

SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

IDENTIFICATION OF PREPARATION: DE1 04 Laminate

USE OF PREPARATION: Cured resin-impregnated woven fiberglass and copper laminate.

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2. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL	CAS NUMBER	EC NUMBER	PERCENT	HAZARD CLASSIFICATION
Continuous filament glass fibers (cured within the resin matrix)	65997-17-3	266-046-0	30-60	Xio R36/37/38
Copper Foil	7440-50-8	231-159-6	10-30	Not Applicable
Non-Hazardous Cured Resin	Proprietary	Proprietary	30-60	Not Applicable

Hazard Classifications: X_i=Irritant, R36/37/38-Irritating to eyes, respiratory system and skin information regarding proprietary ingredients is available from the manufacturer upon request.

3. HAZARDS IDENTIFICATION

CANADIAN WHMIS FOR THE PREPARATION: Not a Controlled Product.

EU PREPARATION CLASSIFICATION (1999/45/EC): Not a Dangerous Preparation.

EMERGENCY OVERVIEW: Dust generated during routine handling, machining, grinding, or sawing of this material may cause mechanical Irritation of the skin, eyes and upper respiratory tract.

POTENTIAL HEALTH EFFECTS: No Information is available on this specific mixture as a whole. The information presented is based on each of the components present at concentrations greater than 1% (0.1 % for carcinogens). Machining, grinding or sawing this material may generate harmful dusts. Continuous filament glass fiber is not considered fibrogenic; however, it is woven from E-Glass fibers which are listed by IARC as "special purpose glass fibers" and designated as "possibility of carcinogenic in human." Inhalation of copper fumes, while not expected to occur under typical conditions of use, may cause metal fume fever. See Section 8 for exposure controls.

ROUTES OF ENTRY (during machining, grinding, or sawing): Dermal: POSSIBLE Inhalation: YES Ingestion: POSSIBLE Injection: POSSIBLE

4. FIRST AID MEASURES

SEEK IMMEDIATE MEDICAL ATTENTION IF IRRITATION OCCURS.

INHALATION: Remove the person to fresh air. Treat respiratory distress as appropriate (artificial respiration, etc.) Provide oxygen if necessary. If not breathing, give mouth-to-mouth resuscitation.

EYES: Immediately flush eyes with large amounts of temperate water for a minimum of 15 minutes. Consult an ophthalmologist for a more detailed medical evaluation.

SKIN: Remove contaminated clothing. Wash skin thoroughly with soap and tepid water.

INGESTION: Not expected to be a significant route of exposure based on expected use. If Ingestion occurs, seek medical attention.

SYMPTOMS OF EXPOSURE: May include Irritation of the skin, eyes, and upper respiratory tract.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical, water.

FIRE FIGHTING EQUIPMENT: Wear full bunker gear including a positive pressure self-contained breathing apparatus in any closed place.

FR4 Copper Board

6. ACCIDENTAL RELEASE MEASURES

GENERAL: Sweep or scrape into approved container for proper disposal.

7. HANDLING AND STORAGE

HANDLING: Cured composite parts and resins are solid articles and do not pose a health hazard as shipped.

STORAGE: Store at room temperature. Avoid contact with incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

MATERIAL	EXPOSURE LIMITS		
	OSHA PEL ^(a)	ACGIH TLV ^(b)	NIOSH REL ^(c)
Continuous filament glass fibers (including special purpose glass fibers)	15 mg/m ³ TWA Total Dust (PNOR) 5 mg/m ³ TWA Respirable Dust	1 fclch TWA Fibers 5 mg/m ³ TWA Inhalable Dust	3 fclch TWA Fibers 5 mg/m ³ TWA Respirable Dust
Copper	0.1 mg/m ³ TWA Fume 1 mg/m ³ TWA Dust/Mist	0.2 mg/m ³ TWA Fume 1 mg/m ³ TWA Dust/Mist	0.1 mg/m ³ TWA Fume 1 mg/m ³ TWA Dust/Mist

See Section 15 for additional Occupational Exposure Limits (OELs). (a) U.S. Department of Labor, Occupational Safety and Health Administration, permissible exposure limit; (b) American Conference of Governmental Industrial Hygienists, threshold limit value; (c) National Institute for Occupational Safety and Health, recommended exposure limit; (d) milligrams per cubic meter; (e) time-weighted average over an 8-hour day, 40-hour work week for OSHA PELs and ACGIH TLVs, or up to a 10-hour day, during a 40-hour work week for NIOSH RELs; (f) Particulates not otherwise regulated; (g) particles in the size range that are hazardous when deposited in the gas-exchange region of the lungs; (h) fibers per cubic centimeter;

Respirable fibers longer than 5 microns and having an aspect ratio of $\geq 3:1$.

