MATERIAL SAFETY DATA SHEET (MSDS)
SAFETY DATA SHEET (SDS)

MSDS Date: November 9, 2011

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

IDENTIFICATION OF PREPARATION: P95 Laminate

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

COMPANY IDENTIFICATION ISOLA USA Corp.
San Tan II Corporate Center
3100 West Ray Road
Chandler, AZ 85226

PHONE: 480-963-0022
FAX: 800-233-1068

MSDS PREPARATION BY: Chemistry & Industrial Hygiene, Inc., (800) 420-9311

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations of Canada and the MSDS contains all the information required by the Controlled Products Regulations.

EMERGENCY TELEPHONE (24 HOUR): 800-468-1263 (Infotrac)

2. HAZARDS IDENTIFICATION

GHS Classification for the preparation: WARNING

Skin irritation/corrosion Category 2 – Causes skin irritation; P264, P280, P302 + P352, P332 + P313, P362
Eye irritation/serious eye damage Category 2B – Causes eye irritation; P264, P305 + P351 + P338, P337 + P313
Hazardous to the aquatic environment Chronic Category 1 – Very toxic to aquatic life with long lasting effects; P273, P391, P501

CANADIAN WHMIS FOR THE PREPARATION: Not a Controlled Product.

EU PREPARATION CLASSIFICATION (1999/45/EC): Dangerous for the Environment (N), R50/53

EMERGENCY OVERVIEW: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Dust generated during routine handling, machining, grinding, or sawing of this material may cause mechanical irritation of the skin, eyes and upper respiratory tract. Copper in powder form is capable of creating a dust explosion.

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 hazardous substances other than those classified as X_n, X_i, or as category 3 carcinogens, mutagens, or toxic for reproduction). 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 humans.” Inhalation of copper fumes, while not expected to occur under typical conditions of use, may cause metal fume fever. Prolonged or repeated exposure may cause dermatitis. See Section 8 for exposure controls.

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL	CAS NUMBER	EC NUMBER	PERCENT	Hazard Classifications
Continuous filament glass fibers (cured within the resin matrix)	65997-17-3	266-046-0	30-60	X_i, R36/37/38
Copper Foil	7440-50-8	231-159-6	10-30	N, R50/53
Non-Hazardous Cured Resin	Proprietary	Proprietary	30-60	Not Applicable

See Section 16 for details on Hazard Classifications.

Information regarding proprietary ingredients is available from the manufacturer upon request.

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 eyes, skin and respiratory tract, chills, muscle ache, nausea, fever, dry throat, cough, weakness, discoloration of the skin and hair, metallic or sweet taste and/or difficulty breathing.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical powder. If using a fire extinguisher, make sure that it is an NFPA Class B extinguisher (e.g. label rating will read AB, ABC, BC, etc.).

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

6. ACCIDENTAL RELEASE MEASURES

GENERAL: Sweep or scrape into approved container for proper disposal. See Section 13 for Disposal Considerations.

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[d] TWA[e] Total Dust (PNOR)[f] 5 mg/m^3[d] TWA[e] Respirable Fraction[g]	1 f/cc[h] TWA[e] Fibers[i] 5 mg/m^3[d] TWA[e] Inhalable Dust[g]	3 f/cc[h] TWA[e] Fibers[i] 5 mg/m^3 TWA[e] Total Fibrous Glass
Copper	0.1 mg/m^3[d] TWA[e] Fume 1 mg/m^3[d] TWA[e] Dust/Mist	0.2 mg/m^3[d] TWA[e] Fume 1 mg/m^3[d] TWA[e] Dust/Mist	0.1 mg/m^3[d] TWA[e] Fume 1 mg/m^3[d] TWA[e] 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 (PEL); (b) American Conference of Governmental Industrial Hygienists', Threshold Limit Value (TLV); (c) National Institute for Occupational Safety and Health, Recommended Exposure Limit (REL); (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 (PNOR); (g) particles in the size range that are hazardous when deposited in the gas-exchange region of the lungs; (h) fibers per cubic centimeter; (i) Respirable fibers longer than 5 microns and having an aspect ratio of ≥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, or other appropriate engineering controls, 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:	Not Applicable
Specific Gravity:	Not Determined
Solubility in Water:	Not Determined
Partition Coefficient:	Not Applicable
Viscosity of Solution:	Not Applicable
Vapor density (Air=1.0):	Not Applicable
Percent Volatility of Solution:	Not Applicable
Total Volatile Organic Compounds (TVOC) (G/L):	Not Applicable

