

Material Safety Data Sheet

1. Chemical Product and Company Identification

가. Trade Name	JP-100(33%)(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 : Category1B Carcinogenicity : Category1A STOT Rep. : Category 1 Aquatic Chronic : Category 2
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b. Hazards Description:

Pictogram



Signal word	DANGER
Hazards Classification and Statements	H225 Highly flammable liquid and vapour H305 May be harmful if swallowed and enters airways H314 Causes severe skin burns and eye damage H317 May cause an allergic skin reaction H318 Causes serious eye damage H336 May cause drowsiness or dizziness H360 May damage fertility or the unborn child H370 Causes damage to organs H372 Causes damage to organs through prolonged or repeated exposure H411 Toxic to aquatic life with long lasting effects
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
P272 Contaminated work clothing should not be allowed out of the workplace
P273 Avoid release to the environment
P280 Wear protective gloves/protective clothing/eye protection/face protection
P281 Use personal protective equipment as required
Response precautionary statements P301+P310 IF SWALLOWED:Immediately call a POISON CENTER or doctor/physician
P301+P330+P331 Toxic if swallowed Fatal if inhaled Toxic if inhaled
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
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.
P312 Call a POISON CENTER or doctor/physician if you feel unwell
P314 Get Medical advice/attention if you feel unwell
P321 Specific treatment (see ... on this label)
P331 Do NOT induce vomiting
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.
P391 Collect spillage.
Storage precautionary statements P403+P233 Store in a well ventilated place Keep container tightly closed
P403+P235 Store in a well ventilated place Keep cool
P405Store locked up
Disposal precautionary statements: P501 Dispose of contents/container in accordance with local/regional/national/international regulation (to be specified).

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

METHYL ETHYL KETONE

Health hazard	1
Fire	3
Reactivity Hazard	0

Bisphenol-A- bisphenol A diglycidyl ether polymer

Health hazard	2
Fire	1
Reactivity Hazard	0

POLYAMIDOAMINE

Health hazard	2
Fire	1
Reactivity Hazard	0

2,4,6-tris (dimethylaminomethyl) phenol

Health hazard	3
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 benze	1330-20-7	55~60
METHYL ETHYL KETONE	2-Butanone	78-93-3	0~5
Bisphenol-A- bisphenol A diglycidyl ether polymer	Phenol, 4,4-(1-methylethylidene)bis-, polymer with 2,2-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis(oxirane)	25036-25-3	0~5
POLYAMIDOAMINE	REACTIVE POLYAMIDE RESIN	68082-29-1	15~20
2,4,6-tris (dimethylaminomethyl) phenol	2,4,6-TRIS((DIMETHYLAMINO)METHYL)PHENO	90-72-2	0~5

4. First aid measures

- a. Eye contact
Flush eyes with plenty of water for at least 15 minutes while holding eyelids open.
- b. Skin contact
Consult a physician if signs of irritation appear.
- c. Inhalation
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.
- d. Ingestion
Move person to fresh air area and provide oxygen if breathing is difficult. Consult a physician if effects occur.
- 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-100(33%).

8. Exposure controls/personal protection

a. Exposure Limits

National regulations

Triethylenetetramine	No Data
Xylene	TWA - 100ppm 435mg/m ³ STEL - 150ppm 655mg/m ³
METHYL ETHYL KETONE	TWA - 200ppm 590mg/m ³ STEL - 300ppm 885mg/m ³
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	No Data

ACGIH regulations

Triethylenetetramine	No Data
Xylene	TWA 100 ppm
Xylene	STEL 150 ppm
METHYL ETHYL KETONE	TWA 200 ppm
METHYL ETHYL KETONE	STEL 300 ppm
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	No Data

Biological exposure limits

Triethylenetetramine	No Data
Xylene	No Data
METHYL ETHYL KETONE	2 mg/L
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	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	-86 °C
6. Boiling Point	80 °C
7. Flash Point	-9 °C
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	0.85~0.95
15. n-Octanol/Water Partition coefficient	No Data
16. Autoignition Temperature	No Data
17. Decomposition Temperature	No Data
18. Viscosity(at 25 °C)	15~30 Cps(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
METHYL ETHYL KETONE	LD50 2737 mg/kg Rat
Bisphenol-A- bisphenol A diglycidyl ether polymer	LD50 > 2000 mg/kg Rat (Dow Chemical)
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	LD50 1200 mg/kg Rat
Dermal	
Triethylenetetramine	LD50 805 mg/kg Rabbit

