

SAFETY DATA SHEET

1. IDENTIFICATION

A. Product name

- EP1760-A-1135

B. Recommended use and restriction on use

- General use : HEAVYDUTY EPOXY PRIMER
- Restriction on use : Do not use except for purpose

C. Supplier 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 (oral) : Category5
- Acute toxicity (inhalation: vapor) : Category5
- Skin corrosion/irritation : Category2
- Serious eye damage/irritation : Category2A
- Germ cell mutagenicity : Category1B
- Carcinogenicity : Category2
- Reproductive toxicity : Category1B
- Specific target organ toxicity(Single exposure) : Category1
- Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)
- Specific target organ toxicity(Repeated exposure) : Category1
- Aspiration hazard : Category2
- Acute aquatic toxicity : Category2
- Chronic aquatic toxicity : Category2

B. GHS label elements

○ Hazard symbols



○ Signal words

- Danger

○ Hazard statements

- H226 Flammable liquid and vapour
- H303 May harmful if swallowed.
- H305 May be harmful if swallowed and enters airways
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H333 May be harmful if inhaled.
- H335 May cause respiratory irritation.
- H340 May cause genetic defects
- H351 Suspected of causing cancer
- H360 May damage fertility or the unborn child
- H370 Causes damage to organs(Refer Section SDS 11)
- H372 Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)
- H401 Toxic to aquatic organisms.

- H411 Toxic to aquatic life with long lasting effects

o **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 gas/mist/vapours/spray.
- P261 Avoid breathing 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.
- P273 Avoid release to the environment.
- 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+P312 IF INHALED: Call a POISON CENTER or doctor/physician if you feel unwell.
- 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).
- P391 Collect spillage.

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)

o **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(%)
---------------	--------------------------	---------	------------

Epoxy resin	-	자료없음	20 ~ 30
Titanium dioxide	Titanium oxide (TiO ₂)	13463-67-7	10 ~ 20
Quartz (SiO ₂)	Crystalline silica	14808-60-7	10 ~ 20
Talc, non-asbestos form	Talcum	14807-96-6	10 ~ 20
Xylene	Dimethylbenzene	1330-20-7	10 ~ 10
Zinc	Zinc powder	7440-66-6	1 ~ 10
n-Butyl alcohol	1-Butanol	71-36-3	1 ~ 10
Propylene glycol methyl ether	1-Methoxy-2-hydroxypropane	107-98-2	1 ~ 10
Solvent naphtha (petroleum), light arom.	Naphtha	64742-95-6	0.1 ~ 2
Ethylbenzene	Benzene, ethyl-	100-41-4	0.1 ~ 2
Secret	Secret	자료없음	1 ~ 10

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.
- 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

- 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

- Please be advised by doctor whether induction of vomit is demanded or not.
- 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

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- 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.
- Prevent the influx to waterways, sewers, basements or confined spaces.
- 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.
- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- 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

- Save in cool, dry and well ventilated place.
- Do not use damaged containers.
- Keep in the original container.
- No open fire.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Store away from water and sewer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

o ACGIH TLV

- [Titanium dioxide] : TWA 10 mg/m³
- [Quartz (SiO₂)] : TWA 0.025 mg/m³, Respirable particulate matter
- [Talc, non-asbestos form] : TWA 2 mg/m³, Respirable particulate matter (containing no asbestos and <1% crystalline silica)
- [Xylene] : TWA 100 ppm (434 mg/m³), STEL, 150 ppm (651 mg/m³)
- [n-Butyl alcohol] : TWA, 20 ppm (61 mg/m³)
- [Propylene glycol methyl ether] : TWA, 50 ppm (184 mg/m³), STEL, 100 ppm (369 mg/m³)
- [Ethylbenzene] : TWA, 20 ppm (87 mg/m³)
- [Secret] : TWA, 50 ppm (152 mg/m³)
- [Secret] : STEL, 1000 ppm (1880 mg/m³)
- [Secret] : TWA, 3 mg/m³, Inhalable particulate matter
- [Secret] : TWA, 200 ppm (491 mg/m³), STEL, 400 ppm (984 mg/m³)
- [Secret] : TWA, 0.05 mg/m³, as Pb
- [Secret] : TWA, 0.01 mg/m³, as Cd, Total particulate TWA, 0.002 mg/m³, as Cd, Respirable particulate fraction
- [Secret] : TWA, 20 ppm (82 mg/m³) STEL 75 ppm (307 mg/m³)

