

MATERIAL SAFETY DATA SHEET

ESTONE E-5000 Green AD-4050 Part A

Date of issue: 2013-08-16

Revision date: 2013-08-16

Version: R0001.0002

1. IDENTIFICATION

A. Product name

- ESTONE E-5000 Green AD-4050 Part A [AP-44580-4050]

B. Recommended use and restriction on use

- General use : Traffic paint(Anti-skid)
 - Restriction on use : Don't user this for ohter use

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : Jeong Seok
 - Address : 192 wanjusandan 3ro Bongdong-eup wanju-gun Jeollabuk-do Korea 565-904
 - Dept. : R&D Department
 - Telephone number : +82-63-260-2323
 - Emergency telephone number : +82-63-260-2323
 - Fax number : +82-63-260-3577
 - E-mail address :

o Supplier/Distributor information

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2. HAZARD IDENTIFICATION

A. GHS Classification

- Carcinogenicity : Category1A
 - Reproductive toxicity : Category2
 - Serious eye damage/irritation : Category2
 - Flammable liquids : Category3
 - Specific target organ toxicity(Single exposure) : Category1
 - Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)
 - Specific target organ toxicity(Repeated exposure) : Category2
 - Skin corrosion/irritation : Category2
 - Aspiration hazard : Category2

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

○ **Hazard statements**

- H226 Flammable liquid and vapour
- H305 May be harmful if swallowed and enters airways
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation.
- H350 May cause cancer
- H361 Suspected of damaging fertility or the unborn child
- H370 Causes damage to organs(Refer Section SDS 11)
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ **Precautionary statements**

1) Prevention

- 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/lighting/equipment.
- P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3
- 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 hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.

2) Response

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302+P352 IF ON SKIN: Wash with plenty of 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
- P331 Do NOT induce vomiting.
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- 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 : 3, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
4,4'-(1-Methylethylidene)bisphenol polymer with 2,2'-(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]	-	25036-25-3	50 ~ 60
Calcium carbonate	Carbonic acid calcium salt (1:1)	471-34-1	30 ~ 40
2-Propanol	Isopropanol	67-63-0	10 ~ 20
C.I. pigment green 13	C.I. pigment green 013	148092-61-9	1 ~ 10
Secret	Secret	-	0 ~ 1

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.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- Remove contact lenses if worn.

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.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- Remove contaminated clothing, shoes and isolate.
- Wash thoroughly after handling.
- Wear gloves when washing the patient, and please avoid contact with contaminated clothing.

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.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- About whether I should induce vomiting Take the advice of a doctor.
- 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.
- If exposed or concerned, get medical attention/advice.

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

- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local fire station and inform the location of the fire and characteristics hazard.

- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- Avoid inhalation of materials or combustion by-products.
- Do not access if the tank on fire.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- The extremely low flash point made by fire-fighters may be less effective at digesting weeks.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handling the damaged containers or spilled material after wearing protective equipment.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away, isolate hazard area and deny entry.

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.
- Do not use plastic containers.
- Spilled material should be treated as a potential risk of waste collected.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Get the manual before use.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- Keep sealed when not in use.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o ACGIH TLV

- [2-Propanol] : TWA 200 ppm
- [Secret] : TWA 100 ppm
- [Secret] : TWA 20 ppm

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. 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 chemical resistant glove.

o Skin protection

- Wear appropriate chemical resistant protective clothing.

o Others

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid(Viscous liquid)
- Color	Green
B. Odor	Unpleasant
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	/
F. Initial Boiling Point/Boiling Ranges	220 °C
G. Flash point	25 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	7.1/1.1
K. Vapour pressure	Not available
L. Solubility	Insolubility
M. Vapour density	Not available
N. Specific gravity	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	480
Q. Decomposition temperature	Not available
R. Viscosity	110±10
S. Molecular weight	Not available

10. STABILITY AND REACTIVITY

A. Chemical stability

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

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

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
 - May cause respiratory irritation.
- **(Oral)**
 - Not available
- **(Eye/Skin)**
 - Causes serious eye irritation
 - Causes skin irritation