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Exposure to air and moisture. Dust generation. Incompatible materials. This material is stable under expected conditions of use. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS: Strong acids, strong oxidizers, strong bases, sodium azide, acetylene, light metals, rubber, plastic.

HAZARDOUS DECOMPOSITION: Dense smoke, acrid vapors and fumes, hydrocarbons of variable composition, CO_X, NO_X and copper fumes.

11. TOXICOLOGICAL INFORMATION

NO DATA AVAILABLE ON THE SPECIFIC MIXTURE.

CONTINUOUS FILAMENT GLASS FIBERS

NIOSH RTECS No.: LK3651000
Acute Effects of Overexposure: Exposure to dust may cause irritation to eyes, skin and respiratory tract, and may cause difficulty breathing.
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.
Target Organs: Eyes, skin, respiratory system
Carcinogenicity: ACGIH A4, IARC Group 3
Special purpose glass fibers (E-Glass): ACGIH A3, IARC Group 2B
Toxicity Data: LD_{50} data not available in sources utilized.
Intratracheal lethal dose in mice > 20 mg/kg

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 or skin and hair discoloration. Ingestion may cause abdominal pain, nausea or vomiting.
Chronic Effects of Overexposure: Long-term exposures may cause skin sensitization, and respiratory, liver and kidney effects.
Target Organs: Eyes, skin, respiratory system, liver, kidneys
Carcinogenicity: Not listed as a carcinogen by IARC, ACGIH, NTP, OSHA, or NIOSH.
Toxicity Data: Mouse-Intraperitoneal LD_{50} 0.7 mg/kg

12. ECOLOGICAL INFORMATION

NO DATA AVAILABLE ON THE SPECIFIC MIXTURE.

CONTINUOUS FILAMENT GLASS FIBERS (E-GLASS)

Information not available in sources utilized.

COPPER

Ecotoxicity: LC_{50}(96h) 52-150 µg/l Rainbow Trout
LC_{50}(48h) 24-101 µg/l Daphnia Magna
LC_{50}(72h) 62.3 µg/l Green Algae
Mobility: Insoluble in water.
Persistence and Degradability: Information not available in sources utilized.
Bioaccumulation Potential: Information not available in sources utilized.

13. DISPOSAL CONSIDERATIONS

GENERAL: Follow all applicable local, national, territorial, and international regulations. As supplied, this material is not regulated as a hazardous waste under the US EPA Resource Conservation and Recovery Act (RCRA). 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 TDG

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) or the Non-Domestic Substances List (NDSL).

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES (EINECS): All of the components of this product are listed on the EINECS inventory, are no long polymers (NLP), or are polymer exempt.

ADDITIONAL OCCUPATIONAL EXPOSURE LIMITS:

See Section 8 for OSHA, ACGIH and NIOSH OELs.

Country	Continuous filament glass fibers (based on mineral wool)	Copper
Arab Republic of Egypt	Not Listed	0.1 mg/m^3 TWA Fume
Australia	Not Listed	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust
Austria	Not Listed	0.1 mg/m^3 MAK Fume 1 mg/m^3 MAK
Belgium	Not Listed	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust
Canada		
-Alberta	1.0 f/cc 8-hour OEL	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA OEL Dust 0.6 mg/m^3 STEL OEL Fume 2 mg/m^3 STEL OEL Dust
-British Columbia, Manitoba, New Brunswick, Nova Scotia, Prince Edward Island	1 f/cc 8-hour TWA 5 mg/m^3 8-hour TWA Inhalable Dust	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust
-Northwest Territory	3 f/cc 8-hour OEL 5 mg/m^3 8-hour OEL (total mass)	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust
-Ontario	1 f/cc TWAEV 5 mg/m^3 TWAEV Inhalable Dust	0.2 mg/m^3 TWAEV Fume 1 mg/m^3 TWAEV Dust
-Quebec	10 mg/m^3 VEMP (8-hour OEL)	0.2 mg/m^3 VEMP (8-hour OEL) Fume