o OSHA PEL

- [Secret]:1000ppm 1900mg/m³
- [Ethylbenzene]:100ppm 435mg/m³
- [Secret]:100ppm 410mg/m³
- [Secret]:100ppm 300mg/m³
- [Secret]:400ppm 980mg/m³
- [Quartz (SiO₂): 10 mg/m³(%SiO₂+2)
- [Talc, non-asbestos form]: 20 mppcf (containing no asbestos, respirable dust)
- [Titanium dioxide]: 15 mg/m³ (Total dust)
- [Xylene]:100ppm 435mg/m³
- [n-Butyl alcohol]:100ppm 300mg/m³
- [Secret]: 3.5mg/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

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	GREY
B. Odor	Smell of liquor
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	26 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	1 % / 14 %
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	> 1(Air=1)
N. Specific gravity(Relative density)	1.584 ~ 1.624
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	343 °C
Q. Decomposition temperature	Not available
R. Viscosity	115 ~ 125 KU
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)
 - May harmful if swallowed.
- (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

- Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
- [Titanium dioxide] : LD50 > 10000 mg/kg Rat (HSDB)
- [Talc, non-asbestos form] : LD50 >5,000 mg/kg rat (GLP, ECHA)
- [Xylene] : LD50=3523 mg/kg rat (EU Method B1)
- [Zinc] : LD50 > 2000 mg/kg Rat (OECD TG 401, GLP)
- [Propylene glycol methyl ether] : LD50 4016 mg/kg Rat (EU Method B.1, GLP)
- [n-Butyl alcohol] : LD50 = 3430 mg/kg rabbit (GLP, ECHA)
- [Solvent naphtha (petroleum), light arom.] : LD50 = 8400 mg/kg Rat (RTECS)
- [Ethylbenzene] : LD50 = 3500 mg/kg Rat (NITE)
- [Secret] : LD50 < 5000 mg/kg Rat
- [Secret] : LD50 >2000 mg/kg 실험종 : Rat (암컷, 사망없음 (OECD TG 423, GLP)) (ECHA)
- [Secret] : LD50 > 8000 mg/kg Rat (TOMES;RTECS)
- [Secret] : LD50 = 2460 mg/kg Rat (HSDB; SIDS; EHC; PATTY)
- [Secret] : LD50 > 31600 mg/kg Rat
- [Secret] : LD50 > 8000 mg/kg Rat (RTECS)
- [Secret] : LD50 > 90000 mg/kg Rat (KOSHA)
- [Secret] : LD50 = 6200 mg/kg Rat (HSDB)
- [Secret] : LD50 = 15400 mg/kg Rat (NITE(2006))
- [Secret] : LD50 = 4710mg/kg Rat (HSDB) LD50 5840 mg/kg Rat (OECD TG 401, ECHA)
- [Secret] : LD50 >2000 mg/kg Rat (OECD TG 423, GLP) (ECHA)
- [Secret] : 890 mg/kg < LD50 < 2330 mg/kg Rat
- [Secret] : LD50 = 98.6 g/kg(98600 mg/kg) Rat (OECD TG 401, ECHA)
- [Secret] : LD50 2080 mg/kg Rat (NITE, ECHA)

* Dermal

- Product (ATEmix) : >5000mg/kg
- [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit (IUCLID)
- [Talc, non-asbestos form] : LD50 >2,000 mg/kg rat (GLP, ECHA)
- [Xylene] : LD50 >4350 mg/kg Rabbit (IUCLID) LD50 12126 mg/kg Rabbit (isomer: m-xylene)
- [Propylene glycol methyl ether] : LD50 >2000 mg/kg Rabbit (EU Method B.3, GLP)
- [n-Butyl alcohol] : LD50 = 3400 mg/kg rabbit (HSDB)
- [Solvent naphtha (petroleum), light arom.] : LD50 > 2000 mg/kg Rabbit (IUCLID)
- [Ethylbenzene] : LD50 = 15400 mg/kg Rabbit (NITE)
- [Secret] : LD50 = 2460 mg/kg Rabbit (SIDS)
- [Secret] : LD50 > 2000 mg/kg Rabbit

