

SAFETY DATA SHEET

According to OSHA Hazcom Standard 29 CFR 1910.1200

EC3119PTB

1. IDENTIFICATION

A. Product name

- EC3119PTB

B. Recommended use and restriction on use

- General use : epoxy hardener
- Restriction on use : Do not use except for purpose

C. Manufacturer / Supplier / Distributor information

Manufacturer information

- Company name : KCC Corporation
- Address : 30, Bangeojinsunhwando-ro, Dong-gu, Ulsan
- Emergency telephone number : 82-52-280-1717

Supplier/Distributor information

- Company name : KCC Corporation
- Address : 30, Bangeojinsunhwando-ro, Dong-gu, Ulsan
- Emergency telephone number : 82-52-280-1717

2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category3
- Acute toxicity (inhalation: vapor) : Category3
- Skin corrosion/irritation : Category2
- Serious eye damage/irritation : Category1
- Respiratory sensitization : Category1
- Skin sensitization : Category1
- Germ cell mutagenicity : Category1B
- Carcinogenicity : Category1B

B. GHS label elements

Hazard symbols



Signal words

- Danger

Hazard statements

- H226 Flammable liquid and vapour

- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H318 Causes serious eye damage
- H331 Toxic if inhaled
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H340 May cause genetic defects
- H350 May cause cancer

○ 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, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233 Keep container tightly closed.
- P240 Ground and bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use non-sparking tools.
- P243 Take action to prevent static discharges.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- P284 In case of inadequate ventilation wear respiratory protection.

2) Response

- 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 person to fresh air and keep 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.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P311 Call a POISON CENTER or doctor/physician.
- P321 Specific treatment (if in eyes, wash with plenty of running water; if in contact with skin, wash with plenty of running water; if inhaled, move to fresh air; if ingested, seek medical advice on whether to induce vomiting).
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- P362+P364 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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Talc(Containing no asbestos fibers)	Talc (Mg ₃ H ₂ (SiO ₃) ₄)	14807-96-6	49 ~ 56
Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde	Not available	68413-28-5	22 ~ 29
2-Butoxyethanol	O-Butyl ethylene glycol ; Ethylene glycol butyl ether ; Ethylene glycol N-butyl ether ; Glycol butyl ether ; Glycol monobutyl ether ; Monobutyl glycol ether ; Butyl glycol ; Butyl oxitol ;	111-76-2	4 ~ 11
1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	bis(2-ethylhexyl) terephthalate ; Terephthalate, bis(2-ethylhexyl)- ; Di-(2-ethylhexyl) terephthalate ; Terephthalic acid, bis(2-ethylhexyl) ester ; Dioctyl terephthalate ; Bis(2-ethylhexyl) benzene-1,4-dicarboxylate ;	6422-86-2	1 ~ 6
4-Methyl-2-pentanone	2-Methyl-4-pentanone ; 2-Methylpropyl methyl ketone ; Hexanone ; 4-Methyl-2-pentanone ; Isobutyl methyl ketone ; Hexone ; 4-Methylpentan-2-one ; Isopropylacetone ;	108-10-1	1 ~ 6
n-Butyl alcohol	1-Butanol ; Propylcarbinol ; Propylmethanol ; N-Butanol ; Butyric alcohol ; Butyl hydroxide ; 1-Hydroxybutane ; Methylolpropane ; Butyl alcohol ; Butan-1-ol ;	71-36-3	1 ~ 6
2,4,6-Tris[(dimethylamino)methyl]phenol	2,4,6-Tris[(N,N-dimethylamino)methyl] phenol ; Tris[(dimethylamino)methyl]phenol, 2,4,6- ; 2,4,6-Tridimethylaminomethylphenol ; 2,4,6-Tris[(dimethylaminomethyl)]phenol ; Tris-2,4,6-(dimethylaminomethyl)phenol ; Tris(2,4,6-dimethylaminomonomethyl)phenol ; Mesitol, a ₂ ,a ₄ ,a ₆ -tris(dimethylamino)- ; a,a',a''-	90-72-2	1 ~ 6
Dichlorodimethylsilane reaction products with silica	Silane, dichlorodimethyl-, reaction products with silica ; Reaction product, silane, dichlorodimethyl-with silica ;	68611-44-9	1 ~ 6
Solvent naphtha (petroleum), light arom.	Naphtha	64742-95-6	1 ~ 6
Ethylenediamine	1,2-Diaminoethane ; Beta-aminoethylamine ; Dimethylenediamine ; 1,2-Ethylenediamine ;	107-15-3	0.1~1
Xylene	Xylol ; Methyltoluene	1330-20-7	0.1~1
Ethylbenzene	Benzene, ethyl- ; Ethyl benzene ; Ethylbenzol ; Phenylethane ;	100-41-4	0.1~1

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.

