

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product name M-Bond 450 Part A

Recommended use of the chemical and restrictions on use

Identified uses Adhesive
Uses advised against Anything other than the above.

Details of the supplier of the safety data sheet

Name of Supplier VISHAY MEASUREMENTS GROUP, INC.
Address of Supplier Post Office Box 27777
Raleigh, NC 27611
USA
Telephone 919-365-3800
Fax 919-365-3945
E-mail mm.us@vpgsensors.com

Emergency telephone number

24 HR. EMERGENCY TELEPHONE NUMBERS (00-1) 703-527-3887 CHEMTREC

SECTION 2: HAZARD OVERVIEW

Emergency overview

Flammable liquid and vapour. Causes serious eye irritation. May cause an allergic skin reaction. May cause cancer. Obtain special instructions before use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Wear protective gloves/eye protection/face protection. IF exposed or concerned: Get medical advice/attention.

Classification of the substance or mixture

In accordance with: GB 13690-2009 and GB 30000-2013

Flammable liquid, Category 3; H226
Skin sensitizer, Category 1; H317
Serious eye damage/irritation, Category 2; H319
Carcinogen, Category 1B; H350

Label elements

Product name M-Bond 450 Part A
Contains: Phenyl glycidyl ether 环氧丙基苯基醚: 0.05 - 0.1%

Hazard Pictogram(s)



Signal Word(s)

DANGER

Hazard Statement(s)

H226: Flammable liquid and vapour.
H317: May cause an allergic skin reaction.
H319: Causes serious eye irritation.
H350: May cause cancer.

Precautionary Statement(s)

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

Prevention	P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233: Keep container tightly closed. P240: Ground and bond container and receiving equipment. P241: Use explosion-proof lighting equipment. P242: Use non-sparking tools. P243: Take action to prevent static discharges. P261: Avoid breathing mist/vapours/spray. P272: Contaminated work clothing should not be allowed out of the workplace. P280: Wear protective gloves/eye protection/face protection.
Response	P303+P361+P353: IF ON SKIN or hair: Take off immediately all contaminated clothing. Rinse skin with water. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P308+P313: IF exposed or concerned: Get medical advice/attention. P370+P378: In case of fire: Use foam to extinguish.
Storage	P403+P235: Store in a well-ventilated place. Keep cool. P405: Store locked up.
Disposal	P501: Dispose of contents in accordance with local, state or national legislation.
Other hazards	Vapours can form explosive mixtures with air.
Main Symptoms	Causes serious eye irritation. May cause an allergic skin reaction. Suspected of causing cancer.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances - not applicable

Mixtures Substances in preparations / mixtures

GHS Classification GB 30000-2013

Chemical identity of the substance	通用名	浓度或浓度范围	CAS No.	EC No.	Hazard classification
Butanone 2-丁酮	-	1 - 10	78-93-3	201-159-0	Flammable liquid, Category 3; H226 Serious eye damage/irritation, Category 2; H319 Specific Target Organ Toxicity — Single Exposure, Category 3 ; H336

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

Phenyl glycidyl ether 环氧丙基 苯基醚	-	0.05 - 0.1	122-60-1	204-557-2	Acute Toxicity, Category 4; H332 Acute Toxicity, Category 4; H312 Acute Toxicity, Category 5; H303 Skin corrosion/irritation, Category 2; H315 Skin sensitization, Category 1; H317 Germ cell mutagenicity, Category 2; H341 Specific Target Organ Toxicity — Single Exposure, Category 3 ; H335 Carcinogenicity, Category 1B; H350 Hazardous to the aquatic environment, Acute, Category 3; H402 Hazardous to the aquatic environment, Chronic, Category 3; H412
-----------------------------------	---	------------	----------	-----------	---

No other components or impurities which will influence the classification of the product

SECTION 4: FIRST AID MEASURES



Description of first aid measures

Self-protection of the first aider

Inhalation

Skin contact

Eye contact

Ingestion

Most important symptoms and effects, both acute and delayed

Indication of immediate medical attention and special treatment needed, if necessary

Avoid breathing mist/vapours/spray. Ensure adequate ventilation. Wear suitable protective clothing. Wear suitable respiratory protective equipment if exposure to high levels of material are likely. Avoid contact with skin. Contaminated clothing should be laundered before reuse. Do not use mouth-to-mouth resuscitation. Eyewash facilities should be stationed close to workplace where possible.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

IF ON SKIN: Gently wash with plenty of soap and water. Remove contaminated clothing and wash clothing before reuse. If irritation (redness, rash, blistering) develops, get medical attention.

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 SWALLOWED: Rinse mouth. Do not give anything by mouth to an unconscious person. Do NOT induce vomiting. If symptoms occur obtain medical attention. Causes serious eye irritation. May cause an allergic skin reaction. May cause cancer.

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

Unsuitable extinguishing media

As appropriate for surrounding fire. Extinguish preferably with foam, carbon dioxide or dry chemical.

