



Akzonobel Industrial Coatings Korea

# MATERIAL SAFETY DATA SHEET

## HICARTHANE#200(G) JET BLACK

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### 1. IDENTIFICATION

#### A. Product name

- HICARTHANE#200(G) JET BLACK [KF000021107]

#### 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
- Carcinogenicity : Category1B
- Reproductive toxicity : Category1B
- Serious eye damage/irritation : Category2
- Flammable liquids : Category2
- Specific target organ toxicity(Single exposure) : Category1
- Specific target organ toxicity(Single exposure) : Category3(Narcotic effects)
- Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)
- Specific target organ toxicity(Repeated exposure) : Category1
- Skin corrosion/irritation : Category2

#### B. GHS label elements



All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable. Akzo Nobel however makes no warranty as to the accuracy of and/or sufficiency of such information.

○ **Hazard symbols**



○ **Signal words**

- Danger

○ **Hazard statements**

- H225 Highly flammable liquid and vapour
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H335 May cause respiratory irritation.
- H336 May cause drowsiness and dizziness.
- 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)

○ **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**

- 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+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.



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#### 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 : 0, Reactivity : 0

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Toluene	Methylbenzene	108-88-3	20 ~ 30
2-Propenoic acid, 2-methyl-, butyl ester, polymer with 2-hydroxyethyl 2-methyl-2-propenoate, methyl 2-methyl-2-propenoate and 2-propenoic acid	-	38415-32-6	10 ~ 20
Isobutyl acetate	Acetic acid, 2-methylpropyl ester	110-19-0	10 ~ 20
Xylene	Dimethylbenzene	1330-20-7	1 ~ 10
n-Butyl acetate	Acetic acid, butyl ester	123-86-4	1 ~ 10
4-Methyl-2-pentanone	Methylisobutyl ketone, MIBK	108-10-1	1 ~ 10
Ethyleneglycol monoethyl ether acetate	2-Ethoxyethyl acetate	111-15-9	1 ~ 10
Silicon dioxide	Precipitated silica	112926-00-8	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
Ethylbenzene	Benzene, ethyl-	100-41-4	1 ~ 10
Acetic acid ethyl ester	Ethyl acetate	141-78-6	1 ~ 10
Acryl resin	-	-	1 ~ 10
Cellulose acetate butylate	Cellulose, acetate butanoate	9004-36-8	1 ~ 10
2-Methyl-2-propenoic acid butyl ester polymer with butyl 2-propenoate, 2-hydroxyethyl 2-methyl-2-propenoate, methyl 2-methyl-2-propenoate and 2-propenoic acid	-	54868-06-3	1 ~ 10
Carbon black	Acetylene black	1333-86-4	1 ~ 10
caprolactone methacr	-	-	0 ~ 1
pe/amide wax	-	-	0 ~ 1
C.I. pigment yellow 042	FERRIC OXIDE, FERRIC HYDROXIDE, CALCIUM CARBONATE	51274-00-1	0 ~ 1
Methyl Ethyl Ketone	2-Butanone	78-93-3	0 ~ 1
Dichlorodimethylsilane reaction products with silica	Silane, dichlorodimethyl-, reaction products with silica	68611-44-9	0 ~ 1
Naphtha (petroleum), hydrotreated heavy	Naphtha	64742-48-9	0 ~ 1
5,12-Dihydroquino[2,3-b]acridine-7,14-dione	Quino[2,3-b]acridine-7,14-dione, 5,12-dihydro-	1047-16-1	0 ~ 1
copolymer	-	-	0 ~ 1
modified urea	-	-	0 ~ 1
polymeric dispersant	-	-	0 ~ 1
Titanium dioxide	Titanium oxide (TiO <sub>2</sub> )	13463-67-7	0 ~ 1
α-[3-[3-(2H-Benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-ω-hydroxy-poly(oxy-1,2-ethanediyl)	-	104810-48-2	0 ~ 1
POLYAMIDE	-	-	0 ~ 1
α-[3-[3-(2H-Benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]-ω-[3-[3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy]poly(oxy-1,2-ethanediyl)	-	104810-47-1	0 ~ 1
modified polysiloxan	-	-	0 ~ 1
Ethanol	Alcohol anhydrous	64-17-5	0 ~ 1



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Propylene glycol methyl ether acetate	Propylene glycol monomethyl ether acetate	108-65-6	0 ~ 1
Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester	Decanedioic acid, 1,10-bis(1,2,2,6,6-pentamethyl-4-piperidinyl) ester	41556-26-7	0 ~ 1
$\alpha$ -Hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl)	-	25322-68-3	0 ~ 1
Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate	Decanedioic acid methyl 1,2,2,6,6-pentamethyl-4-piperidinyl ester	82919-37-7	0 ~ 1
Silicon dioxide	Silic anhydride	7631-86-9	0 ~ 1
Lithium chloride	Lithium monochloride	7447-41-8	0 ~ 1
Aluminium hydroxide	Trihydroxyaluminum	21645-51-2	0 ~ 1
1-Octene	1-Caprylene	111-66-0	0 ~ 1
2-Methoxypropyl acetate	2-Methoxy-1-propyl acetate	70657-70-4	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.

##### 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



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- 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.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Wear appropriate protective equipment.
- 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**

- 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.
- Move container to safe area from the leak area.
- 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.
- Spilled material should be treated as a potential risk of waste collected.