- 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.
- Wash contaminated clothing thoroughly before re-using.
- 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

- Take specific treatment if needed.
- When exposed to large amounts of steam and mist, move to fresh air.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.
- Take the doctor's examination.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

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.
- Remove to fresh air and keep at rest in a position comfortable for breathing.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Avoid use of water jet for extinguishing
- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray

B. Specific hazards arising from the chemical

- Causes serious eye damage
- Causes skin irritation
- Flammable liquid and vapour
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause an allergic skin reaction

C. Special protective actions for firefighters

- Avoid inhalation of materials or combustion by-products.
- Cool containers with water until well after fire is out.
- Do not approach the tank surrounded by fire until it is extinguished.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Keep unauthorized personnel out.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Do not touch spilled material. Stop leak if you can do it without risk.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Move container to safe area from the leak area.

- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.

B. Environmental precautions

- If large amounts have been spilled, inform the relevant authorities.
- Prevent runoff and contact with waterways, drains or sewers.

C. Methods and materials for containment and cleaning up

- Appropriate container for disposal of spilled material collected.
- Dike for later disposal.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Avoid contact with incompatible materials.
- Avoid direct physical contact.
- Comply with all applicable laws and regulations for handling
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.

B. Conditions for safe storage, including any incompatibilities

- Avoid direct sunlight.
- Check regularly for leaks.
- Do not apply any physical shock to container.
- Do not apply direct heat.
- Do not use damaged containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ ACGIH TLV

- [Talc(Containing no asbestos fibers)] : TWA 2 mg/m³, Respirable particulate matter (containing no asbestos and <1% crystalline silica)
- [2-Butoxyethanol] : TWA, 20 ppm (97 mg/m³)
- [4-Methyl-2-pentanone] : TWA, 20 ppm (82 mg/m³) STEL 75 ppm (307 mg/m³)
- [n-Butyl alcohol] : TWA, 20 ppm (61 mg/m³)
- [Ethylenediamine] : TWA, 10 ppm (25 mg/m³)
- [Xylene] : TWA 20 ppm
- [Ethylbenzene] : TWA, 20 ppm (87 mg/m³)

○ OSHA PEL

- [2-Butoxyethanol] : 50 ppm, 240 mg/m³
- [4-Methyl-2-pentanone] : 100 ppm, 410 mg/m³
- [n-Butyl alcohol] : 100 ppm, 300 mg/m³
- [Ethylenediamine] : 10 ppm, 25 mg/m³
- [Xylene] : 100 ppm, 435 mg/m³
- [Ethylbenzene] : 100 ppm, 435 mg/m³

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- Respiratory protection

- Any chemical cartridge respirator with organic vapor cartridge(s).
 - Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
 - Respiratory protection is ranked in order from minimum to maximum.
 - Any air-purifying respirator with a full facepiece and an organic vapor canister.
 - Consider warning properties before use.
 - 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.
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- 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.
 - Hand protection
 - Wear appropriate chemical resistant glove.
 - Skin protection
 - Wear appropriate chemical resistant protective clothing.
 - Others
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid
- Color	LIGHT GREY
B. Odor	Solvent odor
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	23°C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	>1
N. Specific gravity(Relative density)	1.0~1.4
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	408°C
Q. Decomposition temperature	Not available
R. Viscosity	60~80KU
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 : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with incompatible materials and condition.
- Avoid contact with heat, sparks, flame or other ignition sources.

