

# SAFETY DATA SHEET

Version: 4.0  
Date of Issue: 26 April 2017  
Date of First Issue: 20 March 2012

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ACCORDING TO OSHA HCS (29 CFR 1910.1200)

## SECTION 1: IDENTIFICATION

<b>Product identifier used on the label</b>	M-Bond 450 Part A	
<b>Other means of identification</b>	Mixture	
<b>Recommended use of the chemical and restrictions on use</b>		
Recommended use	Adhesives	
Restrictions on use	For professional users only	
<b>Details of the supplier of the safety data sheet</b>		
Supplier	VISHAY MEASUREMENTS GROUP, INC.	
Address of Supplier	Post Office Box 27777 Raleigh, NC 27611 USA	
Telephone	+1 919-365-3800	
Fax	+1 919-365-3945	
E-Mail (competent person)	<a href="mailto:mm.us@vishaypg.com">mm.us@vishaypg.com</a>	
<b>Emergency telephone number</b>	1-800-424-9300	CHEMTREC (24 hours)

## SECTION 2: HAZARD(S) IDENTIFICATION

### Classification of the substance or mixture in accordance with paragraph (d) of 29 CFR 1910.1200

Physical hazards	Flammable Liquid, Category 2
Health hazards	Eye Irritation, Category 2 Germ cell mutagenicity, Category 2 Reproductive toxicity, Category 1B
Environmental hazards	Not classified.

Hazard Symbol



Signal Word(s)

Danger

Hazard Statement(s)

Highly flammable liquid and vapour.  
Causes serious eye irritation.  
Suspected of causing genetic defects.  
May damage fertility or the unborn child.

Precautionary Statement(s)

Obtain special instructions before use.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources and store in a cool, well-ventilated place. No smoking.  
Keep container tightly closed.  
Wash hands and exposed skin thoroughly after handling.  
Wear protective gloves, protective clothing, eye protection and face protection.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If eye irritation persists: Get medical advice/attention.  
IF exposed or concerned: Get medical advice/attention.

**Other hazards**

Repeated exposure may cause skin dryness or cracking.

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Percent of the mixture consists of ingredient(s) of unknown acute toxicity: 0%

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Substances** Not applicable

**Mixtures** Substances in preparations / mixtures

Chemical identity of the substance	%W/W	CAS No.	EC No.	Hazard classification
Tetraphenylethane glycidyl ether	60 - 65	7328-97-4	230-820-6	Germ cell mutagenicity, Category 2.
Ethyl methyl ketone	15 - 18	78-93-3	201-159-0	Flammable Liquid, Category 2 Eye Irritation, Category 2 Specific target organ toxicity — single exposure, Category 3
Diacetone alcohol	10 - 15	123-42-2	204-626-7	Flammable Liquid, Category 3 Eye Irritation, Category 2 (SCL: $\geq$ 10%) Specific target organ toxicity — single exposure, Category 3
2-Ethoxyethanol	10 - 15	110-80-5	203-804-1	Flammable Liquid, Category 3 Acute toxicity, Category 4 Acute toxicity, Category 3 Reproductive toxicity, Category 1B
Phenyl Glycidyl Ether	< 0.1	122-60-1	204-557-2	Skin irritation, Category 2 Skin Sensitisation, Category 1 Acute toxicity, Category 4 Specific target organ toxicity — single exposure, Category 3 Germ cell mutagenicity, Category 2 Carcinogen, Category 1B. Hazardous to the aquatic environment, Chronic, Category 3

## SECTION 4: FIRST AID MEASURES



### Description of first aid measures

Self-protection of the first aider

Do not breathe vapour. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Avoid all contact.

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. IF exposed or concerned: Get medical advice/attention.

Skin Contact

IF ON SKIN: Remove contaminated clothing and wash affected skin with water. Contaminated clothing should be thoroughly cleaned. If irritation (redness, rash, blistering) develops, get medical attention. IF exposed or concerned: Get medical advice/attention.

Eye Contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Ingestion

IF SWALLOWED: Rinse mouth. Do not induce vomiting. IF exposed or concerned: Get medical advice/attention.

**Most important symptoms and effects, both acute and delayed**

Causes serious eye irritation. Suspected of causing genetic defects. May damage fertility. May damage the unborn child. Repeated exposure may cause skin dryness or cracking.

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Indication of any immediate medical attention and special treatment needed      Treat symptomatically.

## SECTION 5: FIRE-FIGHTING MEASURES

### Extinguishing media

Suitable Extinguishing Media

Extinguish preferably with foam, carbon dioxide or dry chemical. Water may be ineffective.

Unsuitable extinguishing Media

Do not use water jet. Direct water jet may spread the fire.