- [Secret] : LD50 > 3000 mg/kg rabbit (NITE)
- [Secret] : LD50 = 12870 mg/kg rabbit (HSDB), LD50 16400 mg/kg Rabbit (OECD TG402, ECHA)
- [Secret] : LD50 >2000 mg/kg Rat (OECD TG 402, GLP, read-across: 69011-06-9)
- [Secret] : LD50 = 20000 mg/kg Guinea pig
- [Secret] : LD50 >16,000 mg/kg rabbit (NITE), LD0 \geq 2000 mg/kg OECD TG402, GLP(ECHA)

*** Inhalation**

- Product (ATEmix) : 20.0mg/L < ATEmix \leq 50.0mg/L
- [Titanium dioxide] : LC50 >3.43 mg/l Rat (OECD TG 403)
- [Talc, non-asbestos form] : LC50 >2.1 mg/L/4hr Rat, Magnesium hydroxide (GLP, ECHA)
- [Xylene] : LC50 5922 ppm 4 hr Rat (25.713 mg/L EPA OPP 81-3, GLP)
- [Zinc] : Dust LC50 > 5.41 mg/m³ 4 hr Rat (OECD TG 403, GLP)
- [Propylene glycol methyl ether] : 증기 LC50 <6000 ppm 6 hr Rat (OECD Guideline 403, GLP)
- [n-Butyl alcohol] : Steam LC50 = 24.25 mg/L/4 hr Rat (HSDB)
- [Solvent naphtha (petroleum), light arom.] : LC50 > 5.2 mg/L 4 hr Rat, LC50=3400 ppm 4hr (IUCLID)
- [Ethylbenzene] : LC50 = 17.4 mg/L/4 hr Rat (4000 ppm/4hr)(EHC, ASTDR)
- [Secret] : LC50 > 200 mg/l
- [Secret] : Dust LC50 = 1.9 mg/L (conversion value) (LC50 = 7.6 mg/L 1 hr) Rat male (OECD TG 403) (ECHA)
- [Secret] : LC50 = 19.2 mg/l 4 hr Rat (conversion of 6336ppm) (OECD SIDS; EHC 65)
- [Secret] : (> 2mg/l , Rat - LC50 (W.R. Grace & Co.))
- [Secret] : dust LC50 = 9.44 mg/L 4hr (75.5 mg/l 30 min) Rat (RTECS)
- [Secret] : LC50 = 59.59 mg/L/4hr Rat (HSDB)
- [Secret] : LC50 = 72.6 mg/l 4 hr Rat (HSDB), LC50 >10000 ppm 6 hr Rat (OECE TG 403, GLP)
- [Secret] : dust LC50 >5.05 mg/kg 4 hr Rat (read-across: 1317-36-8, OECD TG 403, GLP)
- [Secret] : Dust LC50 0.0031 mg/l Rat (Category 1 (NITE)), > 9.02 mg/m³ air 15 min Mouse (ECHA)
- [Secret] : LC50 11.6 mg/l 4h Rat (OECD TG 403)(ECHA)

o **Skin corrosion/irritation**

- Causes skin irritation

o **Serious eye damage/irritation**

- Causes serious eye irritation

o **Respiratory sensitization**

- Not available

o **Skin sensitization**

- Not available

o **Carcinogenicity**

*** IARC**

- [Secret] : Group 2B (Lead compounds, organic)
- [Secret] : Group 3
- [Secret] : Group 1 (Cadmium and Cadmium Compounds)
- [Secret] : Group 1 (cadmium (pyrophoric))
- [Secret] : Group 1 (cadmium (non-pyrophoric);)
- [Secret] : Group 1 (Cadmium)
- [Secret] : Group 2B
- [Secret] : Group 1 (Ethanol in alcoholic beverages)
- [Talc, non-asbestos form] : Group 2B (Talc-based body powder (perineal use of))
- [Ethylbenzene] : Group 2B
- [Secret] : Group 2B (Lead compounds, inorganic)
- [Secret] : Group 2B (Lead and Lead Compounds)
- [Secret] : Group 2B (Lead and inorganic compounds, as Pb)

- [Quartz (SiO₂)] : Group 1 (Silica dust, crystalline, in the form of quartz or cristobalite)

- [Quartz (SiO₂)] : Group 1 (Silica, crystalline-a quartz and cristobalite)