D. Incompatible materials

- Sparks, flames, static electricity, strong acids and base substances

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 cause allergy or asthma symptoms or breathing difficulties if inhaled
- Oral
 - Not available
- Eye-Skin
 - Causes serious eye damage
 - Causes skin irritation
 - May cause an allergic skin reaction

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

Acute toxicity

* Oral

- Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
- [Talc(Containing no asbestos fibers)] : LD50 >5000 mg/kg Rat (OECD TG 423, GLP)(ECHA)
- [2-Butoxyethanol] : LD50 1414 mg/kg Guinea pig (OECD TG 401, GLP) (EU Harmonized Cat. 4) (ECHA)
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : LD50 >5000 mg//kg Rat (ECHA)
- [4-Methyl-2-pentanone] : LD50 2080 mg/kg Rat (NITE, ECHA)
- [n-Butyl alcohol] : LD50 300 ~ 2000 mg/kg EU Harmonised Cat 4. (ECHA)
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : LD50 1200 mg/kg Rat (NIER)
- [Solvent naphtha (petroleum), light arom.] : LD50 > 5000 mg/kg Rat (Read across 86290-81-5)(OECD TG 401,GLP)(ECHA)
- [Ethylenediamine] : LD50 866 mg/kg Rat (OECD TG 401) (ECHA)
- [Xylene] : LD50 3523 mg/kg Rat (EU Method B.1) (ECHA)
- [Ethylbenzene] : LD50 3500 mg/kg Rat (ECHA)

* Dermal

- Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
- [Talc(Containing no asbestos fibers)] : LD50 >2000 mg/kg Rat (OECD TG 402, GLP)(ECHA)
- [2-Butoxyethanol] : LD50 > 2000 mg/kg Guinea pig (ECHA)
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : > 20.0 mL/kg bw (equivalent to 19,680 mg/kg bw) Guinea pig (ECHA)
- [4-Methyl-2-pentanone] : LD50 > 16040 mg/kg Rabbit (NITE)
- [n-Butyl alcohol] : LD50 ca. 3430 mg/kg Rabbit (OECD TG 402, GLP) (ECHA)
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : LD50 1280 mg/kg Rat (NIER)
- [Solvent naphtha (petroleum), light arom.] : LD50 > 2000 mg/kg Rabbit (Read across 86290-81-5)(OECD TG 402,GLP)(ECHA)
- [Ethylenediamine] : LD50 560 mg/kg Rabbit (ECHA)
- [Xylene] : LD50 1700 mg/kg Rabbit (EPA Pesticide, 2005) (NITE). Acute toxicity - dermal EU Harmonized Cat. 4 (ECHA)

- [Ethylbenzene] : LD50 15432 mg/kg (17.8 mL/kg) Rabbit (ECHA)
- * Inhalation
 - Product (ATEmix) : 2.0mg/L 4hr < ATEmix <= 10.0mg/L 4hr
 - [Talc(Containing no asbestos fibers)] : Aerosol LC50 >2.1 mg/ℓ 4 hr Rat No death Not classified (Read-across 1309-42-8) (OECD TG 403, GLP) (ECHA)
 - [2-Butoxyethanol] : Vapor LC50 2~10 mg/L 4 hr (EU Harmonized) (ECHA)
 - [4-Methyl-2-pentanone] : Vapor LC50 11.6 mg/L 4 hr Rat EU harmonised Cat.4 (OECD TG 403) (ECHA)
 - [n-Butyl alcohol] : Vapour LC50 24 mg/L/4h (HSDB), LC0 > 17.76 mg/L/4 hr Rat No death Not classified (ECHA)
 - [Solvent naphtha (petroleum), light arom.] : Vapour LC50 > 7.63 mg/L Rat 4hr (Read across 86290-81-5)(OECD TG 403,GLP)(ECHA)
 - [Ethylenediamine] : Vapour LC50 14.7 mg/ℓ(3000 ppm) 4 hr Rat (ECHA)
 - [Xylene] : Vapor LC50 10~20 mg/L 4 hr (NIER), Acute toxicity - inhalation EU Harmonized Cat. 4 (ECHA)
 - [Ethylbenzene] : Vapor LC50 18.96 mg/L 4 hr Rat (NIER)
- Skin corrosion/irritation
 - Causes skin irritation
- Serious eye damage/irritation
 - Causes serious eye damage
- Respiratory sensitization
 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- Skin sensitization
 - May cause an allergic skin reaction
- Carcinogenicity
 - * IARC
 - [Talc(Containing no asbestos fibers)] : Group 3
 - [2-Butoxyethanol] : Group 3
 - [4-Methyl-2-pentanone] : Group 2B
 - [Xylene] : Group 3
 - [Ethylbenzene] : Group 2B
 - * OSHA
 - Not available
 - * ACGIH
 - [Talc(Containing no asbestos fibers)] : A4 (Talc(containing no asbestos fibers))
 - [2-Butoxyethanol] : A3
 - [4-Methyl-2-pentanone] : A3
 - [Ethylenediamine] : A4
 - [Xylene] : A4
 - [Ethylbenzene] : A3
 - * NTP
 - Not available
 - * EU CLP
 - [4-Methyl-2-pentanone] : Carc.2
 - [Solvent naphtha (petroleum), light arom.] : Carc. 1B (Note P)
- Germ cell mutagenicity
 - May cause genetic defects
- Reproductive toxicity
 - Not available
- STOT-single exposure

