



Akzonobel Industrial Coatings Korea

MATERIAL SAFETY DATA SHEET

HICARTHANE#200 POLAR SILVER

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1. IDENTIFICATION

A. Product name

- HICARTHANE#200 POLAR SILVER [KF000021787]

B. Recommended use and restriction on use

- General use : paint applid on plastic resin
- Restriction on use : Do not use for other purposes

C. Manufacturer / Supplier / Distributor information

○ Manufacturer information

- Company name : Akzonobel Industrial Coatings Korea Ltd.
- Address : 60, Bonsan 1-ro 56beon-gil, Jinyeong-eup, Gimhae-si, Gyeongsangnam-do, Korea
- Dept. :
- Telephone number :
- Emergency telephone number : (82) 55-720-0200
- Fax number :
- E-mail address :

○ Supplier/Distributor information

- Company name : Akzonobel Industrial Coatings Korea Ltd.
- Address : 11, Byeolmang-ro 459beon-gil, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
- Dept. :
- Telephone number :
- Emergency telephone number : (82) 31-490-4200
- Fax number :
- E-mail address :

2. HAZARD IDENTIFICATION

A. GHS Classification

- Acute toxicity (inhalation: vapor) : Category4
- Chronic aquatic toxicity : Category3
- Carcinogenicity : Category1B
- Reproductive toxicity : Category1A
- Serious eye damage/irritation : Category2
- Flammable liquids : Category2
- Specific target organ toxicity(Single exposure) : Category1
- Specific target organ toxicity(Repeated exposure) : Category1
- Skin corrosion/irritation : Category2

B. GHS label elements

○ Hazard symbols



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○ **Signal words**

- Danger

○ **Hazard statements**

- H225 Highly flammable liquid and vapour
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H350 May cause 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)
- H412 Harmful to aquatic life with long lasting effects

○ **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.
- 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

- 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
- 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+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



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C. Other hazards which do not result in classification : (NFPA Classification)○ **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 0, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
2-Methyl-2-propenoic acid butyl ester polymer with 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	-	31942-54-8	10 ~ 20
Isobutyl acetate	Acetic acid, 2-methylpropyl ester	110-19-0	10 ~ 20
4-Methyl-2-pentanone	Methylisobutyl ketone, MIBK	108-10-1	10 ~ 20
Toluene	Methylbenzene	108-88-3	10 ~ 20
Ethyleneglycol monoethyl ether acetate	2-Ethoxyethyl acetate	111-15-9	1 ~ 10
Xylene	Dimethylbenzene	1330-20-7	1 ~ 10
Methyl Ethyl Ketone	2-Butanone	78-93-3	1 ~ 10
2-Methyl-2-Propenoic acid, polymer with 2-ethylhexyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate and methyl 2-methyl-2-propenoate	-	61579-38-2	1 ~ 10
Aluminium	Allbri aluminum paste and powder	7429-90-5	1 ~ 10
Naphtha (petroleum), hydrodesulfurized heavy	Aliphatic hydrocarbon	64742-82-1	1 ~ 10
Ethylbenzene	Benzene, ethyl-	100-41-4	1 ~ 10
Cellulose acetate butylate	Cellulose, acetate butanoate	9004-36-8	1 ~ 10
Solvent naphtha (petroleum), light arom.	Naphtha	64742-95-6	1 ~ 10
Secret	Secret	-	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.
- 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.



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- 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.

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.
- 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

- Ventilate closed spaces before entering.
- 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.
- 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.



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- 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

- Wash thoroughly after handling.
- 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

- Save applicable laws and regulations.
- Keep in the original container.
- Keep sealed when not in use.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- 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**
 - [Isobutyl acetate] : TWA 150 ppm
 - [4-Methyl-2-pentanone] : TWA 50 ppm
 - [Toluene] : TWA 50 ppm
 - [Ethyleneglycol monoethyl ether acetate] : TWA 5 ppm
 - [Xylene] : TWA 100 ppm
 - [Methyl Ethyl Ketone] : TWA 200 ppm
 - [Aluminium] : TWA : 10 mg/m³ Aluminium(metal dust)
 - [Ethylbenzene] : TWA 100 ppm
 - [Secret] : TWA 3.5 mg/m³
 - [Secret] : TWA 400 ppm
 - [Secret] : TWA 150 ppm
 - [Secret] : TWA 1000 ppm
 - [Secret] : 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).



