



PRODUCT SAFETY INFORMATION SHEET

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

TRADE NAME: TMM® Series Laminates
CHEMICAL FAMILY: Hydrocarbon/Mineral Composite
HMIS RATING: H 1 F 0 R 0
USE OF ARTICLE Printed Circuit Boards
DATE ISSUED: February 19, 2018
COMPANY/UNDERTAKING IDENTIFICATION: Rogers Corporation
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2. HAZARDS IDENTIFICATION

CLASSIFICATION OF THE MATERIAL: NE
LABELING REQUIREMENTS: NE
EFFECTS OF OVEREXPOSURE: None anticipated with normal handling. Machining may create dust. Processing material at temperatures exceeding decomposition temperature may release toxic fumes.
INHALATION: Dusts may cause respiratory irritation. 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 about 24 hours.
EYE CONTACT: Dust may cause mechanical irritation.
SKIN CONTACT: Dust may cause mechanical irritation.
INGESTION: None known.
CHRONIC: IARC has classified Glass filament, continuous as Class 3 (Not classifiable as to its carcinogenicity to humans). Chronic exposure to finely divided particles of soluble barium may cause poisoning (i.e. vomiting, colic, diarrhea, convulsive tremors, etc.). Trace amounts of barium may be present in this product; however, barium poisoning is unlikely.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This material is produced as an "article" as defined in 20 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>	<u>EU Classification</u>
<u>DIELECTRIC</u>						

Fused Silica	60676-86-0	262-373-8	Varies	5 mg/m ³ (Resp. Dust)	3 mg/m ³ (Resp. Dust)	Not Classified Under 67/548/EEC
Barium Titanate	12047-27-7	234-975-0	Varies	5 mg/m ³ (Resp. Dust)	3 mg/m ³ (Resp. Dust)	Not Classified Under 67/548/EEC
Barium Oxide	1304-28-5	215-127-9	<2	0.5 mg/m ³ (as soluble Ba)	0.5 mg/m ³ (as soluble Ba)	Not Classified Under 67/548/EEC
Microfiber Glass (Encapsulated in a Polymer Matrix)	65997-17-3	266-046-0	Varies	5 mg/m ³ (Resp. Dust)	1 f/cc	Not Classified Under 67/548/EEC
CLADDING (Copper, Aluminum or Brass)						
Copper	7440-50-8	231-159-6	Varies	1 mg/m ³ (dust and mist)	1 mg/m ³ (dust and mist)	Not Classified Under 67/548/EEC
Aluminum	7429-90-5	231-072-3	Varies	5 mg/m ³ (Resp. Dust)	1 mg/m ³ (Resp. Dust)	Not Classified Under 67/548/EEC (only Al powder is Classified)
Zinc (Component of Brass)	7440-66-6	231-175-3	Varies	5 mg/m ³ (ZnO fume)	2 mg/m ³ (as ZnO)	Not Classified Under 67/548/EEC

4. FIRST-AID MEASURES

INHALATION:	(Dust & Fume) Remove to fresh air. Obtain medical attention if symptoms persist.
EYE CONTACT:	(Dust) Flush immediately with large amounts of water for 15 to 20 minutes. Do not rub eyes. Obtain medical attention if symptoms persist.
SKIN CONTACT:	(Dust) Remove contaminated clothing and flush area with water for 15 to 20 minutes. Obtain medical attention if symptoms persist.
INGESTION:	(Dust) Obtain medical attention if symptoms persist.

5. FIRE-FIGHTING MEASURES

FLASH POINT:	NE °C (°F)	Flammable Limits: NE
AUTOIGNITION TEMPERATURE:	NE °C (°F)	
EXTINGUISHING MEDIA:	X Water Spray	X Foam
	X Dry Chemical	X CO ₂
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 airborne 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:	If mechanical ventilation is absent or inadequate to maintain exposure levels below those listed in Section 2, or if odors are objectionable, use NIOSH/MSHA approved respirators. A qualified individual should evaluate each situation.
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VENTILATION

LOCAL:

Recommended for all industrial operations.

GENERAL:

Recommended for all industrial operations.

PERSONAL PROTECTION

HAND:

Cut resistant gloves.

EYE:

Safety glasses with side-shields are recommended in all industrial operations.

SKIN:

None required.

OTHER:

Safety shower/eyewash in the area. Do not smoke or keep smoking materials in areas where material is machined or excessive dusting occurs. Wash thoroughly before eating or smoking.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Gray or White Solid Sheet Clad with Copper, Aluminum or Brass

ODOR:

Slight Solvent-Like

PHYSICAL STATE:

Solid

BOILING POINT:

NA °C (°F)

MELTING POINT:

NE °C (°F)

FREEZING POINT:

NA °C (°F)

FLASH POINT:

NE °C (°F)

WATER SOLUBILITY:

In-Soluble

VAPOR DENSITY:

NA

VAPOR PRESSURE:

NA

SPECIFIC GRAVITY:

NE (Water = 1)

PARTITION COEFFICIENT:

NA

EVAPORATION RATE:

NA

RELATIVE DENSITY:

NA

VISCOSITY:

NA

AUTO-IGNITION TEMPERATURE:

NE °C (°F)

DECOMPOSITION TEMPERATURE:

NE °C (°F)

PH:

NA

FLAMMABILITY:

NE

10. STABILITY AND REACTIVITY

STABILITY

Stable

CONDITIONS TO AVOID:

None under normal use.

MATERIALS TO AVOID:

NE

HAZARDOUS POLYMERIZATION:

Does not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:

Possible products of combustion include carbon monoxide and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

CARCINOGENIC STATUS:

IARC has classified Glass filament, continuous as Class 3 (Not classifiable as to its carcinogenicity to humans).

12. ECOLOGICAL INFORMATION

ECOTOXICITY:

NE

13. DISPOSAL CONSIDERATION

PHYSICAL/CHEMICAL PROPERTIES AFFECTING DISPOSAL:

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/NDL): Article - exempt
Australian (ACIS): Article - exempt
Korea (KECI): Article - exempt
Japan (ENCS, MITI): Article - exempt
China (IECSC): Article - exempt
EU Directive 2011/65/EC (RoHS): Does not contain any intentionally added substances mentioned by the RoHS directive.

European:
Symbol: Not classified according to directive 1999/45/EC & 2001/60/EC (dangerous preparations).

R-Phase(s): NA

S-Phase(s): NA

TSCA: All materials are listed or exempt from TSCA listing.

(Toxic Substances Control Act):

CERCLA: NA

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

SARA TITLE III: NA

(Superfund Amendments and Reauthorization Act):

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>
7429-90-5	Aluminum	Varies
7440-50-4	Copper	Varies
7440-66-6	Zinc	Varies
NA	Barium Compound	<77

16. OTHER INFORMATION

NA = Not Applicable

NE = Not Established

NC = Not Classified

Date Prepared: 05/06/2014

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REVIEWED BY: EHS Department

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