

# Material Safety Data Sheet

## 1. Chemical Product and Company Identification

가. Trade Name	JP-100D(Hardner)
General Use	Epoxy Hardner Primer
Manufacturer	Jeil Chemical Co., Ltd. 38-16. Hoehak 3-gil, Onsan-Eup, Ulju-Gun, Ulsan, South Korea 052-227-5003

## 2. Hazards Identification

a. Hazards Classification and Statements	Acute. Tox. : Category 4 Skin Irrit. : Category 2 Eye Irrit. : Category 2 Skin Sens. : Category 1 Carcinogenicity : Category1A STOT Rep. : Category 1 Aquatic Chronic : Category 2 Carcinogenicity : Category1B
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### b. Hazards Description:

Pictogram



Signal word

DANGER

Hazards Classification and Statements

H226 Flammable liquid and vapour  
H302 Harmful if swallowed  
H305 May be harmful if swallowed and enters airways  
H311 Toxic in contact with skin  
H314 Causes severe skin burns and eye damage  
H317 May cause an allergic skin reaction  
H318 Causes serious eye damage  
H330 Fatal if inhaled  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

Prevention precautionary statements

P201 Obtain special instructions before use  
P202 Do not handle until all safety precautions have been read and understood  
  
P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking  
P233 Keep container tightly closed  
P240 Ground/bond container and receiving equipment  
P241 Use explosion-proof electrical/ventilating/light/.../equipment  
P242 Use only non-sparking tools  
P243 Take precautionary measures against static discharge  
P260 Do not breathe dust/fume/gas/mist/vapours/spray  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray  
P264 Wash ... thoroughly after handling  
P270 Do not eat, drink or smoke when using this product  
P271 Use only outdoors or in a well-ventilated area  
P285 In case of inadequate ventilation wear respiratory protection

Response precautionary statements

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.  
P301+P330+P331 IF SWALLOWED: Rinse mouth Do NOT induce vomiting  
P302+P352 IF ON SKIN: Wash with soap and water  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing Rinse skin with water/shower  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P307+P311 IF exposed: Call a POISON CENTER or doctor/physician.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P314 Get medical advice/attention if you feel unwell.  
P321 Specific treatment (see ... on this label).  
P330 Rinse mouth.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P362 Take off contaminated clothing and wash before reuse.  
P363 Wash contaminated clothing before reuse.  
P391 Collect spillage.  
P405 Store locked up  
P501 Dispose of contents/container in accordance with local/regional/national/international regulation (to be specified).

Storage precautionary statements

Disposal precautionary statements:

C. Other harmful or danger characteristic (NFPA)

Triethylenetetramine

Health hazard	3
Fire	1
Reactivity Hazard	0

Xylene

Health hazard	No Data
Fire	No Data
Reactivity Hazard	No Data

Diethylene tri-amine

Health hazard	3
Fire	1
Reactivity Hazard	0

BISPHENOL A-EPICHLOROHYDRIN RESIN

Health hazard	2
Fire	1
Reactivity Hazard	0

POLYAMIDOAMINE

Health hazard	2
Fire	1
Reactivity Hazard	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS NO.	Amount(%)	
Triethylenetetramine	1,2-ETHANEDIAMINE, N,N'-BIS(2-AMINOETHYL)-	112-24-3	15~20
Xylene	Dimethyl benzene	1330-20-7	15~18
Diethylene tri-amine	1,2-Ethane diamine, N-(2-Aminoethyl)-(1,2-ETHANEDIAMINE, N-(2-AMINOETHYL)-)	111-40-0	25~28
BISPHENOL A-EPICHLOROHYDRIN RESIN	BISPHENOL A-EPICHLOROHYDRIN RESIN	25068-38-6	5~7

## 4. First aid measures

- a. Eye contact  
Flush eyes with plenty of water for at least 15 minutes while holding eyelids open.  
  