Xylene	LD50 ≥4350 mg/kg Rabbit
METHYL ETHYL KETONE	LD50 6480 mg/kg Rabbit
Bisphenol-A- bisphenol A diglycidyl ether polymer	LD50 > 2000 mg/kg Rabbit (Dow Chemical)
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol Inhalation	LD50 1280 mg/kg Rat
Triethylenetetramine	No Data
Xylene	Vapor LC50 6700 ppm 4 hr Rat
METHYL ETHYL KETONE	Vapor LC50 32 mg/l 4 hr Mouse
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol Skin Corrosion/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
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
METHYL ETHYL KETONE	LC50 3220 mg/l 96 hr Pimephales promelas
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol Water flea toxicity (Acute)	LC50 447.821 mg/l 96 hr
Triethylenetetramine	No Data
Xylene	LC50 190 mg/l 96 hr
METHYL ETHYL KETONE	EC50 5091 mg/l 48 hr Daphnia magna
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol Birds growth hinderance test (Acute)	LC50 28.198 mg/l 48 hr
Triethylenetetramine	No Data
Xylene	No Data
METHYL ETHYL KETONE	EC50 > 500 mg/l 96 hr Skeletonema costatum
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	EC50 34.812 mg/l 96 hr
b. Persistence and degradability	
Persistence	
Triethylenetetramine	log Kow -2.65
Xylene	3.12
METHYL ETHYL KETONE	log Kow 0.29
Bisphenol-A- bisphenol A diglycidyl ether polymer	Not applicable
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	log Kow 0.77
Degradability	
	No Data
c. Bioaccumulative potential:	
condensability	
	BCF 3.162
biodegradability	
Triethylenetetramine	No Data
Xylene	39 (%)
METHYL ETHYL KETONE	89 (%) 20 day
Bisphenol-A- bisphenol A diglycidyl ether polymer	No Data
POLYAMIDOAMINE	No Data
2,4,6-tris (dimethylaminomethyl) phenol	No Data
d. Mobility in soil:	
	log Kow = 3.12
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.	1307
b. Proper Shipping Name	
Triethylenetetramine	TRIETHYLENETETRAMINE
Xylene	XYLENES
METHYL ETHYL KETONE	ETHYL METHYL KETONE,METHYL ETHYL KETONE
Bisphenol-A- bisphenol A diglycidyl ether polymer	Not applicable
POLYAMIDOAMINE	Not applicable
2,4,6-tris (dimethylaminomethyl) phenol	AMINES,LIQUID,CORROSIVE,N.O.S. orPOLYAMINES,LIQUID,CORROSIVE,N.O.S.
c. Transportation Class	3
d. Packing Group	I
e. Marine Pollutant	Not applicable
f. Special precautions for user	
fire emergency	F-A
spill Emergency	S-B

15. Regulation information

a. Industrial Safety and Health Act	No Data
b. Toxic Chemical Control Act	Toxic
c. Dangerous Material Safety Control Act	The first four kinds of petroleum 200ℓ
d. Wastes Management Act	Designated Waste
National regulation	Not applicable
other countries regulation	
U.S.A(OSHA)	Not applicable
U.S.A(CERCLA)	45.3599 kg 100 lb
U.S.A(EPCRA 302)	Not applicable
USA(EPCRA 304)	Not applicable
USA(EPCRA 313)	Applicable
EU	
Triethylenetetramine	Xn: R21C; R34R43R52-53
Xylene	R10Xn; R20/21Xi; R38
METHYL ETHYL KETONE	F; R11Xi; R36R66R67

Bisphenol-A- bisphenol A diglycidyl ether polymer	Not applicable
POLYAMIDOAMINE	Not applicable
2,4,6-tris (dimethylaminomethyl) phenol EU	Xn: R22Xi; R36/38
Triethylenetetramine	R21, R34, R43, R52/53
Xylene	R10, R20/21, R38
METHYL ETHYL KETONE	R11, R36, R66, R67
Bisphenol-A- bisphenol A diglycidyl ether polymer	Not applicable
POLYAMIDOAMINE	Not applicable
2,4,6-tris (dimethylaminomethyl) phenol EU	R22, R36/38
Triethylenetetramine	S1/2, S26, S36/37/39, S45, S61
Xylene	S2, S25
METHYL ETHYL KETONE	S2, S9, S16
Bisphenol-A- bisphenol A diglycidyl ether polymer	Not applicable
POLYAMIDOAMINE	Not applicable
2,4,6-tris (dimethylaminomethyl) phenol	S2, S26, S28

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>)

b. Issuing date 2014-03-04

c. Revision number and date

Revision number -

Date -

d. Others