



PRODUCT SAFETY INFORMATION SHEET

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

TRADE NAME: TC Series™ Laminates

CHEMICAL FAMILY: Polytetrafluoroethylene Composite

HMIS RATING: H 1 F 1 R 0

USE OF ARTICLE Printed Circuit Boards

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2. HAZARDS IDENTIFICATION

CLASSIFICATION OF THE MATERIAL: NE

LABELING REQUIREMENTS: NE

EFFECTS OF OVEREXPOSURE: None are expected with normal handling. Cutting and other finishing operations may create dust. Ventilation and personnel protection should be similar to all operations generating nuisance dust. Processing material at temperatures exceeding decomposition temperature may release toxic fumes.

INHALATION: Dust may cause respiratory irritation. Remove to fresh air and seek medical attention if necessary. Exposure to copper fume or PTFE decomposition products may cause symptoms of metal or Polymer Fume Fever. This is characterized by flu like symptoms (fever, chills, muscle aches) that last 24 hours.

EYE CONTACT: Dust may cause irritation. Flush eyes with water and seek medical attention if necessary.

SKIN CONTACT: Dust may cause irritation. Wash thoroughly with soap and water.

INGESTION: None known.

CHRONIC: NE

3. COMPOSITION/INFORMATION ON INGREDIENTS

This material is produced as an "article" as defined in 29 CFR 1910.1200 and REGULATION (EC) N° 1907/2006 is therefore exempt from the Hazard Communication Standard and REACH. Since this material does not release and will not result in exposure to a hazardous chemical under normal conditions of use, no Safety Data Sheet is required.

<u>Chemical Name</u>	<u>CAS No.</u>	<u>EINECS /ELINCS</u>	<u>%</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Polytetrafluoroethylene	9002-84-0	204-126-9	Varies	NE	NE
Fiberglass	65997-17-3	266-046-0	Varies	5 mg/m ³ (Resp. Dust)	1 f/cc (Resp. Fibers)
Amorphous Silica	60676-86-0	262-373-8	Varies	5 mg/m ³ (Resp. Dust)	3 mg/m ³ (Resp. Dust)
Aluminum Oxide	1344-28-1	215-691-6	Varies	5 mg/m ³ (Resp. Dust)	1 mg/m ³ (Resp. Dust)
Titanium Dioxide	13463-67-7	NA	Varies	15 mg/m ³ (Total Dust)	NE
Boron Nitride	10043-11-5	NA	Varies	NE	NE
Ceramic filler	NA	NA	Varies	15 mg/m ³ (Total Dust)	10 mg/m ³ (Total Dust)
Copper Foil (Dust)	7440-50-8	231-159-6	Varies	1 mg/m ³	1 mg/m ³

4. FIRST-AID MEASURES

INHALATION:	Remove to fresh air. Obtain medical attention if symptoms persist.
EYE CONTACT:	Flush eyes with large amounts of water for 15 to 20 minutes. Obtain medical attention if symptoms persist.
SKIN CONTACT:	Immediately take off all contaminated clothing and flush area with water for 15 to 20 minutes. Obtain medical attention if symptoms persist.
INGESTION:	NA

5. FIRE-FIGHTING MEASURES

FLASH POINT:	NE °C (°F)	Flammable Limits:	LEL	<u>NA</u>	UEL	<u>NA</u>
AUTOIGNITION TEMPERATURE:	NE °C (°F)					
EXTINGUISHING MEDIA:	<u>X</u> Water Spray <u>X</u> Foam <u>X</u> CO ₂ <u>X</u> Dry Chemical <u>X</u> Other –					
SPECIAL FIRE FIGHTING PROCEDURES:	Decomposition in a fire may produce toxic fumes. Firefighters should be equipped with self-contained breathing apparatus and turnout gear.					
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None known.					

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:	In case of fire, toxic fumes are emitted. Wear suitable protective equipment. Do not breathe dust. Eliminate sources of ignition. Avoid contact with skin and eyes.
ENVIRONMENTAL PRECAUTIONS:	Prevent from entering sewer system, surface water, or soil.
CLEANING METHODS:	Sweep or shovel into appropriate container for disposal. Avoid creation of nuisance dust.

