



SAFETY DATA SHEET

This SDS complies with REACH 1907/2006 and 2001/58/EC, GHS, OSHA 29CFR 1910.1200

Section 1: Chemical Product and Company Identification

MANUFACTURER'S NAME

Isola USA Corporation
San Tan Corporate Center
3100 West Ray Road
Chandler, Arizona 85226
Safety Data Sheet Competent Person:

EMERGENCY TELEPHONE

INFOTRAC U.S.-Canada: 800-535-5053

Information: 480-963-0022
Fax: 800-233-1068
J. Neil Smith: neil.smith@isola-group.com

DATE PREPARED: September 3, 2014

REVISION DATE: September 3, 2014

PRODUCT NAME:

Tachyon 100G LAMINATE

FORMULA:

Preparation/Mixture

PRODUCT USE:

Resin impregnated woven fiberglass used in the manufacture or copper-clad laminate for printed circuit boards.

Section 2: Hazards Identification

GHS Hazard Class

Not Applicable. This product does not meet the physical, health, or environmental classification criteria of GHS (Globally Harmonized System).

Signal word:

Not Applicable

Hazard Statement:

Not Applicable

Precautionary Statements:

Prevention	No Precautionary statement
Response	No Precautionary statement
Storage	No Precautionary statement
Disposal	No Precautionary statement

HAZARD CLASSIFICATION:

Not classified as hazardous based on IATA, IMDG, and DOT.

FIRE AND EXPLOSION:

Not considered flammable or combustible, but this product will burn if involved in a fire. Product emits toxic fumes when burned.

POTENTIAL HEALTH EFFECTS:

<0 % of mixture consists of ingredients of unknown acute toxicity
Possible routes of entry include skin & eye contact and process vapor or dust inhalation

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). May cause eye, skin, and respiratory and digestive tract irritation. Long-term or repeated exposure may have effects on the lungs, including pneumoconiosis.

Machining, grinding or sawing this material may generate harmful dusts. See Section 8 for exposure controls.

INGESTION:

May be harmful if swallowed.

INHALATION:

May be harmful if inhaled. Causes respiratory tract irritation.

SKIN CONTACT:

May cause skin irritation.

EYE CONTACT:

Eye irritation may result.

OTHER: Improper handling by heating over 150°C or contact with strong acids and basic compounds can result in the formation of toxic compounds.

Temperatures above 500°C on air can cause chemical decomposition resulting in the formation of toxic compounds - compounds see chapter 16.1. Strong acids or bases may cause the formation of soluble toxic compounds. Grinding debris and other waste of glass must be disposed consistent with applicable regulations. Processing of glass, damage or breakage can result in sharp edges. This may cause cuts. Processing of glass can result in glass dust. Acute effects: Respiratory irritation. Chronic effects: Possible pneumoconiosis effects.

CHRONIC EFFECTS OF OVEREXPOSURE:

None

APPEARANCE:

Off white to beige solid

NFPA Rating:

Component	Health (Blue)	Flammability (Red)	Reactivity (Yellow)	Special (White)
Tachyon 100G LAMINATE	1	0	0	--



Section 3: Composition, Information on Ingredients

PRODUCT COMPOSITION	APPRX %	ACGIH TLV	OSHA PEL	NIOSH REL	CAS NO.	EINECS/ELINCS/REACH	DANGER SYMBOL	RISK PHRASE	DSL CANADA	TSCA
Woven Continuous Filament Glass Fiber (E-glass) (Non Respirable)	20-60	-----	-----	-----	65997-17-3	266-046-0	-----	-----	Y	Y
Copper Foil	10-60	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	0.1 mg/m ^{3(d)} TWA ^(e) Fume 1 mg/m ^{3(d)} TWA ^(e) Dust/Mist	7440-50-8	231-159-6	-----	-----	Y	Y
Proprietary Flame Retardant	2-14	-----	-----	-----	TS	Y/N	-----	-----	Conditional*	Y
Proprietary Resin	25-55	-----	-----	-----	TS	Y/N	-----	-----	N	Y
Proprietary filler	2-20	-----	0.01 mg/m ³ 20 Million particles per cubic foot	-----	TS	Y/N	-----	-----	Y	Y

Trade Secret (TS) Some items on this MSDS may be designated as trade secrets. Bonafide requests for disclosure of trade secret information to medical personnel must be made in accordance with the provisions contained in 29 CFR 1910.1200 I 1-13. The full text for all R-Phrases is shown in Section 16.

