienists (ACGIH) has designated continuous filament fiber glass as not classifiable as a human carcinogen (A4). Continuous filament fiber glass is not listed in the National Toxicology Program (NTP) 7th Annual Report on Carcinogens, nor is it regulated by OSHA as a carcinogen.



In a 1987 epidemiological study in the US, there was no excess of respiratory cancer found in glass filament workers with 20 years of latency. In a 1987 European study there was no excess of lung cancer found in workers with over 20 years of latency. In both studies there was no increasing trend with an estimated time-weighted measure of exposure. In another epidemiology study performed in 1997 by Boffetta⁵ et al., the authors found an excess of lung cancer in workers exposed to glass fibers. However, when the lung cancer rates of these workers were compared to local mortality rates (rather than national rates), no increases were present.

In one laboratory study⁶, animals inhaling very high concentrations of respirable microfibers (comparable composition and durability) on a long term basis developed lung tumors, fibrosis and mesotheliomas. The physical characteristics of the E-glass used in the study were different than the E-glass PPG produces (respirable vs. non-respirable). Studies with humans involved in manufacturing of continuous filament E-glass indicate no known chronic health effects from use or contact with this product.

Section 12: Ecological Information

Fiber glass is generally considered to be an inert solid waste, and no special precautions should be taken in case it is released or spilled. These products do not contain, nor are manufactured with, Class I or Class II Ozone-Depleting Chemicals (CFCs) identified in the **Clean Air Act Amendment, 1990 List of Ozone Depleting Chemicals**.

Section 13 & 14: Disposal and Transportation Considerations

Fiber Glass is considered non-hazardous per **EPA, RCRA 40CFR, Part 261, 1990**. Considered an inert solid waste. Local, state, and national regulations should be consulted to ensure proper disposal procedures. Fiber glass products which are part of a reinforced plastic or uncured resin system must be disposed of in accordance with applicable requirements for those plastics or resins where they exist. Not regulated by the **Department of Transportation (DOT)**.

Section 15: Additional Regulatory Information

Canada: Exempt from **Canadian Environmental Protection Act (CEPA)** reporting on the **Domestic Substances Lists** as these products are considered "articles". Exempt from **Workplace Hazardous Materials Information System (WHMIS)** labeling & MSDS requirements. However, fibrous glass is on the **Ingredient Disclosure List**. It must be listed as an ingredient on MSDS for "controlled products" with fiber glass concentrations greater than 1.0%.

European Economic Committee (EEC) Labeling Classification: Fiber Glass does *not* meet the classification for a "dangerous substance" according to 67/548/EEC and 97/69/EC. The E-glass composition has been incorporated in the EINECS under CAS number 65997-17-3 as a glass oxide.

Japan: Chemical Substances Control Law: Fiber Glass is exempt from this law.

United States: EPA Toxic Substances Control Act (TSCA): Fiber Glass carries no Chemical Abstracts Index name, CAS registry number or EPA code designation number. Fiber Glass is an "article" as defined in Section 710.2(f). It is exempt from Sections 5 and 8(b) reporting requirements. PPG considers these products exempt from **EPA SARA Title III** reporting requirements as they do not meet its health or physical hazards definitions nor contain any SARA 313 chemical ingredients in excess of EPA's de minimus concentrations. **OSHA Hazard Communication Standard:** Subject to the applicable requirements of this regulation. Per this MSDS revision date, these fiber glass products are not known to contain chemical ingredients listed by the Pennsylvania, New Jersey or Massachusetts **Right to Know Law** in excess of amounts requiring reporting on such substances' MSDS or labels.

Health and safety wording on the product packaging label:

(other packaging labels with similar verbiage are used for Canadian, New Jersey & European PPG Fiber Glass product shipments)

NOTICE: Contact with fibrous glass may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing when handling the material. Gloves and eye protection may be appropriate in certain operations. Wash with soap and warm water after handling. Use of a disposable mask in accordance with Occupational Safety and Health Administration 1910.134 respiratory protection requirements designed for nuisance dusts is advisable where high dust levels may be encountered. The International Agency for Research on Cancer (IARC) has designated continuous filament fiber glass as a group 3 "not classifiable as to human carcinogenicity", meaning that evidence is not sufficient to link that fiber to cancer.

Section 16: Other Information

For more regulatory information obtain a copy of the PPG Safety, Health, Environmental and Regulatory Aspects of Fiber Glass Products (SHERAF) paper from your PPG sales representative or telephone number listed in Section 1.2.

References:

1. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Man-made Mineral Fibers and Radon, Vol. 43, 1988, World Health Organization.
2. Threshold Limit Values® booklet, 2000, American Conference of Governmental Industrial Hygienists (ACGIH)
3. Occupational Exposure, Toxic Properties, and Work Practice Guidelines for Fiber Glass, by Bender, J., Konzen, J., and Devitt, G., American Industrial Hygiene Association No. 5 (AIIHA), 1991.
4. Inhalable fraction as defined by sampling criteria for inhalable dust, ACGIH TLV ® booklet, 2000.
5. Boffetta, et. al., Cancer Mortality among Man-Made Vitreous Fiber Production Workers, Epidemiology, May 1997, Volume 8 Number 3, pp. 259-268.
6. Cullen R. T., Searl, A. Buchanan, D., Davis, J.M.G., Miller, B.G., and Jones, A.D. (2000), Inhalation Toxicology, 12, p. 959-977.