- [Talc, non-asbestos form] : Group 3 (Talc not containing asbestos or asbestiform fibres)

- [Titanium dioxide] : Group 2b * IARC(국제 암 연구기관)는 TiO₂를 인체 발암 가능성이 있다고 분류했지만 IARC의 TiO₂ 발암성 관련 연구논문에서 도료같은 물질에 포함되어 있을 경우 심각한 노출이 발생되지 않을것으로 판단하였으며 NIOSH(미국 국립산업안전 보건연구원)에서는 100nm 미만의 초미세 TiO₂를 사용한 만성 동물 흡입 연구 결과에서만 암이 증가하였다는 연구논문이 있음. 따라서 본 제품에 사용하는 TiO₂의 입자크기는 280~360nm 수준으로 암이 발생할 수 있다고 판단하기 어려움.

*** OSHA**

- [Secret] : Applicable (cadmium and cadmium compounds)

*** ACGIH**

- [Secret] : A3 (Lead compounds, organic)

- [Secret] : A2 (Cadmium and Cadmium Compounds)

- [Secret] : A2 (cadmium (pyrophoric))

- [Secret] : A2 (cadmium (non-pyrophoric);)

- [Secret] : A2 (Cadmium)

- [Secret] : A4

- [Secret] : A3 (Ethanol in alcoholic beverages)

- [Ethylbenzene] : A3

- [Secret] : A3 (Lead compounds, inorganic)

- [Secret] : A3 (Lead and Lead Compounds)

- [Secret] : A3 (Lead and inorganic compounds, as Pb)

- [Secret] : A3

- [Quartz (SiO₂)] : A2 (Silica dust, crystalline, in the form of quartz or cristobalite)

- [Quartz (SiO₂)] : A2 (Silica, crystalline-a quartz and cristobalite)

- [Talc, non-asbestos form] : A4 (Talc(containing no asbestos fibers))

- [Titanium dioxide] : A4

- [Xylene] : A4

*** NTP**

- [Secret] : R (Lead compounds, organic)

- [Secret] : K (Cadmium and Cadmium Compounds)

- [Secret] : K (cadmium (pyrophoric))

- [Secret] : K (cadmium (non-pyrophoric);)

- [Secret] : K (Cadmium)

- [Secret] : R (Lead compounds, inorganic)

- [Secret] : R (Lead and Lead Compounds)

- [Secret] : R (Lead and inorganic compounds, as Pb)

- [Quartz (SiO₂)] : K (Silica dust, crystalline, in the form of quartz or cristobalite)

- [Quartz (SiO₂)] : K (Silica, crystalline-a quartz and cristobalite)

- [Quartz (SiO₂)] : K (Silica, Crystalline (Respirable Size))

*** EU CLP**

- [Secret] : Carc.1B (Cadmium and Cadmium Compounds)

- [Secret] : Carc.1B (cadmium (pyrophoric))

- [Secret] : Carc.1B (cadmium (non-pyrophoric);)

- [Secret] : Carc.1B (Cadmium)

- [Solvent naphtha (petroleum), light arom.] : Carc.1B

○ **Germ cell mutagenicity**

- May cause genetic defects

○ **Reproductive toxicity**

- May damage fertility or the unborn child

○ **STOT-single exposure**

- Causes damage to organs(Refer Section SDS 11)

- May cause respiratory irritation.

