

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier**
Product Name M-Bond 450 Part A
Chemical Name Mixture
CAS No. Mixture
EINECS No. Mixture
REACH Registration No. None assigned.
- 1.2 Recommended use of the chemical and restrictions on use**
Identified Use(s) Adhesives.
Uses Advised Against For professional users only.
- 1.3 Supplier's details**
Company Identification VISHAY MEASUREMENTS GROUP UK LTD
Stroudley Road
Basingstoke
Hampshire
RG24 8FW
United Kingdom
Telephone +44 (0) 1256 462131
Fax +44 (0) 1256 471441
E-Mail (competent person) mm.uk@vishaypg.com
- 1.4 Emergency Phone No.** (00-1) 703-527-3887
CHEMTREC

2. SECTION 2: HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture**
- 2.1.1 Regulation (EC) No. 1272/2008 (CLP)** Flam. Liq. 2; H225
Eye Irrit. 2; H319
Muta. 2; H341
Repr. 1B; H360FD
- 2.1.2 Directive 67/548/EEC & Directive 1999/45/EC** R10: Flammable.
Xi; R36: Irritating to eyes.
Muta. 3; R68: Possible risk of irreversible effects.
Repr. Cat. 2; R60: May impair fertility.
Repr. Cat. 2; R61: May cause harm to the unborn child.
- 2.2 Label elements**
Product Name According to Regulation (EC) No. 1272/2008 (CLP)
M-Bond 450 Part A
- Hazard Pictogram(s) 
- Signal Word(s) Danger
- Contains: Tetraphenylethane glycidyl ether and 2-Ethoxyethanol
- Hazard Statement(s) H225: Highly flammable liquid and vapour.
H319: Causes serious eye irritation.
H341: Suspected of causing genetic defects.
H360FD: May damage fertility. May damage the unborn child - Oral.

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

Precautionary Statement(s)

P201: Obtain special instructions before use.
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P308+P313: IF exposed or concerned: Get medical advice/attention.

Additional Information

EUH066: Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards

None.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

EC Classification Regulation (EC) No. 1272/2008 (CLP)

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard Statement(s)
Tetraphenylethane glycidyl ether	60 - 65	7328-97-4	230-820-6	None assigned	Muta. 2; H341
Methyl ethyl ketone	15 - 18	78-93-3	201-159-0	None assigned	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336 EUH066
Diacetone alcohol	10 - 15	123-42-2	204-626-7	None assigned	Flam. Liq. 3; H226 Eye Irrit. 2; H319 STOT SE 3; H335
2-Ethoxyethanol	10 - 15	110-80-5	203-804-1	None assigned	Flam. Liq. 3; H226 Acute Tox. 4; H302 Acute Tox. 3; H331 Repr. 1B; H360FD

H225: Highly flammable liquid and vapour. H226: Flammable liquid and vapour. H302: Harmful if swallowed. H319: Causes serious eye irritation. H331: Toxic if inhaled. H335: May cause respiratory irritation. H336: May cause drowsiness or dizziness. H341: Suspected of causing genetic defects. H360FD: May damage fertility. May damage the unborn child. EUH066: Repeated exposure may cause skin dryness or cracking.

Directive 67/548/EEC & Directive 1999/45/EC

Chemical identity of the substance	%W/W	CAS No.	EC No.	REACH Registration No.	EC Classification and Risk Phrases
Tetraphenylethane glycidyl ether	60 - 65	7328-97-4	230-820-6	None assigned	Muta. 3; R68
Methyl ethyl ketone	15 - 18	78-93-3	201-159-0	None assigned	F; R11 Xi; R36 R66 R67
Diacetone alcohol	10 - 15	123-42-2	204-626-7	None assigned	R10 Xi; R36 Xi; R37
2-Ethoxyethanol	10 - 15	110-80-5	203-804-1	None assigned	R10 Xn; R22 T; R23 Repr. Cat. 2; R60 Repr. Cat. 2; R61

F; Flammable, Xi; Irritant, Xn; Harmful. T; Toxic. R10: Flammable. R11: Highly flammable. R22: Harmful if swallowed. R23: Toxic by inhalation. R36: Irritating to eyes. R37: Irritating to respiratory system. R60: May impair fertility. R61: May cause harm to the unborn child. R66: Repeated exposure may cause skin dryness or cracking. R67: Vapours may cause drowsiness and dizziness. R68: Possible risk of irreversible effects.