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

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

Special hazards arising from the substance or mixture

Flammable liquid and vapour. Vapours can form explosive mixtures with air. Containers may explode when involved in a fire. Keep container(s) exposed to fire cool, by spraying with water. Thermal decomposition will evolve toxic and corrosive vapours: Carbon dioxide, Carbon monoxide. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. Sealed containers may rupture explosively if hot.

Special protective equipment and precautions for fire fighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Stop leak if safe to do so. Eliminate all ignition sources if safe to do so. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid breathing mist/vapours/spray. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. The vapour is heavier than air; beware of pits and confined spaces.

Environmental precautions

Avoid release to the environment. Do not allow to enter drains, sewers or watercourses.

Methods and material for containment and cleaning up

Ensure suitable personal protection during removal of spillages. Use non-sparking equipment when picking up flammable spill. Adsorb spillages onto sand, earth or any suitable adsorbent material. Do NOT absorb in saw-dust or other combustible absorbents. Transfer to a lidded container for disposal or recovery. Ventilate the area and wash spill site after material pick-up is complete. Dispose of this material and its container as hazardous waste. Allow small spillages to evaporate provided there is adequate ventilation.

Preventive measures to prevent secondary disasters

Remove all ignition sources. Prevent spread over a wide area (e.g. by containment or oil barriers). Cover drains.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Ensure adequate ventilation. Avoid breathing mist/vapours/spray. Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. See Section: 8. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Do not use sparking tools. Do not spray on an open flame or other ignition source. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work. Ground/bond container and receiving equipment.

Conditions for safe storage, including any incompatibilities

Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from direct sunlight. Do not reuse empty containers.

Storage temperature

Store in a well-ventilated place. Keep cool..

Storage life

Stable under normal conditions.

Incompatible materials

Keep away from: Strong oxidising agents, Strong acids and alkali.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

SUBSTANCE	CAS No.	PC-TWA(mg/m ³)			Note
		MAC	PC-TWA	PC-STEL	
Butanone 2- 丁 酮	78-93-3	-	300	600	-

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

Source: GBZ 2.1—2019

Biological Exposure Indices

SUBSTANCE		CAS No.	Biological Monitoring Indicator		职业接触生物限值	Sampling Time
中文名	英文名		中文名	英文名		
丁酮	Butanone	78-93-3	丁酮(Urine)	Butanone in urine	2 mg/L	工作班末

Source: ACGIH, 2021

Appropriate engineering controls

Ensure adequate ventilation or use appropriate containment. Atmospheric levels should be controlled in compliance with the occupational exposure limit. Local exhaust recommended. Use non-sparking ventilation systems, approved explosion-proof equipment, and intrinsically safe electrical systems. Eyewash facilities should be stationed close to workplace where possible.

Individual protection measures, such as personal protective equipment

General hygiene measures for the handling of chemicals are applicable. Avoid contact with skin, eyes or clothing. Avoid breathing mist/vapours/spray. Wash hands before breaks and after work. Keep work clothes separately. Contaminated clothing should be thoroughly cleaned. Do not eat, drink or smoke at the work place.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

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. Recommended: PVC / Nitrile rubber.

During full contact:

Protective index 6, corresponding > 480 minutes of permeation time according to EN 374.

Nitrile rubber (Minimum thickness: 0.33 mm)

Butyl rubber (Minimum thickness: 0.5 mm)

During splash contact:

Polychloroprene - CR (Minimum thickness: 0.5 mm)

Unsuitable gloves materials:

Natural rubber, Polyvinyl chloride - PVC.

Body protection:

Wear dustproof working clothes. Wear impervious protective clothing, including boots, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

Respiratory protection



Use only in well-ventilated areas. In case of inadequate ventilation wear respiratory protection. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

High concentrations: Wear suitable respiratory equipment. Recommended: Self-contained breathing apparatus (DIN EN 137)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Liquid
Odour	Not established.
pH (Concentration)	Not established.
Melting point/freezing point	Not established.
Initial boiling point and boiling range (°C)	Not established.
Flash point (°C)	Not established.
Upper/lower flammability or explosive limits	Not established.
Vapour Pressure (mm Hg)	Not established.
Vapour Density (Air=1)	Not established.
Relative density	Not established.
Solubility(ies)	Not established.
Partition Coefficient (n-Octanol/water)	Not established.
Auto Ignition Point (°C)	not applicable - Mixture
Decomposition Temperature (°C)	Not established. not applicable - Mixture

Additional properties

Viscosity (mPa. s)	Not established.
Evaporation rate	Not established.
Explosive properties	Not explosive. Vapours can form explosive mixtures with air.
Oxidising properties	Not established.

SECTION 10: STABILITY AND REACTIVITY

Reactivity

Stable under normal conditions.

Chemical stability

Stable under normal conditions. Hazardous polymerisation will not occur.

Possibility of hazardous reactions

Vapour is explosive in air at temperatures higher than the flash point. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback.

Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep from direct sunlight. Do not spray on an open flame or other ignition source. Take precautionary measures against static discharge.