ADDITIONAL OELs (continued)

Country	Continuous filament glass fibers (based on mineral wool)	Copper
-Saskatchewan	Not Listed	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA OEL Dust 0.6 mg/m^3 STEL OEL Fume 2 mg/m^3 STEL OEL Dust
-Yukon Territory	10 mg/m^3 8-hour OEL	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust 0.2 mg/m^3 STEL Fume 2 mg/m^3 STEL Dust
Denmark	Not Listed	0.1 mg/m^3 TWA
Finland	Not Listed	1 mg/m^3 TWA Dust
France	Not Listed	0.2 mg/m^3 VME Fume 1 mg/m^3 VME Dust 2 mg/m^3 STEL Dust
Germany	Not Listed	0.1 mg/m^3 MAK Fume 1 mg/m^3 MAK Dust
Hungary	Not Listed	0.2 mg/m^3 TWA 0.4 mg/m^3 STEL Dust
India	Not Listed	0.2 mg/m^3 TWA Fume
Italy	Not Listed	Not Listed
Japan	Not Listed	Not Listed
The Netherlands	2 f/cm^3 MAC-TGG Respirable Dust	0.2 mg/m^3 MAC-TGG Fume 1 mg/m^3 MAC-TGG Dust
Norway	Not Listed	0.1 mg/m^3 TWA Fume
The Philippines	Not Listed	1 mg/m^3 TWA Fume
Poland	Not Listed	0.1 mg/m^3 MAC TWA Fume 0.3 mg/m^3 MAC STEL Fume 1 mg/m^3 MAC TWA Dust 2 mg/m^3 MAC STEL Dust
Russia	Not Listed	0.5 ppm (1 mg/m^3) STEL Dust
Sweden	Not Listed	0.2 mg/m^3 NGV Resp. Dust 1 mg/m^3 NGV Total Dust
Switzerland	Not Listed	0.1 mg/m^3 MAK Week Fume 0.2 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	Not Listed

ADDITIONAL OELs (continued)

Country	Continuous filament glass fibers (based on mineral wool)	Copper
United Kingdom	Not Listed	0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust/Mist 2 mg/m^3 STEL Dust/Mist 1 mg/m^3 TWA Week 3 mg/m^3 STEL Week
Argentina, Bulgaria, Colombia, Jordan, Korea, New Zealand, Singapore, Vietnam	1 f/cc 8-hour TWA 5 mg/m3 8-hour TWA Inhalable Dust	Use the ACGIH TLV of 0.2 mg/m^3 TWA Fume 1 mg/m^3 TWA Dust

16. OTHER INFORMATION

HAZARD CLASSIFICATIONS:
X_i=Irritant
N=Dangerous for the Environment

R-PHRASES:
R36/37/38-Irritating to eyes, respiratory system and skin
R50/53-Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Precautionary Statements:
P264 – Wash hands thoroughly after handling.
P273 – Avoid release to the environment.
P280 – Wear protective gloves.
P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 – If skin irritation occurs: Get medical advice/attention.
P337 + P313 – If eye irritation persists: Get medical advice/attention.
P362 – Take off contaminated clothing and wash before reuse.
P391 – Collect spillage.
P501 – Dispose contents/container in accordance with local, national, provincial, territorial, and international regulations.

Current MSDS Revision Date: November 9, 2011
Previous MSDS Date(s): October 6, 2008; September 6, 2005; February 1, 2002; December 7, 1998