○ **STOT-repeated exposure**

- Causes 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**

- [Titanium dioxide] : LL50 >100 mg/ℓ 96 hr *Oryzias latipes*(OECD TG 203)
- [Talc, non-asbestos form] : LC50 100000 mg/ℓ 24 hr *Brachydanio rerio* (IUCLID)
- [Xylene] : LC50=3.3mg/L 96 hr (NITE)
- [Zinc] : LC50 0.439 mg/ℓ 96 hr (Test species *Cottus bairdii*)
- [Propylene glycol methyl ether] : LC50 ≥1000 mg/ℓ 96 hr *Salmo gairdneri*(반지수식, OECD Guideline 203)
- [n-Butyl alcohol] : LC50 1376 mg/ℓ 96 hr *Pimephales promelas*(OECD TG 203, GLP)
- [Solvent naphtha (petroleum), light arom.] : LC50 = 9.22 mg/ℓ 96 hr *Oncorhynchus mykiss* (IUCLID)
- [Ethylbenzene] : LC50 5.1 mg/ℓ 96 hr (ECHA)
- [Secret] : LC50 500 mg/ℓ 96 hr *Oncorhynchus mykiss* (OECD SIDS)
- [Secret] : "LC50 >218.6441 mg/L 96 hr *Pimephales promelas*(Semi-still-water culture, ASTM 2000, GLP) (ECHA)"
- [Secret] : LC50 = 1000 mg/ℓ 96 hr
- [Secret] : LC50 = 42 mg/ℓ 96 hr *Oncorhynchus mykiss* (ECOTOX)
- [Secret] : LC50 >100 mg/ℓ 96 hr *Oryzias latipes* (NITE: MOE eco-toxicity tests of chemicals, 1997)
- [Secret] : LC50 > 4.5 mg/ℓ 96 hr (*Limanda limanda*, Read-across CAS No. 10099-74-8)
- [Secret] : LC50 2.5 mg/ℓ 96 hr (Read-across CAS No. 10108-64-2 APHA 1971)
- [Secret] : ECHA LD50 >179 mg/ℓ 96 hr *Brachydanio rerio*(OECD TG 203, GLP)
- [Secret] : LC50 = 13.6 mg/ℓ 96 hr (IUCLID)

○ **Crustaceans**

- [Titanium dioxide] : EC50 >100 mg/ℓ 48 hr *Daphnia magna*(48h-EL50*Daphnia magna*>100 mg/L, 48h-EC50>100, 48h-EC10=91.2 mg/L, OECD TG 202)
- [Talc, non-asbestos form] : LC50 = 94983.781 mg/ℓ 48 hr
- [Zinc] : EC50 0.416 mg/ℓ 48 hr *Ceriodaphnia dubia* (OECD TG 202)
- [n-Butyl alcohol] : EC50 = 1983 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)
- [Propylene glycol methyl ether] : EC50 21100 ~ 25900 mg/ℓ 48 hr *Daphnia magna*(Still water culture, GLP)
- [Solvent naphtha (petroleum), light arom.] : EC50 = 6.14 mg/ℓ 48 hr *Daphnia magna* (IUCLID)
- [Ethylbenzene] : LC50 2.4 mg/ℓ ~ 1.8 mg/ℓ 48 hr *Mysidopsis bahia*(EC50 48hr >5.2mg/L, EPA 1985, GLP)
- [Secret] : EC50 100 mg/ℓ 48 hr *Daphnia magna* (OECD SIDS)
- [Secret] : LC50 22 mg/L 96 hr mg/ℓ(*Gammarus* sp., Still-water culture) (ECHA)
- [Secret] : EC50 = 1250 mg/ℓ 24 hr *Daphnia magna* (NITE: EHC65, 1987)
- [Secret] : EC50 = 2 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)
- [Secret] : EC50 > 5600 mg/ℓ 24 hr (NITE)
- [Secret] : ECHA LC50 5102 mg/ℓ 24 hr *Daphnia magna*(OECD TG 202)
- [Secret] : LC50 0.07356 mg/ℓ 48 hr *Ceriodaphnia dubia* (Read-across: 10099-74-8, USEPA2002)
- [Secret] : LC50 0.038 mg/ℓ 48 hr *Daphnia magna* (Read-across: 10108-64-2 EPA 600/4-78 012)
- [Secret] : ECHA EC50 >200 mg/ℓ 48 hr *Daphnia magna*(OECD TG 202, GLP)

○ **Algae**

- [Titanium dioxide] : ErL50 >100 mg/ℓ 72 hr (Pseudokirchneriella subcapitata, 72h-ErL50 Pseudokirchneriella subcapitata >100 mg/L growth rate, static, 72h-EyL50 >100 mg/L static, OECD TG 201)
- [Talc, non-asbestos form] : LC50 = 48545.539 mg/ℓ
- [Zinc] : NOEC 0.05 mg/ℓ 72 hr Selenastrum capricornutum (OECD TG 201, GLP)
- [n-Butyl alcohol] : EC50 225 mg/ℓ 96 hr Selenastrum capricornutum (OECD TG 201, GLP)
- [Propylene glycol methyl ether] : EC50 >500 mg/ℓ 72 hr Selenastrum capricornutum (ECHA)
- [Solvent naphtha (petroleum), light arom.] : EC50 = 19 mg/ℓ 72 hr Selenastrum capricornutum (IUCLID)
- [Ethylbenzene] : EC50 3.6 mg/ℓ 96 hr (EPA 1985, GLP)
- [Secret] : ErC50 0.0455 ~ 0.6999 mg/L 72 hr other (Pseudokirchneriella subcapitata, Still-water culture, OECD Guideline 201) (ECHA)
- [Secret] : EC50 = 2.2 mg/ℓ 96 hr
- [Secret] : EC50 0.12 mg/ℓ 72 hr Selenastrum capricornutum (Read-across 1306-19-0)