Consult a physician if signs of irritation appear.
- b. Skin contact  
Immediately remove contaminated clothing or shoes, wash skin with plenty of water for at least 15 minutes. Use soap if readily available, or follow by thoroughly washing soap and water. Do not reuse clothing until thoroughly decontaminated.
- c. Inhalation  
Move person to fresh air area and provide oxygen if breathing is difficult. Consult a physician if effects
- d. Ingestion  
Do not induce vomiting because of risk of aspiration. Rinse mouth with water. Consult a physician if effects occur.

## 5. Fire fighting measures

- Hazardous products of Combustion  
In case of fire, toxic fumes might be formed
- Extinguishing media  
Water spray, foam, dry chemical, or carbon dioxide
- Unusual fire or explosion Hazards  
May produce hazardous fumes of hazardous decomposition products  
When fire fighting, wear full protective equipment including self-contained breathing apparatus

## 6. Accidental release measures

- Personal precautions  
Put on adequate protective equipment. See section 8, Exposure control/ Personal Protection
- Environmental precautions  
Keep away from drains, surface-water, ground water and soil.
- Clean-up Method  
Sweep spilled material into non-leaking containers.  
All disposal methods must be in compliance with applicable local regulations.

## 7. Handling and storage

- a. Storage  
Keep away from: acids, alkalis, oxidizers. Keep in cool, dry, ventilate storage and in closed containers. Store in steel containers preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Avoid freezing temperatures during storage. Do not store in reactive metal containers. Product may partially freeze with extended exposure to cold temperatures.
- b. Handling  
When handling, do not eat, drink, or smoke. Avoid contact with eyes. Avoid contact with skin. Spraying increases the risk of hazardous exposure. In atmospheres where the material is sprayed, workers should avoid contact with aerosols containing S through proper engineering controls, such as exhaust ventilation. Wear goggles and face shield. Do not get into the eyes. Other individuals working in the vicinity of the product where exposure can occur should also be fitted with chemical splash goggles. Contaminated clothing should be properly disposed of in a manner that will not cause additional exposure. Workers should be strongly encouraged to follow good personal hygiene practices, such as thorough washing of hands, arms, neck and face following working with JP-100D.

## 8. Exposure controls/personal protection

- a. Exposure Limits
- National regulations
- Triethylenetetramine  
No Data
- Xylene  
TWA – 100ppm 435mg/m<sup>3</sup> STEL – 150ppm 655mg/m<sup>3</sup>
- Diethylene tri-amine  
TWA – 1ppm 4mg/m<sup>3</sup>
- BISPHENOL A-EPICHLOROHYDRIN RESIN  
No Data
- POLYAMIDOAMINE  
No Data
- ACGIH regulations
- Triethylenetetramine  
No Data
- Xylene  
TWA 100 ppm  
STEL 150 ppm
- Diethylene tri-amine  
TWA 1 ppm

BISPHENOL A-EPICHLOROHYDRIN RESIN	No Data
POLYAMIDOAMINE	No Data
Biological exposure limits	No Data
b. Suitable Engineering Management	Use process isolation, local ventilation or other engineering management to maintain air quality under exposure limits. Set wash up facilities and safe shower system, where storage or use of this material.
c. Personal protector	
Eye protection	Safety glasses with side shields.
Hands protection	Chemical resistant gloves.
Skin and body protection	Chemical resistant protective suit. Chemicals resistant boots.
Respiratory protection	Never exceed the national Occupational Exposure Limit. Use local. Exhaust ventilation or handle in a ventilated enclosure. For greater protection a face piece chemical cartridge respirator is recommended.

## 9. Physical and chemical properties

1. Appearance	
Type	Liquid
Color	Yellow
2. Odor	No Data
3. Odour threshold	No Data
4. pH	No Data
5. Melting Point/Freezing Point	No Data
6. Boiling Point	No Data
7. Flash Point	No Data
8. Evaporation Rate	No Data
9. Flammability	No Data
10. Flammable Limits	No Data
11. Vapor Pressure	No Data
12. Solubility in WATER	No Data
13. Vapor density(water=1)	No Data
14. Density	0.92~0.95
15. n-Octanol/Water Partition coefficient	No Data
16. Autoignition Temperature	No Data
17. Decomposition Temperature	No Data
18. Viscosity(at 25°C)	150~200CPS(at 25°C)
19. Molecular Weight	No Data