Conditional* Condition - The Minister of the Environment has imposed a Ministerial Condition pertaining to manufacturers of this substance. The Condition does not apply Tachyon 100G

Section 4: First Aid Measures

INHALATION:	Remove to fresh air. If not breathing, provide CPR (cardio pulmonary resuscitation). Get immediate medical attention.
SKIN CONTACT:	Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing.
EYE CONTACT:	Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention if irritation persists.
INGESTION:	If swallowed do not induce vomiting, give large quantities of water to drink. Never give anything to an unconscious person. Get immediate medical attention.

Section 5: Fire-fighting Measures

FLASH POINT:	Not applicable
FLAMMABLE LIMITS IN AIR (% by vol):	Not applicable
EXTINGUISHING MEDIA:	Foam, Dry Chemical Powder, or Carbon Dioxide
SPECIAL FIREFIGHTING PROCEDURES:	None
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Emits toxic fumes under fire conditions.

Section 6: Accidental Release Measures

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Wear proper protective equipment as specified in Section 8: Exposure Controls/Personal Protection
If material is released or spilled, sweep, or vacuum material and place in closed containers for subsequent reuse or disposal.

DISPOSAL METHOD: disposal should be made in accordance with federal, state and local regulations.



Section 7: Handling and Storage

PRECAUTIONS TO BE TAKEN IN 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.

INFORMATION ON EMPTIED CONTAINER: Not applicable

SPECIFIC USES: Resin impregnated woven fiberglass used in the manufacture or copper-clad laminate for printed circuit boards.

Section 8: Exposure Controls/Personal Protection

VENTILATION: Provide general ventilation and local exhaust ventilation to meet TLV requirements of individual ingredients (see Section 2) and to control dusting conditions. If cutting or trimming with power equipment, dust collectors and local ventilation should be used. Avoid unnecessary exposure to dust and handle with care. Keep work area clean of dust and fibers by using an industrial vacuum cleaner with high efficiency filter or wetting down area with water. Never use compressed air and avoid dry sweeping.

EYE PROTECTION: Wear safety glasses with side shields Always provide good general, mechanical room ventilation where this chemical/material is used.

RESPIRATORY PROTECTION: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or the CEN European Standards (EU). Use a NIOSH/MSHA or European Standard (EN) approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

PROTECTIVE GLOVES: Recommend use of impervious gloves.

EYE PROTECTION: Recommend eye protection using safety glasses or goggles.

SKIN PROTECTION: Suitable protective clothing to prevent skin contact

WORK/HYGIENE PRACTICES: Provide good personal hygiene after handling. Avoid contact with eyes. Wash hands after handling.

EXPOSURE LIMITS Reference Section 2

OTHER EQUIPMENT: Make safety shower, eyewash stations, and hand washing equipment available in the work area.

Section 9: Physical and Chemical Properties

APPEARANCE - COLOR: Reinforced resin / copper laminate

PHYSICAL STATE: Solid

ODOR: Odorless

PRODUCT CRITERIA

	PRODUCT CRITERIA
ODOR THRESHOLD	Not Available for product
PH	Not Available for product
FLASH POINT:	Not Available for product
LOWER EXPLOSIVE LIMIT; UPPER EXPLOSIVE LIMIT	Not Available for product
FLAMMABILITY (Solid, gas)	Not Available for product
EXPLOSIVE PROPERTIES	Not Available for product
OXIDIZING PROPERTIES	Not Available for product
SPECIFIC GRAVITY (@25 °C):	Not Available for product
EVAPORATION RATE:	Not Available for product
% VOLATILE by VOLUME	Not Available for product
PARTITION COEFFICIENT	Not Available for product
AUTO IGNITION TEMPERATURE	Not Available for product
DECOMPOSITION TEMPERATURE	Not Available for product
BOILING POINT:	Not Available for product
MELTING POINT:	Not Available for product
VAPOR PRESSURE	Not Available for product
VAPOR DENSITY (AIR = 1)	Not Available for product