- Not available
- STOT-repeated exposure
 - Not available
- Aspiration hazard
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- Fish
 - [2-Butoxyethanol] : LC50 1474 mg/ℓ 96 hr *Oncorhynchus mykiss* (OECD TG 203), NOEC > 100 mg/L 21 d *Danio rerio* (OECD TG 204) (ECHA)
 - [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : LC50 > 984 mg/L 96hr *Pimephales promelas* OECD Guideline 203 (ECHA)
 - [4-Methyl-2-pentanone] : LC50 > 179 mg/ℓ 96 hr *Brachydanio rerio* (OECD TG 203, GLP) (ECHA)
 - [n-Butyl alcohol] : LC50 1376 mg/ℓ 96 hr *Pimephales promelas*(OECD TG 203, GLP) (ECHA)
 - [2,4,6-Tris[(dimethylamino)methyl]phenol] : LC50 > 100 mg/L 96 hr *Cyprinus carpio* (OECD TG 203, GLP) (ECHA)
 - [Solvent naphtha (petroleum), light arom.] : LL50 8.2 mg/L 96hr *Pimephales promelas* (Read-across Light alkylate naphtha) (EPA 66013-75-009, GLP), NOELR 2.6 mg/L 14d *Pimephales promelas* (Read-across Light Catalytically Reformed Naphtha) (OECD TG 204, GLP) (ECHA)
 - [Ethylenediamine] : LC50 640 mg/ℓ 96 hr *Poecilia reticulata*(EU Method C.1, GLP) (ECHA)
 - [Xylene] : LC50 7.6 mg/L 96 hr *Oncorhynchus mykiss* (Read-across 95-47-6) (OECD TG 203) (ECHA), NOEC 0.714 mg/L 35 d *Danio rerio* (Read-across 106-42-3) (OECD TG 210, GLP) (ECHA)
 - [Ethylbenzene] : LC50 4.2 mg/L 96 hr *Oncorhynchus mykiss* (NIER)
- Crustaceans
 - [2-Butoxyethanol] : EC50 ca. 1800 mg/ℓ 48 hr *Daphnia magna* (OECD TG 202), NOEC 100 mg/L 21 d *Daphnia magna* (OECD TG 211) (ECHA)
 - [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : EC50 > 1.4 g/L48 hr *Daphnia magna* OECD Guideline 202 (ECHA)
 - [4-Methyl-2-pentanone] : EC50 > 200 mg/ℓ 48 hr *Daphnia magna* (OECD TG 202, GLP), NOEC 30 mg/L 21 d *Daphnia magna* (OECD TG 211) (ECHA)
 - [n-Butyl alcohol] : EC50 1328 mg/ℓ 48 hr *Daphnia magna* (OECD TG 202, GLP), NOEC 4.1 mg/ℓ 21 d *Daphnia magna* (OECD TG 211, GLP) (ECHA)
 - [2,4,6-Tris[(dimethylamino)methyl]phenol] : EC50 > 100 mg/L 48 hr *Daphnia magna* (OECD TG 202, GLP) (ECHA)
 - [Solvent naphtha (petroleum), light arom.] : EL50 4.5 mg/L 48hr *Daphnia magna* (Read-across straight-run light gasoline) (OECD TG 202, GLP), NOELR 2.6 mg/L 21d (Read-across Light alkylate naphtha) (OECD TG 211, GLP) (ECHA)
 - [Ethylenediamine] : EC50 16.7 mg/ℓ 48 hr *Daphnia magna*(EU Method C.2, GLP) (ECHA)
 - [Xylene] : EC50 4.7 mg/L 48 hr *Daphnia magna* (Read-across 108-38-3) (NIER), NOEC 1.17 mg/L 7 d *Ceriodaphnia dubia* (ECHA)
 - [Ethylbenzene] : EC50 1.8~2.4 mg/L 48 hr *Daphnia magna*, NOEC 0.96 mg/L 7 d *Ceriodaphnia dubia* (ECHA)
- Algae
 - [2-Butoxyethanol] : EC50 911 mg/ℓ 72 hr, NOEC 88 mg/L 72 hr *Selenastrum capricornutum* (OECD TG 201) (ECHA)
 - [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : EC50 > 0.86 mg/L 72hr *Raphidocelis subcapitata* OECD Guideline 201 (ECHA)
 - [n-Butyl alcohol] : EC50 225 mg/ℓ 96 hr *Selenastrum capricornutum*(OECD TG 201, GLP) (ECHA)
 - [2,4,6-Tris[(dimethylamino)methyl]phenol] : EC50 46.7 mg/L 72 hr, NOEC 6.44 mg/L 72 hr *Raphidocelis subcapitata* (OECD TG 201, GLP) (ECHA)
 - [Solvent naphtha (petroleum), light arom.] : EL50 3.1 mg/L, NOELR 0.5 mg/L 72hr *Selenastrum capricornutum* (Read-across Blended Gasoline) (OECD TG 201, GLP) (ECHA)
 - [Ethylenediamine] : ErC50 645 mg/ℓ 72 hr Other(*Pseudokirchnerella subcapitata*, EU Method C.3, GLP) (ECHA)
 - [Xylene] : EC50 4.7 mg/L 72 hr *Raphidocelis subcapitata* (Read-across 95-47-6) (OECD TG 201) (ECHA)
 - [Ethylbenzene] : EC50 3.6 mg/L 96 hr, NOEC 3.4 mg/L 96 hr *Raphidocelis subcapitata* (ECHA)

