Material Safety Data Sheet

1. Chemical Product and Company Identification

가. Trade Name	JA-556B
General Use	Epoxy Adhesives
.	
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

b. Hazards Description:

Pictogram

Signal word	WARNING
Hazards Classification and Statements	H302 Harmful if swallowed H315 Causes skin irritation H317 May cause an allergic skin reaction H319 Causes serious eye irritation H351 Suspected of causing cancer H400 Very toxic to aquatic life H410 Very 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 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+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
	P302+P352 IF ON SKIN: Wash with soap and 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.
	P314 Get medical advice/attention if you feel unwell.
	P321 Specific treatment (see ... on this label).
	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.
Storage precautionary statements	P405 Store 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)

Diuron	
Health hazard	1
Fire	1
Reactivity Hazard	1
Epichlorohydrin-bisphenol A resin	
Health hazard	2
Fire	1
Reactivity Hazard	0
Dicyandiamide	
Health hazard	1
Fire	1
Reactivity Hazard	0
silicon oxide	
Health hazard	1
Fire	0
Reactivity Hazard	0
1,6-bis (2,3-epoxypropoxy) hexane	
Health hazard	No Data
Fire	No Data
Reactivity Hazard	No Data

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component		CAS NO.	Amount(%)
Diuron	N''-(3,4-DICHLOROPHENYL)-N,N-DIMETHYLUREA	330-54-1	5~10
Epichlorohydrin-bisphenol A resin	비스페놀 A-에피클로로하이드린 수지 (BISPHENOL A-EPICHLOROHYDRIN RESIN);	25068-38-6	40~45
Dicyandiamide	시아노구아니딘(CYANOGUANIDINE);	461-58-5	0~5
silicon oxide	SILICA	7631-86-9	20~25
1,6-bis (2,3-epoxypropoxy) hexane		16096-31-4	15~20

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 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 JA-556B

8. Exposure controls/personal protection

a. Exposure Limits

National regulations

Diuron	TWA - 10mg/m3
Epichlorohydrin-bisphenol A resin	No Data
Dicyandiamide	No Data
silicon oxide	TWA - 10mg/m3
1,6-bis (2,3-epoxypropoxy) hexane	No Data

ACGIH regulations

Diuron	TWA 10 mg/m3
Epichlorohydrin-bisphenol A resin	No Data
Dicyandiamide	No Data
silicon oxide	No Data
1,6-bis (2,3-epoxypropoxy) hexane	No Data
Biological exposure limits	
	No Data
b. Suitable Engieering Management	Use process isolation, local ventilation or other engieering 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	Milk white
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	1.30~1.40
15. n-Octanol/Water Partition coefficient	No Data
16. Autoignition Temperature	No Data
17. Decomposition Temperature	No Data
18. Viscosity(at 25℃)	Thixo
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

Diuron	LD50 1000 ㎎/㎏ Rat
Epichlorohydrin-bisphenol A resin	LD50 > 1000 ㎎/㎏ Rat
Dicyandiamide	LD50 > 30000 ㎎/㎏ Rat
silicon oxide	LD50 3160 ㎎/㎏ Rat
1,6-bis (2,3-epoxypropoxy) hexane	No Data

Dermal

Diuron	LD50 > 5000 ㎎/㎏ Rat
Epichlorohydrin-bisphenol A resin	LD50 > 20000 ㎎/㎏ Rabbit
Dicyandiamide	LD50 > 10000 ㎎/㎏ Rabbit
silicon oxide	LD50 > 2000 ㎎/㎏ Rabbit
1,6-bis (2,3-epoxypropoxy) hexane	No Data

Inhalation

Diuron	LC50> 5 ㎎/ℓ 4 hr Rat
Epichlorohydrin-bisphenol A resin	No Data
Dicyandiamide	No Data
silicon oxide	LC50> 2.2 ㎎/ℓ 1 hr Rat
1,6-bis (2,3-epoxypropoxy) hexane	No Data

Skin Corrosion/Irritation

No Data

Respiratory sensitization

No Data

Skin sensitization

No Data

Carcinogenicity

No Data

IARC

No Data

OSHA

No Data

ACGIH

A4

NTP

No Data

EU CLP

Carc. 2

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)

Diuron	LC50 0.5 ㎎/ℓ 96 hr
Epichlorohydrin-bisphenol A resin	LC50 1.41 ㎎/ℓ 96 hr Oryzias latipes
Dicyandiamide	LC50 > 100 ㎎/ℓ 96 hr Oryzias latipes
silicon oxide	LC50 5000 ㎎/ℓ 96 hr
1,6-bis (2,3-epoxypropoxy) hexane	LC50 9.065 ㎎/ℓ 96 hr