ENGINEERING CONTROLS:

Use local exhaust when machining, grinding or sanding to minimize exposures and maintain airborne dust and fiber concentrations below occupational exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

RESPIRATORY PROTECTION: In the absence of adequate general or local ventilation, use a NIOSH- or local authority-approved respirator with at least an N95 filter if exposure limits are exceeded. SKIN PROTECTION: Wear gloves during prolonged contact to avoid skin irritation from dust. EYE PROTECTION: Use safety glasses or a face shield when machining, grinding or sawing this material.

WORK/HYGIENE PRACTICES: Good personal hygiene should be exercised by all users of this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Reinforced resin/copper laminate
Odor:	Not Applicable
Odor Threshold:	Not Applicable
Boiling Point:	Not Applicable
Flash Point:	Not Applicable
Auto-Ignition Temperature:	Not Applicable
Lower Explosive Limit (LEL):	Not Applicable
Upper Explosive Limit (UEL):	Not Applicable
Vapor Pressure: Specific Gravity:	Not Applicable
Solubility in Water:	Not Applicable
Partition Coefficient:	Not Applicable
Viscosity of Solution:	Not Applicable
Vapor density (Air=1.0):	Not Applicable
Percent Volatility of Solution:	Typically Less Than 1%
Total Volatile Organic Compounds (TVOC) (G/L):	Not Applicable

10. STABILITY AND REACTIVITY

FR4 Copper Board

CONDITIONS TO AVOID: This material is stable under expected conditions of use, avoid incompatible materials. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS: Strong acids, strong oxidizers, light metals, rubber, plastic.

HAZARDOUS DECOMPOSITION: Dense smoke, acrid vapors and fumes, hydrocarbons of variable composition, CO_x, NO_x.

11. TOXICOLOGICAL INFORMATION

NO DATA AVAILABLE ON THE SPECIFIC MIXTURE.

CONTINUOUS FILAMENT GLASS FIBERS NIOSH RTECS No.: LK3651 000 Acute Effects of Overexposure: Exposure 10 dust may cause irritation to skin, eyes, and respiratory system. Effects Chronic of Overexposure: Repeated or prolonged contact with skin may cause dermatitis. Tumors have been detected in experimental animals but may not be relevant to humans. Carcinogenicity: ACGIH A4, IARC Group 3

Special purpose glass fibers: ACGIH A3, IARC Group 2B Toxicity Data: No data available

COPPER NIOSH RTECS No.: GL5325000 Acute Effects of Overexposure: Exposure to dust may cause cough, headache, shortness of breath, and eye, skin and respiratory irritation. Exposure to fumes may cause metal fume fever. Chronic Effects of Overexposure: Long-term exposures may cause skin sensitization, and respiratory, liver and kidney effects. Carcinogenicity: No known effects Toxicity Data: IPR-MUS LD₅₀ 0.07 mg/kg

12. ECOLOGICAL INFORMATION

NO DATA AVAILABLE ON THE SPECIFIC MIXTURE.

CONTINUOUS FILAMENT GLASS FIBERS (E-GLASS) No available data.

COPPER Ecotoxicity: Copper and its salts are highly poisonous to marine invertebrates, fungi and seaweed. Mobility: Low in soil. Persistence and Degradability: Not biodegradable. Water soluble. Bioaccumulation Potential: Extent unknown, long half-life.

13. DISPOSAL CONSIDERATIONS

GENERAL: Follow all applicable local, national, territorial, and international regulations. This material is regulated as a hazardous waste under the US EPA Resource Conservation and Recovery Act (RCRA). Storage, disposal, treatment, and transportation of this material are regulated by the USEPA. Refer to the European Waste Catalog (EWC) for appropriate waste code(s).