B. Persistence and degradability

○ Persistence

- [2-Butoxyethanol] : log Kow 0.81 (25°C, pH 7, BASF standard method) (ECHA)
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : log Kow = 8.390 (est, NLM: HSDB)
- [4-Methyl-2-pentanone] : log Kow 1.9 (pH 6.7) (OECD TG 117) (ECHA)
- [n-Butyl alcohol] : log Kow 1 (OECD TG 117, GLP) (ECHA)
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Pow \geq 0.219 (21.5°C)(ECHA)
- [Ethylenediamine] : log Kow -2.04 (HSDB)
- [Xylene] : log Pow 3.12 (Read-across 95-47-6) (ECHA)
- [Ethylbenzene] : log Pow 3.6 (20 °C) (ECHA)

○ Degradability

- Not available

C. Bioaccumulative potential

○ Bioaccumulative potential

- [n-Butyl alcohol] : BCF 3.16 (calculation) (ECHA)
- [Xylene] : BCF 25.9 dimensionless (ECHA)
- [Ethylbenzene] : BCF 1 (ECHA)

○ Biodegradation

- [2-Butoxyethanol] : Readily biodegradable, 90.4 % 28 d (CO₂ evolution) (OECD TG 301 B) (ECHA)
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Readily biodegradable, 73.05% (CO₂ evolution) 28d
- [4-Methyl-2-pentanone] : Readily biodegradable, 83 % 28 d (O₂ consumption) (OECD TG 301 F, GLP) (ECHA)
- [n-Butyl alcohol] : Readily biodegradable, 92 % 20 d (O₂ consumption) (ECHA)
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not readily biodegradable, 4% degradation (O₂ consumption) 28day (OECD TG 301D, GLP)(ECHA)
- [Ethylenediamine] : 95 % 28 day (EU Method C.4-E, GLP) (ECHA)
- [Xylene] : Readily biodegradable, 94 % 28 d (O₂ consumption) (Read-across 95-47-6) (OECD TG 301 F, GLP) (ECHA)
- [Ethylbenzene] : Readily biodegradable, 70~ 80 % 28 d (inorg. C analysis) (ISO 14593-CO₂-Headspace Test) (ECHA)

D. Mobility in soil

- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Koc 870,000 (NLM/HSDB)
- [4-Methyl-2-pentanone] : Koc 101.85, log Koc 2.008 (20 °C) (calculation) (ECHA)
- [n-Butyl alcohol] : Koc 3.471 (calculation) (ECHA)
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Koc 20.98 (ECHA)
- [Xylene] : log Koc ca. 2.73 dimensionless (Read-across 95-47-6) (OECD TG 121) (ECHA)

E. Other adverse effects

- [Ethylenediamine] : fish(*Gasterosteus aculeatus*) NOEC(28d) > 10mg/L (OECD Guideline 210, GLP), crustaceans (*Daphnia magna*) NOEC(21d) = 0.16mg/L (Provisional Procedure: Extended toxicology test with *Daphnia magna*, EPA, 1984), Algae(*Pseudokirchnerella subcapitata*) NOEC(72h) = 3.2mg/L (EU Method C.3, GLP) (ECHA)