### Special hazards arising from the substance or mixture

Highly flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, Nitrogen oxides, Aldehydes and Acids. May form explosive mixture with air particularly in enclosed spaces. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.

### Special protective equipment and precautions for fire fighters

Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid release to the environment. Dike fire control water for later disposal.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Avoid all contact. Avoid breathing vapours. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Ensure suitable personal protection during removal of spillages. See Section: 8.

### Methods and material for containment and cleaning up

Ensure full personal protection (including respiratory protection) during removal of spillages. Use non-sparking equipment when picking up flammable spill. Use waterspray to 'knock down' vapour. Adsorb spillages onto sand, earth or any suitable adsorbent material. Do not absorb spillage in sawdust or other combustible material. Transfer to a container for disposal. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste.

## SECTION 7: HANDLING AND STORAGE

### Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Ensure adequate ventilation. Avoid all contact. Do not breathe vapour. In case of inadequate ventilation wear respiratory protection. Use personal protective equipment as required. See Section: 8. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work.

### Conditions for safe storage, including any incompatibilities

Ground/bond container and receiving equipment. Store in a well-ventilated place. Keep cool. Keep container tightly closed. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Store locked up.

Storage temperature  
Incompatible materials

Ambient.  
Keep away from: Reducing agents, Oxidizing agents (May cause fire), Corrosive Substances and Alkalis. Can react vigorously with strong Lewis or mineral acids and strong mineral and organic bases, especially primary and secondary aliphatic amines.

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## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m <sup>3</sup> )	STEL (ppm)	STEL (mg/m <sup>3</sup> )	Note
Ethyl methyl ketone	78-93-3	200	590	300 <sup>^</sup>	885 <sup>^</sup>	NIOSH
		200 <sup>†</sup>	590	-	-	OSHA
		200	-	300	-	ACGIH
Diacetone alcohol	123-42-2	50	240	-	-	NIOSH
		50	240	-	-	OSHA
		50	-	-	-	ACGIH
2-Ethoxyethanol	110-80-5	0.5	1.8	-	-	NIOSH
		200	740	-	-	OSHA
		5	-	-	-	ACGIH, Sk
Phenyl Glycidyl Ether	122-60-1	-	-	1 <sup>*</sup>	6 <sup>*</sup>	NIOSH
		10	60	-	-	OSHA
		0.1	-	-	-	ACGIH, Sk, Sen, A3

Note: OSHA PELs 1910.1000 TABLE Z-1 / NIOSH RELs / ACGIH TLVs

<sup>^</sup>NIOSH average value of 15 minutes.

<sup>\*</sup>NIOSH ceiling limit value of 15 minutes.

<sup>†</sup>OSHA PELs were vacated on June 30, 1993 to return to the original 1971 limits.

Sk - Can be absorbed through skin.

SEN: Confirmed potential for worker sensitization as a result of dermal contact and/or inhalation exposure, based on weight of scientific evidence.

A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histological type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiological studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

The other components listed in Section 3 do not have occupational exposure limits.

### Biological Limit Values

SUBSTANCE	CAS No.	Determinant	Biological Exposure Indices	Sampling Time	Note
Ethyl methyl ketone	78-93-3	Ethyl methyl ketone in urine	2 mg/L	End of shift	Ns
2-Ethoxyethanol	110-80-5	2-Ethoxyacetic acid in urine	100 mg/g creatinine	End of shift at end of workweek	-

Source: 2015 ACGIH Biological Exposure Indices (BEIs)

Ns - Nonspecific

The other components listed in Section 3 do not have biological exposure indices.

#### Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Guarantee that the eye flushing systems and safety showers are located close to the working place.

#### Individual protection measures, such as personal protective equipment (PPE)

General hygiene measures for the handling of chemicals are applicable. Avoid all contact. Do not breathe vapour. Wash hands before breaks and after work. Keep work clothes separately. Do not eat, drink or smoke at the work place.

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Eye/face protection



Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection.

Skin protection



Hand protection: Wear impervious gloves. Gloves should be changed regularly to avoid permeation problems. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.

Body protection: Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection



Ensure adequate ventilation. In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment. Long Term Exposure: A self contained breathing apparatus may be appropriate.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Appearance	Dark Amber Coloured liquid.
Odor	Sweetish ketone odor.
Odor Threshold	Not available.
pH	Not established.
Melting Point/Freezing Point	Not available.
Initial boiling point and boiling range	Not available.
Flash Point	-6°C [Closed cup]
Evaporation rate (Butyl acetate = 1)	Not available.
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Flammable Limits (Lower) (%v/v): 1.7% Flammable Limits (Upper) (%v/v): 11.4%
Vapour pressure	70 mmHg @ 68°C
Vapour density	2.4 (Air = 1)
Relative density	1.16 g/cm <sup>3</sup> (H <sub>2</sub> O = 1)
Solubility(ies)	Slightly soluble in: Water
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.