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- 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.
- **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(Viscous liquid)
- Color	silver
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	100 °C
G. Flash point	21 °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	Not available
N. Specific gravity	0.90~0,95
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
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



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- 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)
 - Not available
- (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
 - [Isobutyl acetate] : LD50 = 15400 mg/kg Rat
 - [4-Methyl-2-pentanone] : LD50 = 2080 mg/kg Rat
 - [Toluene] : LD50 2600 mg/kg Rat
 - [Ethyleneglycol monoethyl ether acetate] : LD50 = 2700 mg/kg Rat
 - [Xylene] : LD50 3500 mg/kg Rat
 - [Methyl Ethyl Ketone] : LD50 2737 mg/kg Rat
 - [Naphtha (petroleum), hydrodesulfurized heavy] : LD50 = 5000 mg/kg Rat
 - [Ethylbenzene] : LD50 = 3500 mg/kg Rat
 - [Solvent naphtha (petroleum), light arom.] : LD50 = 8400 mg/kg Rat
 - [Secret] : LD50 = 15400 mg/kg Rat
 - [Secret] : LD50 5620 mg/kg Rat
 - [Secret] : LD50 > 8000 mg/kg Rat
 - [Secret] : LD50 = 3160 mg/kg Rat
 - [Secret] : LD50 = 5000 mg/kg Rat
 - [Secret] : LD50 = 8532 mg/kg Rat
 - [Secret] : LD50 = 14130 mg/kg Rat
 - [Secret] : LD50 = 2369 mg/kg Rat
 - [Secret] : LD50 = 2000 ~ 3000 mg/kg Rat (female)
 - [Secret] : LD50 = 6200 mg/kg Rat
 - [Secret] : LD50 = 4710mg/kg Rat
 - [Secret] : LD50 = 600 mg/kg Rat
 - [Secret] : LD50 = 5180mg/kg Rat
 - [Secret] : LD50 6200 mg/kg Rat
 - [Secret] : LD50 = 790 mg/kg Rat
 - [Secret] : LD50 > 5000 mg/kg Rat
 - * Dermal
 - [Isobutyl acetate] : LD50 = 17400 mg/kg rabbit
 - [4-Methyl-2-pentanone] : LD50 = 3000 mg/kg rabbit
 - [Toluene] : LD50 120000 mg/kg Rat
 - [Xylene] : LD50 4350 mg/kg Rabbit
 - [Methyl Ethyl Ketone] : LD50 6480 mg/kg rabbit
 - [Naphtha (petroleum), hydrodesulfurized heavy] : LD50 = 3160 mg/kg rabbit
 - [Ethylbenzene] : LD50 = 15400 mg/kg Rabbit
 - [Solvent naphtha (petroleum), light arom.] : LD50 > 2000 mg/kg Rabbit



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- [Secret] : LD50 = 3000 mg/kg rabbit
- [Secret] : LD50 > 18000 mg/kg Rabbit
- [Secret] : LD50 > 5000 mg/kg Rabbit
- [Secret] : LD50 = 17600 mg/kg Rabbit
- [Secret] : LD50 = 12870 mg/kg rabbit
- [Secret] : LD50 = 9500 mg/kg Rabbit
- [Secret] : LD50 15800 mg/kg rabbit
- [Secret] : LD50 = 3402 mg/kg rabbit
- [Secret] : LD50 > 2000 mg/kg Rabbit

*** Inhalation**

- [Isobutyl acetate] : LC50 = 8000 ppm 4 hr Rat
- [4-Methyl-2-pentanone] : LC50 = 8.2 mg/l Rat
- [Toluene] : LC50 12.5 mg/l 4 hr Rat
- [Ethylene glycol monoethyl ether acetate] : LC50 = 12.1 mg/l Rat (8hr)
- [Xylene] : Steam LC50 6700 ppm 4 hr Rat (Equivalents : 29.09 mg/L)
- [Methyl Ethyl Ketone] : Steam LC50 32 mg/l 4 hr Mouse
- [Ethylbenzene] : Steam LC50 = 4000 ppm 4 hr Rat (Equivalents : 17.4 mg/L)
- [Solvent naphtha (petroleum), light arom.] : Mist LC50 = 3400 ppm 4 hr Rat
- [Secret] : Steam LC50 100 mg/l 4 hr Rat (LC50 = 200 mg/L/1hr conversion $\frac{1}{60}$)
- [Secret] : dust LC50 = 75.5 mg/l 30 min Rat
- [Secret] : Steam LC50 = 4345 ppm 6 hr Rat
- [Secret] : Steam LC50 = 2000 ppm Rat
- [Secret] : LC50 = 20000 ppm 10 hr Rat
- [Secret] : LC50 = 72600 mg/l 4 hr Rat
- [Secret] : LC50 64000 ppm 4 hr Rat
- [Secret] : Steam LC50 = 8000 ppm 4 hr Rat
- [Secret] : Steam LC50 8050 ppm 4 hr Rat

