

SAFETY DATA SHEET

KER 828HC

Date of issue: 2013-09-13

Revision date: 2018-07-06

Version: R0004.0009

1. IDENTIFICATION

A. Product name

- KER 828HC [MSDS-122]

B. Recommended use and restriction on use

- General use : epoxy
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : KUMHO P&B CHEMICALS.INC
- Address : 218, Yeosusandan 2-ro, Yeosu, Jeollanamdo, Korea
- Dept. : Environment & Safety Team
- Telephone number : +82-61-688-3682
- Emergency telephone number : +82-61-688-3682/ +82-61-688-3825
- Fax number : 061-688-3686

o Supplier/Distributor information

- Company name : KUMHO P&B CHEMICALS
- Address : East Wing 8F, SignitureTowers Seoul, 100 Cheonggyecheon-ro, jung-gu, Seoul,
- Dept. : Epoxy Resin Business Team
- Telephone number : +82-2-6961-3464,3481
- Emergency telephone number : +82-2-6961-1114
- Fax number : 82-2-6961-3490,3492
- E-mail address : epoxy_domestic@kpb.co.kr

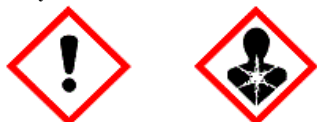
2. HAZARD IDENTIFICATION

A. GHS Classification

- Acute toxicity (oral) : Category4
- Acute toxicity (dermal) : Category4
- Specific target organ toxicity(Repeated exposure) : Category2
- Aspiration hazard : Category2

B. GHS label elements

o Hazard symbols



o Signal words

- Warning

o Hazard statements

- H302 Harmful if swallowed
- H305 May be harmful if swallowed and enters airways
- H312 Harmful in contact with skin
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

o Precautionary statements

1) Prevention

- P260 Do not breathe gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P314 Get medical advice/attention if you feel unwell.
- P330 Rinse mouth.
- P331 Do NOT induce vomiting.
- P363 Wash contaminated clothing before reuse.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

○ NFPA grade (0 ~ 4 level)

- Health : 2 , Flammability : 2, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
2,2-Bis(4'-glycidylxyphenyl)propane	Diphenylol propane dicyclidyl ether ; Bisphenol A diglycidyl ether ; Dimethylmethane diglycidyl ether ; 2,2-bis(4-(2,3-Epoxypropoxy)phenyl) propane ; 2,2'-[(1-Methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane ; 4,4'-Bis(2,3-epoxypropoxy)diphenyldimethyl methane ; Bis(4-hydroxyphenyl)dimethylmethane diglycidyl ether ; Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis- ; 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane ; Bisphenol A diglycidyl ether	1675-54-3	100

4. FIRST AID MEASURES**A. Eye contact**

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.
- Prevent the spread of the skin.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.
- If swallowed, large amounts of water to drink and do not induce vomiting.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Handling the damaged containers or spilled material after wearing protective equipment.
- Do not direct water at spill or source of leak.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Small leak: sand or other non-combustible material, please let use absorption.
- Wipe off the solvent.
- Dike for later disposal.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Comply with all applicable laws and regulations for handling
- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.

B. Conditions for safe storage, including any incompatibilities

- Do not use damaged containers.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.
- Do not eat, drink or smoke when using this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - Not available
- o **OSHA PEL**
 - Not available

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the 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. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Any chemical cartridge respirator with organic vapor cartridge(s).
 - Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
 - Any air-purifying respirator with a full facepiece and an organic vapor canister.
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- o **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- o **Hand protection**
 - Wear appropriate glove.
- o **Skin protection**
 - Wear appropriate clothing.
- o **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	pale yellow
B. Odor	very light odorless
C. Odor threshold	Not available
D. pH	7

E. Melting point/Freezing point	liquid in room temperature
F. Initial Boiling Point/Boiling Ranges	> 200 °C
G. Flash point	259 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	0.01Pa (at 20 °C)
L. Solubility	약 0.009 kg/m ³ (at 23 °C)
M. Vapour density	해당없음
N. Specific gravity(Relative density)	1.17
O. Partition coefficient of n-octanol/water	log Pow >3 (n-octanol/Water standard)
P. Autoignition temperature	>300 °C
Q. Decomposition temperature	Not available
R. Viscosity	20~30(at 25 °C)
S. Molecular weight	200~250

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- (Respiratory tracts)
 - May be harmful if swallowed and enters airways
- (Oral)
 - Harmful if swallowed
- (Eye-Skin)
 - Not available

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- Acute toxicity
 - * Oral
 - Product (ATEmix) : >5000mg/kg
 - [2,2-Bis(4'-glycidylloxyphenyl)propane] : LD50 11,300 mg/kg rat (HSDB)
 - * Dermal
 - Product (ATEmix) : >5000mg/kg
 - [2,2-Bis(4'-glycidylloxyphenyl)propane] : LD50 >23,200 mg/kg Rabbit (IARC, NITE)
 - * Inhalation
 - Not available
- Skin corrosion/irritation
 - Not available
- Serious eye damage/irritation
 - Not available
- Respiratory sensitization
 - Not available

- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - [2,2-Bis(4'-glycidylphenoxy)propane] : Group 3
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - May cause damage to organs through prolonged or repeated exposure
- **Aspiration hazard**
 - May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Acute toxicity - fish**
 - LC₅₀, 96 hour: 2 mg/l, *Onchorhynchus mykiss* (Rainbow trout)
- **Acute toxicity - aquatic, invertebrates**
 - EC₅₀, 48 hour: 1.8 mg/l, *Daphnia magna*
- **Acute toxicity - aquatic plants**
 - EC₅₀, 72 hour: >11 mg/l, *Selenastrum capricornutum*
 - NOEC, 72 hour: 4.2 mg/l, *Selenastrum capricornutum*
- **Acute toxicity**
 - NOEC, 18 hour: 42.6 mg/l, *Pseudomonas putida*

B. Persistence and degradability

- **Persistence**
 - Not available
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - Not available
- **Biodegradation**
 - Not available

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.

- Dispose by incineration.
- Will be pre-processed by the separation of oil and water.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 3082

B. Proper shipping name

- Environmentally hazardous substances, liquid, n.o.s.(2,2-Bis(4'-glycidyoxyphenyl)propane).

C. Hazard Class

- 9

D. IMDG CODE/IATA DGR Packing group

- III

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-F (Water-soluble marine pollutants)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [2,2-Bis(4'-glycidyoxyphenyl)propane] : H319, H315, H317
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - Not applicable
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - Not applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION

A. Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS, ECHA

B. Issue date

- 2013-09-13

C. Revision number and Last date revised

- 8 times, 2018-07-06

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).