Water flea toxicity (Acute)

Diuron	EC50 1.4 ㎎/ℓ 48 hr
Epichlorohydrin-bisphenol A resin	EC50 1.7 ㎎/ℓ 48 hr
Dicyandiamide	EC50 > 1000 ㎎/ℓ 48 hr Daphnia magna (OECD TG 202)
silicon oxide	LC50 7600 ㎎/ℓ 48 hr
1,6-bis (2,3-epoxypropoxy) hexane	LC50 1.398 ㎎/ℓ 48 hr

Birds growth hinderance test (Acute)

Diuron	EbC 0.013 ㎎/ℓ 72 hr
Epichlorohydrin-bisphenol A resin	No Data
Dicyandiamide	EC50 935 ㎎/ℓ 72 hr Selenastrum capricornutum (OECD TG 201)
silicon oxide	EC50 440 ㎎/ℓ 72 hr
1,6-bis (2,3-epoxypropoxy) hexane	No Data

b. Persistence and degradability

Persistence

Diuron	No Data
Epichlorohydrin-bisphenol A resin	log Kow 2.821
Dicyandiamide	log Kow -1.15
silicon oxide	log Kow 0.53
1,6-bis (2,3-epoxypropoxy) hexane	log Kow 0.84

Degradability

No Data

c. Bioaccumulative potential:

condenasability

Diuron	BCF 14
Epichlorohydrin-bisphenol A resin	BCF 0.56 ~ 0.67
Dicyandiamide	BCF ≤ 3.1 (Cyprinus carpio)
silicon oxide	BCF 3.162
1,6-bis (2,3-epoxypropoxy) hexane	BCF 3.162

biodegradablility

Diuron	No Data
Epichlorohydrin-bisphenol A resin	0 (%) 28 day
Dicyandiamide	0 (%) 28 day (This substance is not readily biodegradable under aerobic
silicon oxide	No Data
1,6-bis (2,3-epoxypropoxy) hexane	No Data

d. Mobility in soil:

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

9

d. Packing Group

III

e.Marine Pllutant

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

Observational chemicals

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)

45.3599 kg 100 lb

U.S.A(EPCRA 302)

Not applicable

USA(EPCRA 304)

Not applicable

USA(EPCRA 313 규정)

applicable

EU

Diuron	Carc. Cat. 3; R40Xn; R22-48/22N; R50-53
Epichlorohydrin-bisphenol A resin	Xi; R36/38R43N; R51-53
Dicyandiamide	Not applicable
silicon oxide	Not applicable

1,6-bis (2,3-epoxypropoxy) hexane	Not applicable
EU	
Diuron	R22, R40, R48/22, R50/53
Epichlorohydrin-bisphenol A resin	R36/38, R43, R51/53
Dicyandiamide	Not applicable
silicon oxide	Not applicable
1,6-bis (2,3-epoxypropoxy) hexane	Not applicable
EU	
Diuron	S2, S13, S36/37, S46, S60, S61
Epichlorohydrin-bisphenol A resin	S2, S28, S37/39, S61
Dicyandiamide	Not applicable
silicon oxide	Not applicable
1,6-bis (2,3-epoxypropoxy) hexane	Not applicable

16. Other requirements in domestic and other countries

a. Information source and references

Diuron

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)

BISPHENOL A-EPICHLOROHYDRIN RESIN

National Institute of Technology and Evaluation(NITE)(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)

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)

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

National Library of Medicine/Chemical Carcinogenesis Research Information System(NLM/CCRIS)(http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CCRIS)

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)

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

Dicyandiamide

National Library of Medicine/Hazardous Substances Data Bank(NLM/HSDB)(http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)

OECD Screening Information Data Set(http://cs3-hq.oecd.org/scripts/hpv/)

Uakron

OECD Screening Information Data Set(http://cs3-hq.oecd.org/scripts/hpv/)

HSD

National Library of Medicine/Hazardous Substances Data Bank(NLM/HSDB)(http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB)

1,6-bis (2,3-epoxypropoxy) hexane

Ecological Structure Activity Relationships(ECOSAR

Quantitative Structure Activity Relation(QSAR

b. Issuing date 2013-06-28

c. Revision number and date

Revision number -

Date -

d. Others