## 10. Stability and reactivity

Conditions to avoid	Can react strongly with epoxy resins at elevated temperature
Materials to avoid	Acids, amines, bases, oxidizing agents
Hazardous reaction	Hazardous polymerization does not occur by itself
Decomposition temperature	Not available
Hazardous decomposition component	Hazardous decomposition products are not expected to form during normal storage

## 11. Toxicological information

a. Information on the likely routes of exposure	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation.
b. Acute Toxicity Data	
Acute toxic	
Oral	
Triethylenetetramine	LD50 2500 mg/kg Rat

Xylene	LD50 3500 mg/kg Rat
Diethylene tri-amine	LD50 1080 mg/kg Rat
BISPHENOL A-EPICHLOROHYDRIN RESIN	LD50 > 1000 mg/kg Rat
POLYAMIDOAMINE	No Data
Dermal	
Triethylenetetramine	LD50 805 mg/kg Rabbit
Xylene	LD50 ≥4350 mg/kg Rabbit
Diethylene tri-amine	LD50 672 mg/kg Rabbit
BISPHENOL A-EPICHLOROHYDRIN RESIN	LD50 > 20000 mg/kg Rabbit
POLYAMIDOAMINE	No Data
Inhalation	
Triethylenetetramine	No Data
Xylene	Vapor LC50 6700 ppm 4 hr Rat
Diethylene tri-amine	LC50 170 ppm 4 hr Rat
BISPHENOL A-EPICHLOROHYDRIN RESIN	No Data
POLYAMIDOAMINE	No Data
Skin Corrosion/Irritation	
	No Data
Serious Eye Damage/Irritation	
	No Data
Respiratory sensitization	
	No Data
Skin sensitization	
	No Data
Carcinogenicity	
	No Data
IARC	
	Group 3
OSHA	
	No Data
ACGIH	
	A4
NTP	
	No Data
EU CLP	
	No Data
Germ Cell Mutagenicity	
	No Data
Reproductive toxicity	
	No Data
Germ Cell Mutagenicity	
	No Data
Reproductive toxicity	
	No Data
Specific target organ toxicity (single exposure):	
	No Data
Specific target organ toxicity (repeated exposure):	
	No Data
Aspiration hazard	
	No Data

## 12. Environmental information

### a. Aquatic and terrestrial ecotoxicity

Fish toxicity (Acute)	
Triethylenetetramine	No Data
Xylene	LC50 3.3 mg/l 96 hr
Diethylene tri-amine	No Data

BISPHENOL A-EPICHLOROXYDRIN RESIN	LC50 1.41 mg/l 96 hr Oryzias latipes
POLYAMIDOAMINE	No Data
Water flea toxicity (Acute)	
Triethylenetetramine	No Data
Xylene	LC50 190 mg/l 96 hr
Diethylene tri-amine	EC50 16 mg/l 48 hr
BISPHENOL A-EPICHLOROXYDRIN RESIN	EC50 1.7 mg/l 48 hr
POLYAMIDOAMINE	No Data
Birds growth hinderance test (Acute)	
	No Data
b. Persistence and degradability	
Persistence	
Triethylenetetramine	No Data
Xylene	No Data
Diethylene tri-amine	No Data
BISPHENOL A-EPICHLOROXYDRIN RESIN	log Kow 2.821
POLYAMIDOAMINE	No Data
Degradability	
	No Data
c. Bioaccumulative potential:	
condenasability	
Triethylenetetramine	No Data
Xylene	No Data
Diethylene tri-amine	No Data
BISPHENOL A-EPICHLOROXYDRIN RESIN	BCF 0.56 ~ 0.67
POLYAMIDOAMINE	No Data
biodegradability	
Triethylenetetramine	No Data
Xylene	39 (%)
Diethylene tri-amine	No Data
BISPHENOL A-EPICHLOROXYDRIN RESIN	0 (%) 28 day
POLYAMIDOAMINE	No Data
d. Mobility in soil:	
Triethylenetetramine	No Data
Xylene	log Kow = 3.12
Diethylene tri-amine	No Data
BISPHENOL A-EPICHLOROXYDRIN RESIN	No Data
POLYAMIDOAMINE	No Data
e. Other adverse effects	
	No Data