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

4. SECTION 4: FIRST AID MEASURES



4.1 Description of first aid measures

Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Get medical advice/attention.

Skin Contact

IF ON SKIN: Wash with plenty of water. Contaminated clothing should be thoroughly cleaned. If irritation (redness, rash, blistering) develops, get medical attention. IF exposed or concerned: Get medical advice/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.

4.2 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. - Oral. Repeated exposure may cause skin dryness or cracking.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media

As appropriate for surrounding fire. 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.

5.2 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.

5.3 Advice 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.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 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. Use waterspray to 'knock down' vapour. Ensure suitable personal protection during removal of spillages. See Section: 8.

6.2 Environmental precautions

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

6.3 Methods and material for containment and cleaning up

Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent 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 (2008/98/EEC).

6.4 Reference to other sections

See Section: 8, 13

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

7. SECTION 7: HANDLING AND STORAGE



- 7.1 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.
- 7.2 Conditions for safe storage, including any incompatibilities**
Ground/bond container and receiving equipment. Store in a well-ventilated place. 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.
Storage temperature Ambient. 5 - 25°C
Storage life Stable under normal conditions.
Incompatible materials 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.
- 7.3 Specific end use(s)** Adhesives. See Section: 1.2.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1 Control parameters**
8.1.1 Occupational Exposure Limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
Methyl ethyl ketone	78-93-3	200	600	300	899	WEL
Diacetone alcohol	123-42-2	50	241	75	362	WEL
2-Ethoxyethanol	110-80-5	10	37	-	-	WEL

Note WEL: Workplace Exposure Limit (UK HSE EH40).

- 8.1.2 Biological limit value** Not established.
8.1.3 PNECs and DNELs Not established.
- 8.2 Exposure controls**
- 8.2.1 Appropriate engineering controls** Use appropriate containment or ensure adequate ventilation. Atmospheric levels should be controlled in compliance with the occupational exposure limit.
- 8.2.2 Individual protection measures, such as personal protective equipment (PPE)**
- Eye/ face protection
 Wear protective eye glasses for protection against liquid splashes. Wear eye protection with side protection (EN166).
- Skin protection
 Hand protection: Wear impervious gloves (EN374). 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
Normally no personal respiratory protection is necessary. In case of inadequate ventilation wear respiratory protection. Open system(s): Wear suitable respiratory protective equipment.

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com



Thermal hazards

Not applicable.

8.2.3 Environmental Exposure Controls

Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Dark Amber Coloured liquid.
Odour	Sweetish ketone odor.
Odour 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	Not available.
Flammability (solid, gas)	Not applicable - Liquid
Upper/lower flammability or explosive limits	Flammable Limits: 1.7% - 11.4%
Vapour pressure	70 mmHg @ 68°C
Vapour density	2.4 (Air = 1)
Relative density	1.16 g/cm ³ (H ₂ 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.
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

9.2 Other information

VOC: 37%

10. SECTION 10: STABILITY AND REACTIVITY

10.1 Stability and reactivity	Stable under normal conditions. Reaction with some curing agents may produce considerable heat.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	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.
10.4 Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
10.5 Incompatible materials	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.
10.6 Hazardous decomposition product(s)	May decompose in a fire giving off toxic fumes. Carbon monoxide, Carbon dioxide, Aldehydes and Acids.