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**

- [4-Methyl-2-pentanone] : 2B
- [Xylene] : 3
- [Ethylbenzene] : Group 2B
- [Secret] : 2B
- [Secret] : Group 3
- [Secret] : 3
- [Secret] : 1

*** OSHA**

- Not available

*** ACGIH**

- [4-Methyl-2-pentanone] : A3
- [Xylene] : A4
- [Aluminium] : A4
- [Ethylbenzene] : A3
- [Secret] : A4
- [Secret] : A3



*** NTP**

- Not available

*** EU CLP**

- [Naphtha (petroleum), hydrosulfurized heavy] : Carc. 1B

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

○ **Germ cell mutagenicity**

- Not available

○ **Reproductive toxicity**

- May damage fertility or the unborn child

○ **STOT-single exposure**

- Causes damage to organs(Refer Section SDS 11)

○ **STOT-repeated exposure**

- Causes damage to organs through prolonged or repeated exposure (Refer Section SDS 11)

○ **Aspiration hazard**

- Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

○ **Fish**

- [Isobutyl acetate] : LC50 = 17 mg/ℓ 96 hr

- [4-Methyl-2-pentanone] : LC50 = 540 mg/ℓ 96 hr

- [Toluene] : LC50 24 mg/ℓ 96 hr Oncorhynchus mykiss

- [Ethyleneglycol monoethyl ether acetate] : LC50 = 40 mg/ℓ 96 hr

- [Xylene] : LC50 3.3 mg/ℓ 96 hr

- [Methyl Ethyl Ketone] : LC50 3220 mg/ℓ 96 hr Pimephales promelas

- [Ethylbenzene] : LC50 = 9.09 mg/ℓ 96 hr

- [Solvent naphtha (petroleum), light arom.] : LC50 = 9.22 mg/ℓ 96 hr Oncorhynchus mykiss

- [Secret] : LC50 230 mg/ℓ 96 hr Pimephales promelas

- [Secret] : LC50 ≥ 100 mg/ℓ 96 hr Oryzias latipes

- [Secret] : LC50 = 62 mg/ℓ 96 hr

- [Secret] : LC50 = 0.97 mg/ℓ 96 hr Lepomis macrochirus

- [Secret] : LC50 = 344 mg/ℓ 96 hr

- [Secret] : LC50 = 42 mg/ℓ 96 hr Oncorhynchus mykiss

- [Secret] : LC50 > 100 mg/ℓ 96 hr

- [Secret] : LC50 > 20000 mg/ℓ 96 hr Oncorhynchus mykiss

- [Secret] : LC50 = 0.996 mg/ℓ 96 hr

- [Secret] : LC50 15400 mg/ℓ 96 hr Lepomis macrochirus

- [Secret] : LC50 4.8 mg/ℓ 96 hr Brachydanio rerio

- [Secret] : LC50 = 123.852 mg/ℓ 96 hr

○ **Crustaceans**

- [4-Methyl-2-pentanone] : EC50 = 170 mg/ℓ 48 hr

- [Toluene] : EC50 11.5 mg/ℓ 48 hr Daphnia magna

- [Xylene] : LC50 190 mg/ℓ 96 hr

- [Methyl Ethyl Ketone] : EC50 5091 mg/ℓ 48 hr Daphnia magna

- [Ethylbenzene] : LC50 = 0.4 mg/ℓ 96 hr

- [Solvent naphtha (petroleum), light arom.] : EC50 = 6.14 mg/ℓ 48 hr Daphnia magna

- [Secret] : EC50 = 5600 mg/ℓ 24 hr

- [Secret] : EC50 717 mg/ℓ 48 hr Daphnia magna

- [Secret] : EC50 = 373 mg/ℓ 48 hr Daphnia magna

- [Secret] : LC50 = 32 mg/ℓ 48 hr

- [Secret] : EC50 = 20 mg/ℓ 24 hr

- [Secret] : EC50 > 500 mg/ℓ 48 hr (Cyclops)