SOLUBILITY IN WATER:	Insoluble
WATER SOLUBILITY IN THE SOLVENT	Not Available for product
FREEZING POINT:	Not Available for product
VISCOSITY	Not Available for product
VOC CONTENT	Not Available for product
VOLATILITY %	Not Available for product

Section 10: Stability and Reactivity

STABILITY:	Stable
CONDITIONS TO AVOID:	Avoid exposure to heat, flames, sparks and other ignition sources. Hazardous polymerization will not occur. Avoid contact with incompatible materials. Avoid dust generation.
HAZARDOUS DECOMPOSITION PRODUCTS:	Dense smoke, acrid vapors and fumes, aliphatic and aromatic hydrocarbons of variable composition, silicon dioxide, CO _x , NO _x .
HAZARDOUS POLYMERIZATION:	Will not occur
INCOMPATIBLE MATERIALS:	Strong acids, strong bases, strong oxidizers, amines, and some metallic salts.
EXOTHERMIC REACTION FIGHTING PROCEDURES:	Dissipate heat by spreading material apart and dousing with water. Contain vapors with local exhaust.

Section 11: Toxicological Information

There is no toxicological information available for the product mixture.

GHS Required Criteria	Toxicity Criteria	Toxicity Information	Comments	Chemical Constituent
Acute Toxicity	TDLo Implant Rabbit	20 mg/kg		Proprietary Filler
	LDLo (Intraperitoneal/rat)	400 mg/kg		Proprietary Filler
	TCLo (Inhalation/rat)	197 mg/m ³		Proprietary Filler
	LD50 Oral/Rat	>5000 mg/kg		Proprietary Resin
	LD50 Dermal/Rat	>2000 mg/kg		Proprietary Resin
	LD50 Dermal/Rat	>5000 mg/kg		Glass Fiber
	LD50 Ingestion	2,000-5,000 mg/kg		Glass Fiber
		269 mg/kg		Copper oxide
Skin Corrosion/Irritation		Data Not Available		
Serious Eye Damage / Eye Irritation		Data Not Available		
Respiratory or Skin Sensitization		Data Not Available		
Germ Cell Mutagenicity		Data Not Available		
Carcinogenicity		Data Not Available		
	Amorphous silica: Vitreous silica, quartz glass, fused silica Group 3: Not classifiable as to its carcinogenicity to humans (Silica, vitreous)		IARC	Proprietary Filler
	Group 2A: Probably carcinogenic to humans (Glass, oxide, chemicals)			Glass Fiber
Reproductive Toxicity		Data Not Available		
STOST -- Single Exposure	Inhalation - May cause respiratory irritation.			Proprietary Filler
	Inhalation - May cause respiratory irritation.			Glass Fiber
STOST - Repeated Exposure	Inhalation - May cause damage to organs through prolonged or repeated exposure. - Lungs			Proprietary Filler
Aspiration Hazard		Data Not Available		
Ames test		Data Not Available		

STOST = Specific Target Organ Systemic Toxicity

Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.



Section 12: Ecological Information

BIODEGRADATION:	No Information available	
BIOACCUMULATION:	No Information available	
ECO TOXICITY:	>1000ppm (daphnia magna) (24-hr acute immobilization test) Slight to very low toxicity.	Proprietary Filler
	>10,000 ppm (rainbow trout) (4 day static study) Slight to very low toxicity	Proprietary Filler
	LC ₅₀ (96h) 52-150 µg/l Rainbow Trout	Copper
	LC ₅₀ (48h) 24-101 µg/l Daphnia Magna	Copper
	LC ₅₀ (72h) 62.3 µg/l Green Algae	Copper
	>10,000 ppm (freshwater fish) (96 hour static acute toxicity study) Slight to very low toxicity	Proprietary Filler
MOBILITY:	No Information available	

Note: all of the ingredients have been tested for Ecotoxicity.