7. HANDLING AND STORAGE

HANDLING:	Wear suitable protective equipment, refer to Section 8.
STORAGE:	Keep in a cool, well-ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION:	None needed under normal conditions. If material is heated and odors are noticeable and/or irritating a respirator meeting NIOSH requirements should be used. A qualified individual should evaluate each situation.
<u>VENTILATION</u>	
LOCAL:	Recommended for all industrial operations.
GENERAL:	Recommended for all industrial operations.
<u>PERSONAL PROTECTION</u>	
HAND:	Gloves to avoid skin contact if desired.
EYE:	Safety glasses with side-shields are recommended in all industrial operations
SKIN:	None Required
OTHER:	Safety shower/eyewash in the area.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Board (various colors) clad with copper
ODOR:	None
PHYSICAL STATE:	Solid
BOILING POINT:	NA °C (°F)
MELTING POINT:	327 °C (°F)
FREEZING POINT:	NA °C (°F)
FLASH POINT:	NE °C (°F)
WATER SOLUBILITY:	In-Soluble
VAPOR DENSITY:	NA
VAPOR PRESSURE:	NA
SPECIFIC GRAVITY:	2.3 – 2.9 (Water = 1)
PARTITION COEFFICIENT:	NA
EVAPORATION RATE:	NA
RELATIVE DENSITY:	NA
VISCOSITY:	NA
AUTO-IGNITION TEMPERATURE:	NA °C (°F)
DECOMPOSITION TEMPERATURE:	NA °C (°F)
PH:	NA
FLAMMABILITY:	NA

10. STABILITY AND REACTIVITY

STABLE X UNSTABLE

CONDITIONS TO AVOID: PTFE begins to decompose above 500°F and increases rapidly above 750°F. Processing at these temperatures for prolonged periods of time is not recommended.

MATERIALS TO AVOID: NE

HAZARDOUS POLYMERIZATION: _____ May Occur X Does Not Occur

HAZARDOUS DECOMPOSITION PRODUCTS:

11. TOXICOLOGICAL INFORMATION

CARCINOGENIC STATUS: Fiberglass (continuous filament): IARC Group 3 (unclassifiable as to carcinogenicity to humans).

ACUTE/CHRONIC: NE

REPRODUCTIVE HAZARDS: NE

Decomposition may emit hydrofluoric acid, tetrafluoroethylene, hexafluoropropylene, perfluoroisobutylene, and carbonyl fluoride.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: NE

13. DISPOSAL CONSIDERATION

PHYSICAL/CHEMICAL PROPERTIES AFFECTING DISPOSAL: None

ENVIRONMENTAL TOXICITY DATA: NE

WASTE DISPOSAL METHOD: Dispose of in accordance with applicable federal, state, provincial, and local laws and regulations.

14. TRANSPORT INFORMATION

UN NUMBER: Not Regulated

UN PROPER SHIPPING NAME: Not Regulated

HAZARD CLASS (ES): Not Regulated

PACKING GROUP: Not Regulated

ENVIRONMENTAL HAZARDS: NE

15. REGULATORY INFORMATION

INTERNATIONAL REGULATIONS:

Canadian (DSL/NDSL): Article - exempt

Australian (ACIS): Article - exempt

Korea (KECI): Article - exempt

Japan (ENCS, MITI): Article - exempt

China (IECSC): Article - exempt

TSCA (Toxic Substances Control Act): All materials are listed or exempt from TSCA listing.

CERCLA (Comprehensive Emergency Response, Compensation, and Liability Act): NA

SARA TITLE III (Superfund Amendments and Reauthorization Act): NA

311/312 HAZARD CATEGORIES: None

This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and 40 CFR 372:

<u>CAS #</u>	<u>CHEMICAL NAME</u>	<u>PERCENT BY WEIGHT</u>
7440-50-4	Copper	Varies

16. OTHER INFORMATION

NA = Not Applicable

FILE: 99374-TC Series™ Laminates -05032019 Rev 1

NE = Not Established

NC = Not Classified

PREPARED BY: EHS Department

Date Prepared: 05/03/2019

REVIEWED BY: EHS Department

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