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- [Secret] : EC50 = 2 mg/ℓ 48 hr *Daphnia magna*
- [Secret] : LC50 = 1919 mg/ℓ 48 hr Other (Species : *Daphnia*)
- [Secret] : LC50 = 0.110 mg/ℓ 48 hr
- [Secret] : LD50 > 100 mg/ℓ 96 hr *Daphnia magna*
- [Secret] : EC50 = 1983 mg/ℓ 48 hr
- [Secret] : EC50 ≥ 3.2 mg/ℓ 48 hr *Daphnia magna*
- [Secret] : LC50 = 2332.935 mg/ℓ 48 hr

○ Algae

- [Methyl Ethyl Ketone] : EC50 > 500 mg/ℓ 96 hr *Skeletonema costatum*
- [Solvent naphtha (petroleum), light arom.] : EC50 = 19 mg/ℓ 72 hr *Selenastrum capricornutum*
- [Secret] : EC50 1800 ~ 3200 mg/ℓ 72 hr (*Selenastrum* sp.)
- [Secret] : EC50 ≥ 1000 mg/ℓ 72 hr *Selenastrum capricornutum*
- [Secret] : EC50 = 0.017 mg/ℓ 96 hr
- [Secret] : EC50 = 500 mg/ℓ 72 hr
- [Secret] : EC50 = 2.2 mg/ℓ 96 hr
- [Secret] : EC50 = 0.615 mg/ℓ 96 hr
- [Secret] : EC50 = 28 mg/ℓ 48 hr
- [Secret] : EC50 = 9.337 mg/ℓ 96 hr

B. Persistence and degradability

○ Persistence

- [Isobutyl acetate] : log Kow = 1.78
- [4-Methyl-2-pentanone] : log Kow = 1.38
- [Toluene] : log Kow 2.73
- [Ethyleneglycol monoethyl ether acetate] : log Kow = 0.59
- [Methyl Ethyl Ketone] : log Kow 0.29
- [Solvent naphtha (petroleum), light arom.] : log Kow = 2.1 ~ 6 (Estimates)
- [Secret] : log Kow 0.73
- [Secret] : log Kow = 0.53
- [Secret] : log Kow = 0.43
- [Secret] : log Kow = 1.78
- [Secret] : log Kow = 0.37 (at 25 °C)
- [Secret] : log Kow = 1.16
- [Secret] : log Kow = 5.14
- [Secret] : log Kow -0.77
- [Secret] : log Kow 4.57
- [Secret] : log Kow = 0.52

○ Degradability

- [Solvent naphtha (petroleum), light arom.] : BOD5/COD = 0.43
- [Secret] : BOD5/COD 0.81
- [Secret] : (75% (20days))
- [Secret] : BOD5/COD = 0.57

C. Bioaccumulative potential

○ Bioaccumulative potential

- [Secret] : BCF 30
- [Secret] : BCF = 3.162
- [Secret] : BCF = 1351
- [Secret] : BCF = 0.3493
- [Secret] : BCF = 180.1

○ Biodegradation

- [Toluene] : 86 (%) 20 day
- [Ethyleneglycol monoethyl ether acetate] : Biodegradability = 86.9 (%)



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- [Xylene] : 39 (%)
- [Methyl Ethyl Ketone] : 89 (%) 20 day
- [Secret] : 100 (%) 28 day
- [Secret] : Biodegradability > 60 (%) 28 day
- [Secret] : Biodegradability = 98 (%)
- [Secret] : Biodegradability = 38 (%) 28 day
- [Secret] : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed)
- [Secret] : (DPGME Rapidly biodegradable.)
- [Secret] : 41 ~ 42 (%) 28 day

D. Mobility in soil

- [Xylene] : log Kow = 3.12 (measured) (ortho), 3.2 (measured) (meta), 3.15 (measurements) (p) (5)
- [Ethylbenzene] : log Kow = 3.15 (11)
- [Secret] : Koc = 1
- [Secret] : Koc = 1.838

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

- II

E. Marine pollutant

- [Aluminium] : Applicable
- [Ethylbenzene] : Applicable
- [Solvent naphtha (petroleum), light arom.] : Applicable

