

Name of Grade	SE-770 (Acid anhydride)	CODE	11304A
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1. Product and company identification

a). Product Name	SE-770 (Acid anhydride)
b). Recommended use of the chemical	Liquid epoxy
c). Manufacture Information	
Manufacturer	GREENSTAR CO.,LTD.
Address	539-3, Segyo-dong, Pyeongtaek-city, Kyung GI, KOREA
Emergency or Information Contact	TEL: 031) 657-2321~2326 FAX: 031) 657-2327

2. Hazards identification

a) Hazard Risk Classification	Acute Toxicity – Oral : Category 4 Skin Corrosion/Irritation : Category 2 Serious Eye Damage/Irritation : Category 2 Skin Sensitization : Category 1 Carcinogenicity: Category 1B Reproductive toxicity: Category 1B Specific target organ toxicity (single exposure) : Category 2 Specific target organ toxicity (repeated exposure) : Category 2 Chronic hazards to the aquatic environment : Category 2
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b) Label elements including precautionary statements
Symbol



Signal word	Danger
Hazard risk statement	H302 Harmful if swallowed H315 Causes skin irritation H317 May cause allergic skin reaction H319 Cause serious eye irritation H411 Toxic to aquatic life with long lasting effects
Precautionary statement	
Prevention	P261 Avoid breathing dust/fume/gas/mist/vapors/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 glove/clothing/ eye protection/face protection

Response	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 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. remove contact lenses, if present and easy to do. Continue rinsing 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
Storage	P403+P233 Store in a well- ventilated place. Keep container tightly closed.
Disposal	P501 Dispose of contents/container to ...
C) Other hazard risk which are not included in the classification criteria	
Health	2
Fire	1
Reactivity	0

3. Composition/Information on ingredients

물질명	이명(관용명)	CAS 번호	함유량(%)
ANTIMONY TRIOXIDE	-	1309-64-4	1 - 5
FERRIC-FERROUS OXIDE	-	1317-61-9	1 - 5
ALUMINA TRIHYDRATE	-	21645-51-2	25 - 40
DIGLYCIDYL ETHER OF BISPHENOL A	-	25068-38-6	35 - 55
DIGLYCIDYL ETHER OF BROMONATED BISPHENOL A	-	40039-93-8	5 - 15

4. First aid measures

a) Eye contact	Flush eye plenty of water for at least several minutes while holding eyelids open Consult a physician if signs of irritation appear
b) Skin contact	If skin irritation occurs: Get medical advice/attention Immediately remove contaminated clothing or shoes, wash skin plenty of water for at least several minutes. 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	Rinse mouth with water Consult a physician if effects occur
e) Indication of immediate medical attention and notes for physician	Get adequate measure with the symptoms

5. Fire-Fighting measure

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| a) Suitable and unsuitable extinguishing media | |
| – Suitable extinguishing media | Use Dry chemical, carbon dioxide, water, foam, sand |
| – Unsuitable extinguishing media | No data |
| – Conflagration | Use foaming agent in use or water spray |
| b) Specific hazards arising from the chemical | In case of combustion, Toxic fumes might be formed |
| c) Special protective equipment and precautions for fire-fighters | The rescuer wear a protective equipment
isolate from heat, electrical equipment, sparks and open flame |

6. Accidental release measures

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| a) Personal precautions, protective equipment and emergency procedures | Eliminate all ignition sources
Do not touch or walk through spilled material
Stop leak if you can do it without risk
Use care with the material and condition to avoid |
| b) Environmental precautions and protective procedures | Avoid to discharge in the environment
Store away from water supply and drainage |
| c) Methods and materials for containment and cleaning up | No entry to unauthorized person

Absorb on sand or non-flammable material and store away in container

All disposal methods must be in compliance with applicable local regulations
Sweep spilled material into non-leaking containers. |

7. Handling and storage

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|----------------------------------|---|
| a) Precautions for safe handling | Avoid inhalation, Avoid contact with eyes, skin, and clothing
Store and handle in accordance with the existing law and regulation
Contaminated work clothing should not be allowed out of the workplace
Avoid prolonged or repeated exposure |
| b) Conditions for safe storage | Store at good place of ventilation.
Avoid to contact with fire source. |

8. Exposure controls & personal protection

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|-------------------------------------|---|
| a) Control parameters | |
| Domestic regulation | No data |
| ACGIH | No data |
| b) Appropriate engineering controls | Wash hands before breaks and at the end of workday
Mechanical exhaust required
Install a local ventilation
Handle in accordance with good industrial hygiene and safety practice |
| c) Personal protective equipment | |
| – Respiratory protection | Handle in a ventilated enclosure
For greater protection a face piece chemical cartridge respirator is recommended |
| – Eye protection | Safety glasses with side shields |
| – Hands protection | Chemical resistant gloves |
| – Body protection | Chemical resistant protective suit & boot
Don't need protective clothes at normal state. |