Incompatible materials

Strong oxidising agents, Strong acids and alkali.

Hazardous decomposition products

Flammable liquid and vapour. May decompose in a fire giving off toxic fumes. Vapours are heavier than air and may travel considerable distances to a source of ignition and flashback. In confined spaces, sewers, etc., the vapours may collect to form explosive mixtures with air. Decomposition products: Carbon monoxide, Carbon dioxide, aldehydes, acids.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects (Substances in preparations / mixtures)

Acute toxicity - Ingestion

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

Acute toxicity - Inhalation

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

Acute toxicity - Skin contact

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

Skin corrosion/irritation

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

Serious eye damage/irritation

Mixture: Serious eye damage/irritation, Category 2; H319: Causes serious eye irritation.

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

	Butanone 2-丁酮	Serious eye damage/irritation, Category 2; H319: Causes serious eye irritation. Test Result: Irritating to eyes. (OECD 405) 危险化学品目录 (2015 版)
Respiratory or skin sensitisation		EU Data: Harmonised Classification/ ECHA registration dossier Mixture: Skin sensitizer, Category 1; H317: May cause an allergic skin reaction.
	Phenyl glycidyl ether 环氧丙基苯基醚	Skin sensitizer, Category 1; H317: May cause an allergic skin reaction. Buehler test Sensitisation (guinea pig) – Positive (Adverse effects observed) 危险化学品目录 (2015 版)
Germ cell mutagenicity		EU Data: Harmonised Classification/ ECHA registration dossier
Carcinogenicity		Mixture: Based upon the available data, the classification criteria are not met.
	Phenyl glycidyl ether 环氧丙基苯基醚	Mixture: Carcinogen, Category 1B; H350: May cause cancer Carcinogen, Category 1B; H350: May cause cancer 危险化学品目录 (2015 版)
Reproductive toxicity		EU Data: Harmonised Classification/ ECHA registration dossier
STOT - single exposure		Mixture: Based upon the available data, the classification criteria are not met.
STOT - repeated exposure		Mixture: Based upon the available data, the classification criteria are not met.
Aspiration hazard		Mixture: Based upon the available data, the classification criteria are not met.
Other information		

SECTION 12: ECOLOGICAL INFORMATION

Toxicity	Based upon the available data, the classification criteria are not met.
Persistence and degradability	No data for the mixture as a whole.
Bioaccumulative potential	No data for the mixture as a whole.
Mobility in soil	No data for the mixture as a whole.
Other adverse effects	No data for the mixture as a whole.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	This material and its container must be disposed of as hazardous waste. Dispose of wastes in an approved waste disposal facility. Dispose of contents in accordance with local, state or national legislation.
Packaging waste	Contaminated packages must be completely emptied and can be re-used following proper cleaning. Handle contaminated packages in the same way as the substance itself.

SECTION 14: TRANSPORT INFORMATION

	ADR/RID/ JT/T 617-2018/陆运	IMDG/海运	ICAO/IATA/空运
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	III	III	III
Environmental hazards	Not applicable	Not classified as a Marine Pollutant.	Not applicable
Special precautions for user	See Section: 2		
Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable		

SECTION 15: REGULATORY INFORMATION

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

SAFETY DATA SHEET

M-Bond 450 Part A

In accordance with: GB/T 16483-2008 and GB/T 17519-2013

www.vpgsensors.com
Date of issue: 27/01/2023
Date of First Issue: 20/03/2012
Version: 5.0
SDS Code: 15065

National regulations

Catalogue of Hazardous Chemicals

Listed:

Butanone 2-丁酮

Phenyl glycidyl ether 环氧丙基苯基醚

Catalogue of Toxic Chemicals Restricted to be Imported/Exported

All chemicals are not listed

Catalogue of Prohibited Chemicals

All chemicals are not listed

List of Priority Chemicals for Prevention and Control

All chemicals are not listed

Inventory of Existing Chemical Substances in China (IECSC)

Listed:

Butanone 2-丁酮

Phenyl glycidyl ether 环氧丙基苯基醚

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: Not applicable – V1.0

References: Existing Safety Data Sheet (SDS), 危险化学品目录 (2015 版)

Harmonised Classification(s) for Butanone 2-丁酮(CAS No. 78-93-3) and Phenyl glycidyl ether (CAS No. 122-60-1).

Existing ECHA registration(s) for Butanone 2-丁酮 (CAS No. 78-93-3) and Phenyl glycidyl ether 环氧丙基苯基醚(CAS No. 122-60-1).

Legend

ADR	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DNEL	Derived no effect level
IATA	IATA: International Air Transport Association
ICAO	ICAO: International Civil Aviation Organization
IMDG	IMDG: International Maritime Dangerous Goods
LTEL	Long term exposure limit
PBT	PBT: Persistent, Bioaccumulative and Toxic
PNEC	Predicted No Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	RID: Regulations concerning the international railway transport of dangerous goods
STEL	Short term exposure limit
vPvB	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.



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.