F. Special precautions for user related to transport or transportation measures



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- 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

- [Isobutyl acetate] : F; R11 R66
- [4-Methyl-2-pentanone] : F; R11 Xn; R20 Xi; R36/37 R66
- [Toluene] : F; R11 Repr.Cat.3; R63 Xn; R48/20-65 Xi; R38 R67
- [Ethyleneglycol monoethyl ether acetate] : R10 Repr. Cat. 2; R60-61 Xn; R20/21/22
- [Xylene] : R10 Xn; R20/21 Xi; R38
- [Methyl Ethyl Ketone] : F; R11 Xi; R36 R66 R67
- [Aluminium] : F; R15-17
- [Naphtha (petroleum), hydrodesulfurized heavy] : Carc. Cat. 2; R45 - Muta. Cat. 2; R46 - Xn; R65
- [Ethylbenzene] : F; R11 Xn; R20
- [Solvent naphtha (petroleum), light arom.] : Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
- [Secret] : F; R11 Xi; R36 R66 R67
- [Secret] : R10
- [Secret] : R10 R66 R67
- [Secret] : Xn; R22 Xi; R36
- [Secret] : F; R11
- [Secret] : F; R11 Xi; R36 R67
- [Secret] : F; R11 T; R23/24/25-39/23/24/25
- [Secret] : R10 Xn; R 22 Xi; R37/38-41 R67
- [Secret] : R10 Repr. Cat. 2; R61 Xi; R37

* Risk Phrases

- [Isobutyl acetate] : R11, R66
- [4-Methyl-2-pentanone] : R11, R20, R36/37, R66
- [Toluene] : R11, R38, R48/20, R63, R65, R67
- [Ethyleneglycol monoethyl ether acetate] : R60, R61, R10, R20/21/22
- [Xylene] : R10, R20/21, R38
- [Methyl Ethyl Ketone] : R11, R36, R66, R67
- [Aluminium] : R15, R17
- [Naphtha (petroleum), hydrodesulfurized heavy] : R45, R46, R65
- [Ethylbenzene] : R11, R20
- [Solvent naphtha (petroleum), light arom.] : R45, R65, R46
- [Secret] : R11, R36, R66, R67
- [Secret] : R10
- [Secret] : R10, R66, R67
- [Secret] : R22, R36
- [Secret] : R11
- [Secret] : R11, R36, R67
- [Secret] : R11, R23/24/25, R39/23/24/25
- [Secret] : R10, R22, R37/38, R41, R67
- [Secret] : R61, R10, R37

* Safety Phrase

- [Isobutyl acetate] : S2, S16, S23, S25, S29, S33



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- [4-Methyl-2-pentanone] : S2, S9, S16, S29
- [Toluene] : S2, S36/37, S46, S62
- [Ethyleneglycol monoethyl ether acetate] : S53, S45
- [Xylene] : S2, S25
- [Methyl Ethyl Ketone] : S2, S9, S16
- [Aluminium] : S2, S7/8, S43
- [Naphtha (petroleum), hydrodesulfurized heavy] : S53, S45
- [Ethylbenzene] : S2, S16, S24/25, S29
- [Solvent naphtha (petroleum), light arom.] : S53, S45
- [Secret] : S2, S16, S26, S33
- [Secret] : S2
- [Secret] : S2, S25
- [Secret] : S2, S26
- [Secret] : S2, S7, S16
- [Secret] : S2, S7, S16, S24/25, S26
- [Secret] : S1/2, S7, S16, S36/37, S45
- [Secret] : S2, S7/9, S13, S26, S37/39, S46
- [Secret] : S53, S45
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Isobutyl acetate] : 2267.995 kg 5000 lb
 - [4-Methyl-2-pentanone] : 2267.995 kg 5000 lb
 - [Toluene] : 453.599 kg 1000 lb
 - [Xylene] : 45.3599 kg 100 lb
 - [Methyl Ethyl Ketone] : 2267.995 kg 5000 lb
 - [Ethylbenzene] : 453.599 kg 1000 lb
 - [Secret] : 2267.995 kg 5000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [4-Methyl-2-pentanone] : Applicable
 - [Toluene] : Applicable
 - [Xylene] : Applicable
 - [Aluminium] : 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



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B. Issue date

- 2013-06-26

C. Revision number and Last date revised

- 1 times, 2014-03-11

D. Other

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



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