### 13. Disposal considerations

Incineration is the recommended disposal method for all chemical wastes. Material collected on absorbent material may be disposed in a landfill in accordance with all applicable local, state and federal regulations

### 14. Transport information

a. UN No.	3082
b. Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
c. Transportation Class	3
d. Packing Group	2
e. Marine Pollutant	No Data
f. Special precautions for user	

fire emergency F-A

spill Emergency S-F

15. Regulation information

a. Industrial Safety and Health Act No Data

b. Toxic Chemical Control Act Toxic

c. Dangerous Material Safety Control Act No Data

d. Wastes Management Act Designated Waste

e. Other requirements in domestic and other countries

National regulation Not applicable

other countries regulation

    U.S.A(OSHA ) Not applicable

    U.S.A(CERCLA)

Triethylenetetramine 453.599 kg 1000 lb

Xylene 45.3599 kg 100 lb

Diethylene tri-amine Not applicable

BISPHENOL A-EPICHLOROHYDRIN RESIN Not applicable

POLYAMIDOAMINE Not applicable

    U.S.A(EPCRA 302 ) Not applicable

    USA(EPCRA 304 ) Not applicable

    EU

Triethylenetetramine R10Repr. Cat. 2; R60-61Xn; R20/21/22

Xylene R10Xn; R20/21Xi; R38

Diethylene tri-amine Xi; R36/38R43N; R51-53

BISPHENOL A-EPICHLOROHYDRIN RESIN No Data

POLYAMIDOAMINE Carc.Cat.2; R45, Muta.Cat.2; R46

    EU

Triethylenetetramine R60, R61, R10, R20/21/22

Xylene R10, R20/21, R38

Diethylene tri-amine R36/38, R43, R51/53

BISPHENOL A-EPICHLOROHYDRIN RESIN No Data

POLYAMIDOAMINE R45, R46

    EU

Triethylenetetramine S53, S45

Xylene S2, S25

Diethylene tri-amine S2, S28, S37/39, S61

BISPHENOL A-EPICHLOROHYDRIN RESIN No Data

POLYAMIDOAMINE S:53-45

16. Other requirements in domestic and other countries

a. Information source and references

Triethylenetetramine

    Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)

    ECB-ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>)

    ECOTOX Database, EPA(<http://cfpub.epa.gov/ecotox>)

IUCLID Chemical Data Sheet, EC-ECB  
International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>)  
TOXNET, U.S. National Library of Medicine(<http://toxnet.nlm.nih.gov>)  
The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)  
산업중독편람, 신광출판사  
위험물질정보관리시스템, 소방방재청(<http://hazmat.nema.go.kr>)  
화학물질정보시스템, 국립환경과학원(<http://ncis.nier.go.kr>)

BISPHENOL A-EPICHLOROHYDRIN RESIN

National Institute of Technology and Evaluation(NITE)([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html))  
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)  
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)  
National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)  
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)  
European chemical Substances Information System(ECB-ESIS)(<http://ecb.jrc.it/esis>)  
National Institute of Technology and Evaluation(NITE)([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html))  
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)  
National Institute of Technology and Evaluation(NITE)([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html))  
European chemical Substances Information System(ECB-ESIS)(<http://ecb.jrc.it/esis>)  
National Library of Medicine/Chemical Carcinogenesis Research Information  
National Library of Medicine/genetic toxicology(NLM/GENETOX)(<http://toxnet.nlm.nih.gov/>)  
National Institute of Technology and Evaluation(NITE)([http://www.safe.nite.go.jp/ghs/h18\\_bunrui.html](http://www.safe.nite.go.jp/ghs/h18_bunrui.html))  
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)

- b. Issuing date 2014-06-28
- c. Revision number and date
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|-----------------|---|
| Revision number | - |
| Date            | - |
- d. Others