14. TRANSPORT INFORMATION

Not regulated by US DOT, ICAO/IATA, RID/ADR, IMDG, Canada TOG

15. REGULATORY INFORMATION

EPA Toxic Substances Control Act (TSCA) Status, All of the components of this product are listed on the TSCA inventory

Canadian Environmental Protection Act: All of the components of this product are listed on the Canadian Domestic Substances List (DSL).

European Inventory of Existing Commercial Chemical Substances (EINECS): All of the components of this product are listed on the EINECS inventory.

ADDITIONAL OCCUPATIONAL EXPOSURE LIMITS (OELs) See Section 8 for OSHA, ACGIH and NIOSH OELs.

	Continuous filament glass fibers (based on mineral wool)	Copper
Arab Republic of Egypt	Not Listed	0.1 mg/m ³ TWA Fume
Australia	0.5 free TWA Fibers 2 max ³ TWA Dust	0.2 mg/m ³ TWA Fume 1 mg/m ³ TWA Dust

FR4 Copper Board

Austria	0.5 fleec TWA Fibers	MAK 0.1 mg/m ³ Fume MAK 1 maim ³
Belgium	Not Listed	0.2 mg/m ³ TWA Fume 1 maim ³ TWA Dust
Denmark	1 fleec TWA Fibers, Carcinogen	0.1 mg/m ³ TWA
Finland	10 mg/m ³ TWA Dust	0.2 mg/m ³ TWA Fume 1 malm ³ TWA Dust
France	1 fleec TWA Fibers	0.2 mg/m ³ VME Fume 1 mg/m ³ VME Dust 2 mQlm ³ STEL"Dust
Germany	0.25 fleec TWA (Non-exonerated Fibers) 6 mQ/m ³ TWA Dust	MAK 0.1 mg/m ³ Fume MAK 1 mg/m ³ Dust
Hungary	Not Listed	0.2 mlljm ³ TWA 0.4 mQ/m ³ STEL Dust
India	Not Listed	0.2 mg/m ³ TWA Fume
Italy	<1 fleec TWA Fibers 5 maim ³ TWA Dust	Not Listed
Japan	2.9 mg/m ³ Dust (administrative controllevel)	Not Listed
The Netherlands	2 fleec TWA Fibers	MAC-TGG 1 mg/m ³ Dust
Norway	1 fleec TWA Fibers	0.1 mg/m ³ TWA Fume
The Philippines	Not Listed	1 mg/m ³ TWA Fume
Poland	Not Listed	MAC 0.1 mg/m ³ TWA Fume MAC 0.3 mg/m ³ STEL Fume MAC 1 mg/m ³ TWA Dust MAC 2 mQlm ³ STEL Dust
Russia	Not Listed	STEL 0.5 ppm (1 mg/m ³)(Dust)
Sweden	1 f/cc TWA Fibers	NGV 0.2 mg/m ³ (Resp. Dust) NGV 1 ma/m ³ rTotal Dustl
	Continuous filament glass fibers (based on mineral wool)	Copper
Switzerland	0.5 fleec Fibers	0.1 mg/m ³ MAK Week Fume 0.1 mg/m ³ KZG Week Fume 1 mg/m ³ MAK Week 1 mg/m ³ KZG Week
Thailand	Not Listed	0.1 mg/m ³ TWA Fume 1 mg/m ³ TWA
Turkey	Not Listed	1000 ppm TWA
United Kingdom	2 lice TWA Fibers 5 mg/m ³ TWA Dust	0.2 mQ{m ³ TWA Fume 1 mg/m ³ TWA DusVMist 2 mg/m ³ STEL DusVMist 1 mg/m ³ TWA Week 3 mo/m ³ STEL Week
Argentina, Buigaria, Colombia, Jordan, Korea, New Zealand, Singapore, Vietnam	Not Listed	Use the ACGIH TLV of 0.2 mg/m ³ TWAFume

16. OTHER INFORMATION

DISCLAIMER

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy or reliability.