



MATERIAL SAFETY DATA SHEET

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: M-Bond 450 Part B

November 18, 2005

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

MSDS # MGM056G

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	%
110-80-5	2-Ethoxyethanol (Cellosolve)	51
78-93-3	Methyl Ethyl Ketone	26
80-08-0	4,4'-Sulfonyldianiline	16
1330-20-7	Xylene	7

SECTION 3: HEALTH HAZARD DATA

Routes of Entry:

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

Health Hazards (Acute and Chronic): Chronic exposure to 2-Ethoxyethanol may cause injury to bone marrow, blood cells, kidney, liver and reproductive system. 2-Ethoxyethanol is a suspected human reproductive and birth defect hazard. Prolonged skin contact with Methyl Ethyl Ketone may defat the skin and produce dermatitis. Chronic exposure to Methyl Ethyl Ketone may cause central nervous system effects.

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

Signs and Symptoms of Exposure:

INHALATION: May cause irritation of nose, throat, and respiratory system. Symptoms may include sore throat, coughing, headache, nausea, and shortness of breath. High concentrations have a narcotic effect and may cause central nervous system depression and unconsciousness.

EYE CONTACT: Vapors are irritating and may produce immediate pain, redness, and tearing. Splashes can cause severe pain, stinging, swelling, and eye damage.

SKIN CONTACT: May cause irritation with redness, itching, and pain. May be absorbed through the skin with possible systemic effects. Prolonged contact may cause dermatitis.

INGESTION: Swallowing may cause nausea, vomiting, abdominal pain, breathing difficulties and weakness. Liver and kidney damage may result from swallowing large quantities of this material.

Medical Conditions Generally Aggravated by Exposure: Persons with pre-existing blood or central nervous system disorders, skin disorders, eye problems, or impaired respiratory function may be more susceptible to the effects of this substance.

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Get medical attention.

EYE CONTACT: In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

SKIN CONTACT: Immediately flush skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

INGESTION: Call a physician immediately. Do NOT induce vomiting unless directed to do so by medical personnel. If vomiting should occur, keep head below hips to prevent aspiration into the lungs. Never give anything by mouth to an unconscious person.

SECTION 5: FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): 16°F (-9°C) Closed Cup (For Methyl Ethyl Ketone)

Flammable limits: LEL: 1.4% UEL: 11.4% (For Methyl Ethyl Ketone)

Extinguishing Media: Use alcohol foam, dry chemical, or carbon dioxide. Water spray may be used to keep fire exposed containers cool. Water may be used to flush spills away from exposures and to dilute spills to non-flammable mixture.

Special Firefighting Procedures: Firefighters should wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in pressure demand or other 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: Above flash point, vapor-air mixtures are explosive within limits noted. Sealed containers may rupture when heated. Contact with strong oxidizers may cause fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Steps to be taken if material is released or spilled: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (vermiculite, dry sand, earth) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

SECTION 7: EXPOSURE CONTROLS -- PERSONAL PROTECTION

Respiratory Protection: If the exposure limit is exceeded, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not know. Use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Ventilation: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Use explosion proof equipment.

Protective Gloves: Butyl rubber gloves recommended.

Eye Protection: Use chemical safety goggles and a full face shield where splashing is possible.

Other Protective Clothing or Equipment: Wear impervious protective clothing including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Work / Hygienic Practices: Wash hands thoroughly after handling and before eating, drinking or smoking. Maintain eye wash station and emergency shower in work area.

SECTION 8: HANDLING AND STORAGE

Precautions to be taken in handling and storing: Protect against physical damage. Store in a cool, dry, well-ventilated location, away from any area where the fire hazard may be acute. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be "No Smoking" areas.

Other Precautions: Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	176°F (80°C)*
Vapor Pressure (mmHg):	78 @ 20°C*
Vapor Density (Air = 1):	2.5*
Specific Gravity (H₂O = 1):	≈0.89
Melting Point:	-123°F (-86°C)*
Evaporation Rate (BuAc = 1):	2.7*
Volatile Organic Compounds:	84%
Solubility in Water:	Appreciable >10%

*For Methyl Ethyl Ketone

Appearance and Odor: Amber colored fluid, sweetish ketone odor.

SECTION 10: STABILITY AND REACTIVITY DATA

Stability: Stable under ordinary conditions of use and storage.

Conditions to Avoid: Heat, flames, ignition sources and incompatibles.

Incompatibility (Materials to Avoid): Oxidizing materials, strong acids, strong bases, caustics, amines, ammonia, halogens, chloroform, chlorosulfonic acid, oleum, potassium-t-butoxide, hydrogen peroxide, nitric acid, copper and aluminum. Can attack many plastics, resins and rubber.

Hazardous Decomposition or By-products: Carbon monoxide and carbon dioxide may form when heated to decomposition.

Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

2-Ethoxyethanol (Cellosolve)

OSHA PEL:	200 ppm TWA (SKIN)
ACGIH TLV:	5 ppm TWA (SKIN)

Methyl Ethyl Ketone

OSHA PEL: 200 ppm
 ACGIH TLV: 200 ppm TWA (300 ppm STEL)
 OTHER: ORAL (Rat) LD₅₀ 2737 mg/kg
 INHALATION (Rat) LC₅₀ 23,500 mg/m³ 8-hour
 SKIN (Rabbit) LD₅₀ 6480 mg/kg

4,4'-Sulfonyldianiline

OSHA PEL: Not established
 ACGIH TLV: Not established

Xylene

OSHA PEL: 100 ppm
 ACGIH TLV: 100 ppm TWA

SECTION 12: DISPOSAL CONSIDERATIONS
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Waste Disposal Method: Dispose of in accordance with local, state, and federal environmental regulations.

SECTION 13: TRANSPORTATION INFORMATION

SHIPPING NAME	CLASS	PACKING GROUP	UN NUMBER
Resin Solution Flammable Liquid	3	II	1866

(This applies to shipment of a kit containing M-Bond 450 Part A and Part B.)

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
110-80-5	2-Ethoxyethanol (Cellosolve)	51.0
78-93-3	Methyl Ethyl Ketone	26.0
133-20-7	Xylene	7.0

TSCA NOTIFICATION:

All components of this product are listed in the Toxic Substance Control Act Chemical Substance Inventory (TSCA). This information should be included in all Material Safety Data Sheets that are copied and distributed for this material.

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.