B. Persistence and degradability

o Persistence

- [Talc, non-asbestos form] : log Kow -1.50 (Estimate)
- [Xylene] : log Kow=3.16 (NITE)
- [n-Butyl alcohol] : log Kow 1 (OECD TG 117)
- [Propylene glycol methyl ether] : log Kow -0.49 log Kow (HSDB)
- [Solvent naphtha (petroleum), light arom.] : log Kow = 2.1 ~ 6 (IUCLID)
- [Ethylbenzene] : log Kow 3.6 (ECHA)
- [Secret] : -0.5304 log Kow (molbase)
- [Secret] : log Kow = 0.8 (ISCS)
- [Secret] : log Kow = -1.38
- [Secret] : ECHA 1.9 log Kow (OECD TG 117)

o Degradability

- [Solvent naphtha (petroleum), light arom.] : BOD5/COD = 0.43
- [Secret] : BOD5/COD = 0.57 (IUCLID)

C. Bioaccumulative potential

o Bioaccumulative potential

- [Zinc] : BCF = 600
- [Ethylbenzene] : BCF 1
- [Secret] : BCF = 3500

o Biodegradation

- [Xylene] : 39 (%) (NITE)
- [Zinc] : (Biodegradability test, not applicable) (IUCLID)
- [n-Butyl alcohol] : 92% 20 days (ECHA)
- [Propylene glycol methyl ether] : Biodegradability = 96 % 28 day (OECD Guideline 301 E, GLP)
- [Ethylbenzene] : 70-80% 28 day (ISO 14593 CO2, GLP)
- [Secret] : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed) (IUCLID)
- [Secret] : ECHA 83% 28 day (OECD TG 301, GLP)

D. Mobility in soil

- [Xylene] : log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
- [Secret] : log Kow = 0.8 (1)
- [Secret] : Koc = 1
- [Secret] : log koc= 0.03
- [Secret] : ECHA 101.85 Koc (estimate)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, 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.

B. Special precautions for disposal

- The user of this product must dispose by oneself or entrust it to a waste disposer, a person who recycles other's waste or establishes and operates waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG)

- 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. IMDG Packing group

- III

E. Marine pollutant

- 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.
- Air transport(IATA): This product is NOT classified as dangerous for IATA Transport.
- 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

- [Zinc] : H260,H250,H410
- [Zinc] : H410
- [Secret] : H350,H341,H361fd,H330,H372,H410,
- [Secret] : H250,H350,H341,H361fd,H330,H372,H410,
- [Xylene] : H226,H332,H312,H315

- [Ethylbenzene] : H225,H332
- [Secret] : H225
- [n-Butyl alcohol] : H226,H302,H335,H315,H318,H336
- [Propylene glycol methyl ether] : H226,H336
- [Secret] : H226,H335,H315,H318,H336
- [Secret] : H225,H319,H336
- [Secret] : H225,H332,H319,H335
- [Solvent naphtha (petroleum), light arom.] : H350,H340,H304
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Xylene] : 45.3599 kg 100 lb
 - [Zinc] : 453.599 kg 1000 lb
 - [n-Butyl alcohol] : 2267.995 kg 5000 lb
 - [Ethylbenzene] : 453.599 kg 1000 lb
 - [Secret] : 2267.995 kg 5000 lb
 - [Secret] : 4.53599 kg 10 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [Xylene] : Applicable
 - [Zinc] : Applicable
 - [n-Butyl alcohol] : Applicable
 - [Ethylbenzene] : Applicable
 - [Secret] : 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

- 2013-07-17

C. Revision number and Last date revised

- 4 times, 2019-04-11

D. Other

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