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- It shall be treated by incineration
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- 1263

B. Proper shipping name

- PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base)(Ethylenediamine)

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- III

E. Marine pollutant

- Not 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

○ POPs Management Law

- [Talc(Containing no asbestos fibers)] : Not applicable
- [Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde] : Not applicable
- [2-Butoxyethanol] : Not applicable
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Not applicable
- [4-Methyl-2-pentanone] : Not applicable
- [n-Butyl alcohol] : Not applicable
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not applicable
- [Dichlorodimethylsilane reaction products with silica] : Not applicable
- [Solvent naphtha (petroleum), light arom.] : Not applicable
- [Ethylenediamine] : Not applicable
- [Xylene] : Not applicable
- [Ethylbenzene] : Not applicable

○ Information of EU Classification

* Classification

- [2-Butoxyethanol] : H302,H315,H319,H331
- [4-Methyl-2-pentanone] : H225,H319,H332,H335,H351
- [n-Butyl alcohol] : H226,H302,H315,H318,H335,H336
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : H302,H315,H319
- [Solvent naphtha (petroleum), light arom.] : H304,H340,H350
- [Ethylenediamine] : H226,H302,H312,H314,H317,H334
- [Xylene] : H226,H312,H315,H332
- [Ethylbenzene] : H225,H304,H332,H373

○ U.S. Federal regulations

* OSHA PROCESS SAFETY (29CFR1910.119)

- Not applicable

* CERCLA Section 103 (40CFR302.4)

- [4-Methyl-2-pentanone] : 2267.995 kg 5000 lb

- [n-Butyl alcohol] : 2267.995 kg 5000 lb
- [Ethylenediamine] : 2267.995 kg 5000 lb
- [Xylene] : 45.3599 kg 100 lb
- [Ethylbenzene] : 453.599 kg 1000 lb
- [Talc(Containing no asbestos fibers)] : Not applicable
- [Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde] : Not applicable
- [2-Butoxyethanol] : Not applicable
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Not applicable
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not applicable
- [Dichlorodimethylsilane reaction products with silica] : Not applicable
- [Solvent naphtha (petroleum), light arom.] : Not applicable

* EPCRA Section 302 (40CFR355.30)

- [Ethylenediamine] : 4535.99 kg 10000 lb
- [Talc(Containing no asbestos fibers)] : Not applicable
- [Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde] : Not applicable
- [2-Butoxyethanol] : Not applicable
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Not applicable
- [4-Methyl-2-pentanone] : Not applicable
- [n-Butyl alcohol] : Not applicable
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not applicable
- [Dichlorodimethylsilane reaction products with silica] : Not applicable
- [Solvent naphtha (petroleum), light arom.] : Not applicable
- [Xylene] : Not applicable
- [Ethylbenzene] : Not applicable

* EPCRA Section 304 (40CFR355.40)

- [Ethylenediamine] : 2267.995 kg 5000 lb
- [Talc(Containing no asbestos fibers)] : Not applicable
- [Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde] : Not applicable
- [2-Butoxyethanol] : Not applicable
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Not applicable
- [4-Methyl-2-pentanone] : Not applicable
- [n-Butyl alcohol] : Not applicable
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not applicable
- [Dichlorodimethylsilane reaction products with silica] : Not applicable
- [Solvent naphtha (petroleum), light arom.] : Not applicable
- [Xylene] : Not applicable
- [Ethylbenzene] : Not applicable

* EPCRA Section 313 (40CFR372.65)

- [4-Methyl-2-pentanone] : Applicable
- [n-Butyl alcohol] : Applicable
- [Xylene] : Applicable
- [Ethylbenzene] : Applicable
- [Talc(Containing no asbestos fibers)] : Not applicable
- [Cashew, nutshell liq. polymer with ethylenediamine and formaldehyde] : Not applicable
- [2-Butoxyethanol] : Not applicable
- [1,4-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester] : Not applicable
- [2,4,6-Tris[(dimethylamino)methyl]phenol] : Not applicable

- [Dichlorodimethylsilane reaction products with silica] : Not applicable
- [Solvent naphtha (petroleum), light arom.] : Not applicable
- [Ethylenediamine] : Not 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

- 2014-04-10

C. Revision number and Last date revised

- 6 times, 2025-05-02

D. Other

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