### Other information

Volatile Organic Compound Content (%): 37%

## SECTION 10: STABILITY AND REACTIVITY

<b>Reactivity</b>	Stable under normal conditions. Reaction with some curing agents may produce considerable heat.
<b>Chemical stability</b>	Stable under normal conditions.
<b>Possibility of hazardous reactions</b>	Highly flammable liquid and vapour. May form explosive mixture with air particularly in enclosed spaces. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.
<b>Conditions to avoid</b>	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
<b>Incompatible materials</b>	Keep away from: Reducing agents, Oxidizing agents, Corrosive Substances and Alkalis. Can react vigorously with strong Lewis or mineral acids and strong mineral and organic bases, especially primary and secondary aliphatic amines.
<b>Hazardous decomposition product(s)</b>	May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon

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dioxide, Aldehydes and Acids.

## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on toxicological effects (Substances in preparations / mixtures)

#### Acute toxicity - Ingestion

Based upon the available data, the classification criteria are not met.  
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.

#### Acute toxicity - Inhalation

Based upon the available data, the classification criteria are not met.  
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 20 mg/l.

#### Acute toxicity - Skin Contact

Based upon the available data, the classification criteria are not met.  
Acute Toxicity Estimate Mixture Calculation: Estimated LC50 > 2000 mg/kg bw/day.

#### Skin corrosion/irritation

Repeated exposure may cause skin dryness or cracking.

#### Serious eye damage/irritation

Causes serious eye irritation.

#### Respiratory or skin sensitization

Based upon the available data, the classification criteria are not met.

#### Germ cell mutagenicity

Suspected of causing genetic defects.

#### Carcinogenicity

Based upon the available data, the classification criteria are not met.

#### Reproductive toxicity

May damage fertility or the unborn child.

#### STOT - single exposure

Based upon the available data, the classification criteria are not met.

#### STOT - repeated exposure

Based upon the available data, the classification criteria are not met.

#### Aspiration hazard

Based upon the available data, the classification criteria are not met.

### Information on likely routes of exposure

Inhalation

Possible – accidental exposure.

Ingestion

Unlikely – accidental exposure.

Skin Contact

Possible – accidental exposure.

Eye Contact

Possible – accidental exposure.

### Early onset symptoms related to exposure

Causes serious irritation to eyes.

### Delayed health effects from exposure

Suspected of causing genetic defects. May damage fertility or the unborn child.  
Repeated exposure may cause skin dryness or cracking.

### Other information

NTP Report on Carcinogens

Not listed.

IARC Monographs

Phenyl Glycidyl Ether (CAS# 122-60-1) - Possibly carcinogenic to humans.

OSHA Designated Carcinogen

Not listed.

## SECTION 12: ECOLOGICAL INFORMATION

### Ecotoxicity

Based upon the available data, the classification criteria are not met.  
Estimated (96 hour) LC50 (Fish) > 100 mg/l

### Persistence and degradability

Part of the components are biodegradable.

### Bioaccumulative potential

The product has low potential for bioaccumulation.

### Mobility in soil

The product has moderate mobility in soil. (Slightly soluble in: Water)

### Other adverse effects

None known.

## SECTION 13: DISPOSAL CONSIDERATIONS

### Waste treatment methods

Do not release undiluted and unneutralised to the sewer. This material and its container must be disposed of as hazardous waste. Dispose of wastes in an approved waste disposal facility. Containers of this material may be hazardous when empty since they retain product residue.

### Additional Information

Dispose of contents in accordance with local, state or national regulations.

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## SECTION 14: TRANSPORT INFORMATION

	ADR/RID	IMDG	IATA
UN number	UN 1133	UN 1133	UN 1133
UN proper shipping name	ADHESIVES containing flammable liquid	ADHESIVES containing flammable liquid	ADHESIVES containing flammable liquid
Transport hazard class(es)	3	3	3
Packing group	II	II	II
Environmental hazards	Not classified as a Marine Pollutant/Environmentally hazardous substance.	Not classified as a Marine Pollutant/Environmentally hazardous substance.	Not classified as a Marine Pollutant/Environmentally hazardous substance.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not application.		
Special precautions for user	See Section: 2		

## SECTION 15: REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

#### US Federal Regulations

EPCRA Section 313 Toxics Release Inventory (TRI) Program

2-Ethoxyethanol - De Minimis limit: 1%

TSCA (Toxic Substance Control Act)

Tetraphenylethane glycidyl ether - Subject to 2,500 lb reporting threshold.  
Ethyl methyl ketone - Subject to 25,000 lb reporting threshold.  
Diacetone alcohol - Subject to 25,000 lb reporting threshold.  
2-Ethoxyethanol - Subject to 2,500 lb reporting threshold.  
Phenyl Glycidyl Ether - Subject to 2,500 lb reporting threshold.