Section 13: Disposal Considerations

WASTE FROM RESIDUES / UNUSED PRODUCTS:

Follow the waste disposal requirements of your country, state, or local authorities.

CONTAMINATED PACKAGING:

Recommend contaminated packaging material should be disposed of as stated above for residues and unused product.

RINSATE: Do not dispose of rinse water containing product in a sanitary sewer system or storm water drainage system.

Section 14: Transport Information

DOT TRANSPORT: Not Regulated

ADR = International Carriage of Dangerous Goods by Road Not Regulated

RAIL TRANSPORT: Not Regulated

SEA TRANSPORT: IMDG Not Regulated

AIR TRANSPORT: IATA/ICAO Not Regulated

Section 15: Regulatory Information

Directive 1999/45/EC Not applicable

LABEL FOR SUPPLY: None

RISK PHRASES: None

TOXIC SUBSTANCES CONTROL ACT (TSCA) STATUS:

This product is in compliance with rules, regulations, and orders of TSCA. All components are listed on the TSCA Inventory.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA) TITLE III SECTION 313 SUPPLIER NOTIFICATION:

This regulation requires submission of annual reports of toxic chemical(s) that appear in section 313 of the Emergency Planning and Community Right To Know Act of 1986 and 40 CFR 372. This information must be included in all MSDS's that are copied and distributed for the material.

The Section 313 toxic chemicals contained in this product are: None

CALIFORNIA PROPOSITION 65:

This regulation requires a warning for California Proposition 65 chemical(s) under the statute.

The California proposition 65 chemical(s) contained in this product are: Toluene

STATE RIGHT-TO-KNOW TOXIC SUBSTANCE OR HAZARDOUS SUBSTANCE LIST:

Florida Toxic Substance(s):	Not listed
Massachusetts's hazardous substance(s):	60676-86-0
Pennsylvania hazardous substance code(s):	Proprietary Resin, 60676-86-0, 65997-17-3
New Jersey	Proprietary Resin, 60676-86-0, 65997-17-3
Illinois	Not listed
Michigan	Not listed



CANADA:

This MSDS/SDS will be non-compliant 3 years after the issue date. This MSDS contains all of the information required by the Controlled Products Regulations (CPR).

WHMIS-INFORMATION:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR), SOR/88-66, Current to February 20, 2012. The classes of controlled products listed in the CPR, Section 32, Part IV, have been reviewed and based on Professional Judgment this product has been determined to be WHMIS controlled.

Canadian WHMIS for the preparation:

- Class D, Division 2A – Very Toxic Material Causing Chronic Toxic Effects
- Class D, Division 2B – Toxic Material Causing Eye and Skin Irritation and Skin Sensitization

EUROPEAN UNION:

This product has been reviewed for compliance with the following European Community Directives: REACH 1907/2006; Directive 1999/45/EC, Regulation (EC) No 1272/2008 on classification, labeling and packaging (CLP) of substances and mixtures.

WGK: 0 (German Federal Water Management Act) (Water Hazard Class)

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
-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

ADDITIONAL OELs (continued)

Country	Continuous filament glass fibers (based on mineral wool)	Copper
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
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/m ³ 8-hour TWA Inhalable Dust	Use the ACGIH TLV of 0.2 mg/m ³ TWA Fume 1 mg/m ³ TWA Dust

Section 16: Other Information

European Community Hazards Identification:

R: None
S: None
Danger Symbol(s): None

Revision Comments: Initial version September 3, 2014
Revision Number: 0
Information Sources: RTECS, REACH, OSHA 29CFR 1910.1200

FOR INDUSTRIAL USE ONLY

DISCLAIMER: The information contained in this MSDS relates specifically to the product as a whole and may not be valid if used in combination with other materials or in any specified process. The information on TACHYON 100G is accurate to the best of our knowledge but does not purport to be all inclusive and should only be used as a general guide. It is the user's responsibility to ensure that the product will be suitable for particular usage. The user assumes all responsibility for compliance with applicable Federal, State and Local Regulations. We do not accept liability for damage or loss that may occur from the use of this information.