11. SECTION 11: TOXICOLOGICAL INFORMATION

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

Acute toxicity

Ingestion

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

Inhalation

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

Skin Contact

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

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

	Skin corrosion/irritation	bw/day.
	Serious eye damage/irritation	EUH066: Repeated exposure may cause skin dryness or cracking.
	Respiratory or skin sensitization	Eye Irrit. 2: Causes serious eye irritation.
	Germ cell mutagenicity	Based on available data, the classification criteria are not met.
	Carcinogenicity	Muta. 2: Suspected of causing genetic defects.
	Reproductive toxicity	Based on available data, the classification criteria are not met.
	STOT - single exposure	Repr. 1B: May damage fertility. May damage the unborn child - Oral
	STOT - repeated exposure	Based on available data, the classification criteria are not met.
	Aspiration hazard	Based on available data, the classification criteria are not met.
11.2	Other information	None.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	Toxicity	Based on available data, the classification criteria are not met. Estimated (96 hour) LC50 (Fish) > 100 mg/l
12.2	Persistence and degradability	Part of the components are biodegradable.
12.3	Bioaccumulative potential	The product has low potential for bioaccumulation.
12.4	Mobility in soil	The product has moderate mobility in soil. (Slightly soluble in: Water)
12.5	Results of PBT and vPvB assessment	Not classified as PBT or vPvB.
12.6	Other adverse effects	None known.

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1	Waste treatment methods	Do not release undiluted and unneutralised to the sewer. This material and its container must be disposed of as hazardous waste (2008/98/EEC). Send after pre-treatment to a appropriate hazardous waste incinerator facility according to legislation.
13.2	Additional Information	Dispose of contents in accordance with local, state or national legislation.

14. SECTION 14: TRANSPORT INFORMATION

		ADR/RID / IMDG / IATA
14.1	UN number	UN 1133
14.2	Proper Shipping Name	ADHESIVES containing flammable liquid
14.3	Transport hazard class(es)	3
14.4	Packing group	II
14.5	Environmental hazards	Not classified as a Marine Pollutant.
14.6	Special precautions for user	See Section: 2
14.7	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
14.8	Additional Information	None.

15. SECTION 15: REGULATORY INFORMATION

15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture	
15.1.1	EU regulations	
	SVHCs	2-Ethoxyethanol (CAS# 110-80-5)
	Authorisations and/or Restrictions On Use	For professional users only. CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction).
15.1.2	National regulations	
	Germany	Water hazard class: 2
15.2	Chemical Safety Assessment	Not available.

SAFETY DATA SHEET

Revision: 2.0 Date: 05.05.2015

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH),
1272/2008 (CLP) & 453/2010

www.vpgsensors.com

16. SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.

References: Existing Safety Data Sheet (SDS), Harmonised Classification(s) for Methyl ethyl ketone (CAS# 78-93-3), Diacetone alcohol (CAS# 123-42-2) and 2-Ethoxyethanol (CAS# 110-80-5), Existing ECHA registration(s) for Methyl ethyl 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> (Tetraphenylethane glycidyl ether (CAS# 7328-97-4)).

Classification of the substance or mixture According to Regulation (EC) No. 1272/2008 (CLP)	Classification Procedure
Flam. Liq. 2; H225	Flash Point [Closed cup]/ Estimated Boiling Point (°C)
Eye Irrit. 2; H319	Threshold Calculation
Muta. 2; H341	Threshold Calculation
Repr. 1B; H360FD	Threshold Calculation

LEGEND

LTEL	Long Term Exposure Limit
STEL	Short Term Exposure Limit
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
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

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Vishay Precision Group gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Vishay Precision Group accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

Annex to the extended Safety Data Sheet (eSDS)

No information available.



Disclaimer

ALL PRODUCTS, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Vishay Precision Group, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "VPG"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

The product specifications do not expand or otherwise modify VPG's terms and conditions of purchase, including but not limited to, the warranty expressed therein.

VPG makes no warranty, representation or guarantee other than as set forth in the terms and conditions of purchase. **To the maximum extent permitted by applicable law, VPG disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.**

Information provided in datasheets and/or specifications may vary from actual results in different applications and performance may vary over time. Statements regarding the suitability of products for certain types of applications are based on VPG's knowledge of typical requirements that are often placed on VPG products. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. You should ensure you have the current version of the relevant information by contacting VPG prior to performing installation or use of the product, such as on our website at vpgsensors.com.

No license, express, implied, or otherwise, to any intellectual property rights is granted by this document, or by any conduct of VPG.

The products shown herein are not designed for use in life-saving or life-sustaining applications unless otherwise expressly indicated. Customers using or selling VPG products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify VPG for any damages arising or resulting from such use or sale. Please contact authorized VPG personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Copyright Vishay Precision Group, Inc., 2014. All rights reserved.