



MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: M-Bond 600 Adhesive

October 21, 2005

Vishay Micro-Measurements
Post Office Box 27777
Raleigh, NC 27611

MSDS # MGM011J

919-365-3800

CHEMTREC 1-800-424-9300 (U.S.)
703-527-3887 (Outside U.S.)

NOTE: CHEMTREC numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

SECTION 2: HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

CAS NUMBER	CHEMICAL IDENTITY	%
109-99-9	Tetrahydrofuran	50.2
28064-14-4	Epoxy Novolac	32.0-36.2
78-93-3	Methyl Ethyl Ketone	13.5-17.8

SECTION 3: HEALTH HAZARD DATA

Routes of Entry:

Inhalation: YES **Skin:** YES **Ingestion:** Accidental

Health Hazards (Acute and Chronic): Chronic over-exposure may result in kidney and/or liver damage.

Carcinogenicity:

NTP:	Not listed
IARC Monographs:	Not listed
OSHA Regulated:	Not listed

Signs and Symptoms of Exposure:

INHALATION: Excessive exposure to solvents may cause respiratory irritation and central nervous system depression. Signs and symptoms of central nervous system depression, in order of increasing exposure, are headaches, dizziness, drowsiness, and incoordination. Signs and symptoms of excessive exposure may be nausea and/or vomiting.

EYE CONTACT: May cause severe irritation or burns.

SKIN CONTACT: May cause severe irritation or burns. Absorption into the skin may cause dermatitis. Repeated contact may cause drying or flaking of skin. May rarely cause an allergic skin reaction.

INGESTION: May cause headache, nausea, vomiting, dizziness, gastrointestinal irritation.

Medical Conditions Generally Aggravated by Exposure: Skin disorders, respiratory system disease.

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES
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INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open.

SKIN CONTACT: In case of contact, flush skin with water while removing contaminated clothing. Wash affected area with soap and water. Launder contaminated clothing before reuse.

INGESTION: Call a physician. If swallowed, do **NOT** induce vomiting unless directed to do so by a physician. If conscious, give large amounts of water.

SECTION 5: FIRE AND EXPLOSION HAZARD DATA
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Flash Point (Method Used): 6°F (-14°C) PMCC

Autoignition Temperature: 610°F (320°C)

Flammable limits: LFL: 1.8 UFL: 11.8

Extinguishing Media: Alcohol foam, dry chemical, carbon dioxide. Water may be ineffective.

Special Firefighting Procedures: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

Unusual Fire and Explosion Hazards: Vapors may flow along surfaces to distant ignition source and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire. May form explosive peroxides, especially when heated.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled: Keep unnecessary people away; isolate hazard area. Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources; no flares, smoking or flames in area. Stop leak if you can do so without risk. Keep out of storm drains, surface waters and soil. Use water spray to reduce vapors. Take up with sand or other non-combustible absorbent material and place into container for later disposal. Flush area with water.

SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

Respiratory Protection: Respiratory protection required if airborne concentration exceeds TLV. At concentrations up to 1000 ppm, a chemical cartridge respirator with organic vapor cartridge is recommended. Above this level, a self-contained breathing apparatus is recommended.

Ventilation: Use only with adequate ventilation.

Local Exhaust: Keep below TLV

Mechanical: Keep below TLV

Special: N/A

Other: N/A

Protective Gloves: Use gloves impervious to this material when prolonged or frequently repeated contact could occur. Neoprene gloves are recommended.

Eye Protection: Chemical splash goggles are recommended.

Other Protective Clothing or Equipment: Impervious over-clothing as needed to prevent skin contact. Safety shower and eye wash station in local area.

Work / Hygienic Practices: Wash thoroughly after using.

SECTION 8: HANDLING AND STORAGE

Precautions to be taken in handling and storing: Keep containers tightly closed. Store in a cool, dry, well-ventilated, flammable liquid storage area. Take precautionary measures against static discharges. Keep away from open flames and spark producing equipment. Keep product out of light.

Other Precautions: Keep containers tightly sealed when not in use. Bond and ground containers when transferring liquid. Use caution when opening cap. Avoid prolonged exposure to vapors and skin contact. Avoid breathing vapors.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	150°F (66°C)
Vapor Pressure (mmHg):	129 @ 68°F (20°C)
Vapor Density (Air = 1):	2.4
Specific Gravity (H₂O = 1):	0.9
Melting Point:	N/A
Evaporation Rate (BuAc = 1):	8.0
Volatile Organic Compounds:	598g/liter
Solubility in Water:	Appreciable (more than 50%)

Appearance and Odor: Colorless liquid; ether-like odor.

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable.

Conditions to Avoid: Heat, flame, other sources of ignition, light, air. Avoid subjecting resin to temperatures above 90°F/32°C due to presence of volatile methyl ethyl ketone.

Incompatibility (Materials to Avoid): Acids, strong oxidizing agents, strong bases, strong reducing agents.

Hazardous Decomposition or By-products: Carbon monoxide, carbon dioxide, explosive peroxides, phenolics.

Hazardous Polymerization: Will not occur by itself, but masses of more than one pound of product plus an aliphatic amine will cause irreversible polymerization with considerable heat buildup.

SECTION 11: TOXICOLOGICAL INFORMATION

Tetrahydrofuran

OSHA PEL:	200 ppm (TWA)
ACGIH TLV:	200 ppm
OTHER:	250 PPM (STEL)
	LD ₅₀ IPR (RAT) 2900 mg/kg
	LD ₅₀ INHAL (RAT) 78 g/m ³

Epoxy Novolac

OSHA PEL:	Not established
ACGIH TLV:	Not established
Other:	LD ₅₀ SKIN (RABBIT) >2000 mg/kg
	LD ₅₀ ORAL (RAT) >4000 mg/kg

Methyl Ethyl Ketone

OSHA PEL: 200 ppm (TWA)
 ACGIH TLV: 200 ppm
 OTHER: 300 ppm (STEL)
 LD₅₀ ORAL (RAT) 2737 mg/kg
 LD₅₀ IPR (MOUSE) 616 mg/kg
 LD₅₀ SKIN (RABBIT) 13 g/kg

SECTION 12: DISPOSAL CONSIDERATIONS
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Waste Disposal Method: Do not dump into any sewers, on the ground, or into any body of water. All disposal methods must be in accordance with all local, state and federal environmental regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility of the waste generator.

SECTION 13: TRANSPORTATION INFORMATION

SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Flammable Liquid, N.O.S. (Tetrahydrofuran / Ethyl Methyl Ketone) (Methyl Ethyl Ketone) Flammable Liquid	3	II	1993

SECTION 14: REGULATORY INFORMATION

SECTION 313 SUPPLIER NOTIFICATION:

This product contains a toxic chemical or chemicals (as listed below) subject to the reporting requirements of Section 313 Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

CAS NUMBER	CHEMICAL NAME	% BY WEIGHT
78-93-3	Methyl Ethyl Ketone	13.5-17.8

TSCA NOTIFICATION:

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA).

SECTION 15: OTHER INFORMATION

To the best of our knowledge, the information provided above meets the requirements of the United States Occupational Safety and Health Act and regulations established under 29 CFR 1910.1200 (g)(2)(c)(1)-(4) for a mixture of hazardous chemicals which has not been tested as a whole. The data provided on this Material Safety Data Sheet is from manufacturers of the original components. Vishay Micro-Measurements specifically disclaims any and all form of liability and/or responsibility for the application of this product.