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

- **Acute toxicity**
 - * **Oral**
 - [4,4'-(1-Methylethylidene)bisphenol polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]] : LD50 > 2000 mg/kg Rat
 - [Calcium carbonate] : LD50 = 6450 mg/kg Rat
 - [2-Propanol] : LD50 = 4710mg/kg Rat
 - [Secret] : LD50 > 5000 mg/kg Rat
 - [Secret] : LD50 = 1746 mg/kg Rat
 - [Secret] : LD50 = 4250 mg/kg Rat
 - * **Dermal**
 - [4,4'-(1-Methylethylidene)bisphenol polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]] : LD50 > 2000 mg/kg Rabbit
 - [2-Propanol] : LD50 = 12870 mg/kg rabbit
 - [Secret] : LD50 = 99 mg/kg Rabbit
 - * **Inhalation**
 - [2-Propanol] : LC50 = 72600 mg/ℓ 4 hr Rat
 - [Secret] : LC50 = 2.2 mg/ℓ 4 hr Rat
- **Skin corrosion/irritation**
 - Causes skin irritation
- **Serious eye damage/irritation**
 - Causes serious eye irritation
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - [2-Propanol] : 3
 - [Secret] : 1
 - [Secret] : 3
 - * **OSHA**

- Not available
- * **ACGIH**
 - [2-Propanol] : A4
 - [Secret] : A2
 - [Secret] : A3
- * **NTP**
 - Not available
- * **EU CLP**
 - [Secret] : Carc. 1B
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Suspected of damaging fertility or the unborn child
- **STOT-single exposure**
 - Causes damage to organs(Refer Section SDS 11)
 - May cause respiratory irritation.
- **STOT-repeated exposure**
 - May cause damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
- **Aspiration hazard**
 - May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Calcium carbonate] : LC50 > 56000 mg/ℓ 96 hr
 - [2-Propanol] : LC50 > 100 mg/ℓ 96 hr
 - [Secret] : LC50 1254.44 mg/ℓ 96 hr Salmo gairdneri
 - [Secret] : LC50 = 1250 mg/ℓ 96 hr
- **Crustaceans**
 - [Secret] : LC50 = 0.4 ~ 2.3 mg/ℓ 48 hr
 - [Secret] : LC50 = 5.4 mg/ℓ 96 hr
 - [Secret] : EC50 = 280 mg/ℓ 24 hr Daphnia magna
- **Algae**
 - [Calcium carbonate] : EC50 = 22000 mg/ℓ 96 hr
 - [2-Propanol] : EC50 = 2.2 mg/ℓ 96 hr
 - [Secret] : EC50 = 11.038 mg/ℓ 96 hr

B. Persistence and degradability

- **Persistence**
 - [Secret] : log Kow 5.87
 - [Secret] : log Kow = 3.16 ~ 7.06
 - [Secret] : log Kow = 0.83
 - [Secret] : log Kow = 1.057
- **Degradability**
 - Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**
 - [Calcium carbonate] : BCF = 3.162
- **Biodegradation**
 - [Secret] : Biodegradability = 12 ~ 13 (%)
 - [Secret] : Biodegradability = 96 (%)
 - [Secret] : Biodegradability > 90 (%) 5 day

D. Mobility in soil

- [Calcium carbonate] : Koc = 4.971

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS**A. Disposal methods**

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, 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.
- High temperature incinerate
- After taking off organic solvents that are supposed to be recycled, incinerate the rest of them at a high degree.

B. Special precautions for disposal

- The user of this product must disposal 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 number**

- 1263

B. Proper shipping name

- Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base

C. Hazard class

- 3

D. Packing group

- I

E. Marine pollutant

- [Secret] : 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-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-E (Flammable liquids, floating on water)

15. REGULATORY INFORMATION**A. National and/or international regulatory information**

- o **POPs Management Law**
 - Not applicable
- o **Information of EU Classification**
 - * **Classification**
 - [2-Propanol] : F; R11 Xi; R36 R67
 - [Secret] : Carc. Cat. 2; R45 Muta. Cat. 2; R46 Xn; R65
 - [Secret] : Xn; R20/21/22 Xi; R36/38
 - * **Risk Phrases**
 - [2-Propanol] : R11, R36, R67
 - [Secret] : R45, R46, R65
 - [Secret] : R20/21/22, R36/38
 - * **Safety Phrase**
 - [2-Propanol] : S2, S7, S16, S24/25, S26
 - [Secret] : S53, S45
 - [Secret] : S2, S36/37, S46

- **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)**
 - [2-Propanol] : 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

B. Issue date

- 2013-08-16

C. Revision number and Last date revised

- 1 times, 2013-08-16

D. Other

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