9. Physical and chemical properties

a) Appearance	Black opaque liquid
b) Odor	odourless
c) Odor threshold	No data
d) PH	No data
E) Melting/freezing point	No data
f) Initial boiling point and boiling range	No data
g) Flashing point	①DGEBAs: > 249 °C
h) Evaporation rate	No data
i) Flammability	No data
j) Upper/lower flammability or explosive limits	No data
k) Vapor pressure	No data
L) Solubility	Insolubility
m) Vapor density	No data
n) Specific gravity	1.55 ± 0.05 (at 25°C)
o) Partition coefficient	No data
p) Auto-ignition temperature	No data
q) Decomposition temperature	No data
r) Viscosity	4,000 ~9,000 cps (at 25°C)
s) Formula mass (Mw)	No data

10. Stability and reactivity

a) Chemical stability	Stable in recommended conditions
b) Possibility of hazardous reactions	It may cause exothermic polymerization with acid, amines or other epoxy
c) Conditions to avoid	Avoid to contact with strong oxidizing agent, heat, spark and flame Don't apply heat to container
d) Hazardous decomposition products	May produce hazardous carbon oxides, chloro hydrogen

11. Toxicological information

a) Information on the likely route of exposure	May cause respiratory organ irritation May cause Skin irritation May cause eye irritation
b) Health information from short and long-term exposure	
Acute toxic	
Oral	
ALUMINA TRIHYDRATE	LD50 > 5000 mg/kg Rat (oral(rat))
DIGLYCIDYL ETHER OF BISPHENOL A	LD50 > 1000 mg/kg Rat
Dermal	
DIGLYCIDYL ETHER OF BISPHENOL A	LD50 > 20000 mg/kg Rabbit
Inhalation	No data
Skin corrosive/irritant	
DIGLYCIDYL ETHER OF BISPHENOL A	* Cause skin irritant (rabbit) (CERI Hazard data 2002) * Class R38 (EU) * Cause skin irritant of above middle (STANDARD DRAIZE TEST)
FERRIC-FERROUS OXIDE	Non irritation -rabbit
Serious eye damage/eye irritation	
ANTIMONY TRIOXIDE	Mind irritation - rabbit

DIGLYCIDYL ETHER OF BISPHENOL A	* Cause skin irritant (rabbit) (CERI Hazard data 2002) * Cause skin irritant of above middle (STANDARD DRAIZE TEST)
Skin sensitization	
DIGLYCIDYL ETHER OF BISPHENOL A	R43 (EU regulation 7th revision)
Carcinogenicity	No data

12. Ecological information

a) Aquatic and terrestrial ecotoxicity

Fish

ANTIMONY TRIOXIDE	LC50 80 mg/l 96 hr
ALUMINA TRIHYDRATE	LC50 > 100 mg/l 96 hr 기타 (Salmo trutta)
DIGLYCIDYL ETHER OF BISPHENOL A	LC50 1.41 mg/l 96 hr Oryzias latipes

Crustacean

ANTIMONY TRIOXIDE	EC50 423.45 mg/l 48 hr
ALUMINA TRIHYDRATE	EC50 > 100 mg/l 48 hr Daphnia magna
DIGLYCIDYL ETHER OF BISPHENOL A	EC50 1.7 mg/l 48 hr

Bird

ANTIMONY TRIOXIDE	EC50 67 mg/l 72 hr
ALUMINA TRIHYDRATE	EC50 > 100 mg/l 72 hr Selenastrum capricornutum

b) Persistence and resolvability

Persistence

DIGLYCIDYL ETHER OF BISPHENOL A	log Kow 2.821 (estimation)
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resolvability

No data

c) Bioaccumulative potential

Concentration

ALUMINA TRIHYDRATE	BCF 3.162
DIGLYCIDYL ETHER OF BISPHENOL A	BCF 0.56 ~ 0.67 (exposure concentration :10ug/l, 5.6<= BCF=<6.8(exposure concentration:1ug/l))

Bio resolvability

0 (%) 28 day

d) Mobility in soil

No data

e) Other adverse effects

No data

13. Disposal considerations

a) Disposal method	Dispose of contents/container to the regulations
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14. Transport information

a) UN number	3082
b) UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
c) Transport hazard class	9
d) Packing group	III
e) Marine pollution	No data
f) Special precaution in connection with transport or conveyance	
Emergency procedure at fire	F-A
Emergency procedure at leakages	S-F

15. Regulatory information

a) Occupational safety and health act	No data
b) Toxic chemical control act	Observational chemical
c) Safety control dangerous	No data
d) Wastes control act	Specific waste
e) Other requirements in domestic and other countries	
Domestic regulation	No data
Other countries	
USA	No data
EU (Classification)	Xi; R36/38R43N; R51-53
EU (Risk phrases)	R36/38, R43, R51/53
EU (Safety phrases)	S2, S28, S37/39, S61

4. First aid measures

a) Information source and references	
	IUCLID Chemical Data Sheet, EC-ECB, National Institute of Technology and Evaluation ㉔
b) Issuing date	2013-01-16
c) Revision number and date	
Revision No.	1
Revision date.	2013-07-05
d) Others	

○ The Written Material safety data sheet is some edited and modified data on reference to the MSDS of Korea occupational safety and health agency.