NIOSH Occupational Carcinogen List  
OSHA List of highly hazardous chemicals, toxics and reactives

Phenyl Glycidyl Ether - Listed.  
Not listed.

NTP Report on Carcinogens (RoC) List Not listed.  
Poison Prevention Packaging Act

Not listed.  
Not listed.

#### US State Regulations

California State, Proposition 65 List

2-Ethoxyethanol - Safe harbor level - MADL: 750 (oral) ug/day, 960 (inhalation) ug/day.

California State, Safer Consumer Products Regulations

Phenyl Glycidyl Ether - Safe harbor level - NSRL: 5 ug/day.  
Tetraphenylethane glycidyl ether - Candidate Chemicals List.  
Ethyl methyl ketone - Candidate Chemicals List.  
2-Ethoxyethanol - Candidate Chemicals List and Group Member List: Glycol ethers.

Maine State, Toxic Chemicals in Children's Products Act

Phenyl Glycidyl Ether - Candidate Chemicals List.  
Tetraphenylethane glycidyl ether - COC List.  
2-Ethoxyethanol - COC List.  
Phenyl Glycidyl Ether - COC List.

New Jersey State Worker and Community RTK Act

Ethyl methyl ketone - RTKHSL and SHHSL.  
2-Ethoxyethanol - RTKHSL and SHHSL.  
Phenyl Glycidyl Ether - RTKHSL and SHHSL.

Pennsylvania State, Worker and Community RTK Act

Ethyl methyl ketone - Hazardous Substances List and the Environmental Hazard List.  
2-Ethoxyethanol - Hazardous Substances List and the Environmental Hazard List.

Rhode Island State, Hazardous Substances RTK Act

Phenyl Glycidyl Ether - Hazardous Substances List.  
Diacetone alcohol - Hazardous Substances List.  
Ethyl methyl ketone - Hazardous Substances List.  
Diacetone alcohol - Hazardous Substances List.  
2-Ethoxyethanol - Hazardous Substances List.  
Phenyl Glycidyl Ether - Hazardous Substances List.

#### Non-Regional

IARC Monographs, List of Classifications

Phenyl Glycidyl Ether - Group 2B.



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## SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: . New SDS Regulation compliant with HazCom 2012 format, all sections have been updated to include new information. Please review SDS with care.

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### References:

Existing Safety Data Sheet (SDS)

EU Data: Harmonised Classification(s) for Ethyl methyl ketone (CAS# 78-93-3), Diacetone alcohol (CAS# 123-42-2) and 2-Ethoxyethanol (CAS# 110-80-5). Existing ECHA registration(s) for Ethyl Methyl ketone (CAS# 78-93-3), Diacetone alcohol (CAS# 123-42-2) and 2-Ethoxyethanol (CAS# 110-80-5), the Classification and Labelling Inventory for Tetraphenylethane glycidyl ether (CAS# 7328-97-4) and <https://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=94530B12-1>

GHS Classification of the substance or mixture	Classification Procedure
Flammable Liquid, Category 2	Flash Point [Closed cup]/ Estimated Boiling Point (°C)
Eye Irritation, Category 2	Threshold Calculation
Germ cell mutagenicity, Category 2	Threshold Calculation
Reproductive toxicity, Category 1B	Threshold Calculation
Repeated exposure may cause skin dryness or cracking.	Harmonised Classification

### LEGEND

ACGIH: American Conference of Governmental Industrial Hygienists  
BEI: Biological Exposure Indices (ACGIH)  
IARC: International Agency for Research on Cancer  
Irr: Irritation  
NIOSH: National Institute of Occupational Safety and Health  
NTP: National Toxicology Program  
OSHA: The Occupational Safety & Health Administration  
PBT: Persistent, Bioaccumulative and Toxic  
PEL: Permissible exposure limit

REL: Recommended exposure limit  
SCL: Specific Concentration Limit  
Skin<sup>2</sup>: Risk of overexposure via dermal contact  
STEL: Short Term Exposure Limit  
TLV: Threshold Limit value  
TSCA: Toxic Substance Control Act  
TWA: Time Weighted Average  
URT: Upper respiratory tract  
vPvB: very Persistent and very Bioaccumulative

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

### Disclaimers

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