## **7. HANDLING AND STORAGE**

### **A. Precautions for safe handling**

- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- 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**



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- Save in cool, dry and well ventilated place.
- Do not use damaged containers.
- Do not apply direct heat.
- No open fire.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### A. Exposure limits

- o **ACGIH TLV**
  - [Toluene] : TWA 20 ppm (75 mg/m<sup>3</sup>)
  - [Isobutyl acetate] : TWA, 150 ppm (713 mg/m<sup>3</sup>)
  - [Xylene] : TWA 100 ppm (434 mg/m<sup>3</sup>), STEL, 150 ppm (651 mg/m<sup>3</sup>)
  - [n-Butyl acetate] : TWA, 150 ppm (713 mg/m<sup>3</sup>), STEL, 200 ppm (950 mg/m<sup>3</sup>)
  - [4-Methyl-2-pentanone] : TWA, 20 ppm (82 mg/m<sup>3</sup>) STEL 75 ppm (307 mg/m<sup>3</sup>)
  - [Ethylene glycol monoethyl ether acetate] : TWA, 5 ppm (27 mg/m<sup>3</sup>)
  - [Ethylbenzene] : TWA, 20 ppm (87 mg/m<sup>3</sup>)
  - [Acetic acid ethyl ester] : TWA, 400 ppm (1440 mg/m<sup>3</sup>)
  - [Carbon black] : TWA, 3 mg/m<sup>3</sup>, Inhalable particulate matter
  - [Methyl Ethyl Ketone] : TWA, 200 ppm (590 mg/m<sup>3</sup>) STEL, 300 ppm (885 mg/m<sup>3</sup>)
  - [Titanium dioxide] : TWA 10 mg/m<sup>3</sup>
  - [Ethanol] : STEL, 1000 ppm (1880 mg/m<sup>3</sup>)

### 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)



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- Color	black
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	79 °C
G. Flash point	5 °C ~ 20 °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(Relative density)	0.93~1.03
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	420 °C
Q. Decomposition temperature	Not available
R. Viscosity	49~57KU
S. Molecular weight	Not available

## 10. STABILITY AND REACTIVITY

### A. Chemical Stability and Reactivity

- 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 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
    - [Toluene] : rat LD50=2600 mg/kg



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- [Isobutyl acetate] : LD50 = 15400 mg/kg Rat
- [Xylene] : LD50=3550 mg/kg rat
- [n-Butyl acetate] : LD50 = 14130 mg/kg Rat
- [4-Methyl-2-pentanone] : LD50 = 2080 mg/kg Rat
- [Ethyleneglycol monoethyl ether acetate] : LD50 = 2700 mg/kg Rat
- [Ethylbenzene] : LD50 = 3500 mg/kg Rat
- [Acetic acid ethyl ester] : LD50 5620 mg/kg Rat
- [Carbon black] : LD50 = 15400 mg/kg Rat
- [Methyl Ethyl Ketone] : LD50 2737 mg/kg Rat
- [Dichlorodimethylsilane reaction products with silica] : LD50 > 5000 mg/kg Rat
- [Naphtha (petroleum), hydrotreated heavy] : LD50 > 15000 mg/kg Rat
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : LD50 > 1000 mg/kg Rat
- [Titanium dioxide] : LD50 > 10000 mg/kg Rat
- [ $\alpha$ -[3-[3-(2H-Benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropyl]- $\omega$ -[3-[3-(2H-Benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl]-1-oxopropoxy]poly(oxy-1,2-ethanediyl)] : LD50 = 5000 mg/kg Rat
- [Ethanol] : LD50 = 6200 mg/kg Rat
- [Propylene glycol methyl ether acetate] : LD50 = 8532 mg/kg Rat
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : LD50 = 2369 mg/kg Rat
- [ $\alpha$ -Hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl)] : LD50 = 600 mg/kg Rat
- [Silicon dioxide] : LD50 = 3160 mg/kg Rat
- [Lithium chloride] : LD50 = 526 mg/kg Rat
- [Aluminium hydroxide] : LD50 > 5000 mg/kg Rat
- [1-Octene] : LD50 > 5000 mg/kg Rat

#### \* Dermal

- [Toluene] : rabbit LD50=12,000 mg/kg
- [Isobutyl acetate] : LD50 = 17400 mg/kg rabbit
- [Xylene] : LD50 4350 mg/kg Rabbit
- [n-Butyl acetate] : LD50 = 17600 mg/kg Rabbit
- [4-Methyl-2-pentanone] : LD50 = 3000 mg/kg rabbit
- [Silicon dioxide] : LD50 = 5000 mg/kg
- [Ethylbenzene] : LD50 = 15400 mg/kg Rabbit
- [Acetic acid ethyl ester] : LD50 > 18000 mg/kg Rabbit
- [Carbon black] : LD50 = 3000 mg/kg rabbit
- [Methyl Ethyl Ketone] : LD50 6480 mg/kg rabbit
- [Naphtha (petroleum), hydrotreated heavy] : LD50 > 3160 mg/kg Rabbit
- [Titanium dioxide] : LD50 > 10000 mg/kg Rabbit
- [Propylene glycol methyl ether acetate] : LD50 > 5000 mg/kg Rabbit
- [Lithium chloride] : LD50 = 1488 mg/kg rabbit
- [1-Octene] : LD50 > 2000 mg/kg Rabbit

#### \* Inhalation

- [Toluene] : rat LC50=28.1 mg/L/4hr
- [Isobutyl acetate] : LC50 = 38.0 mg/L/4 hr Rat
- [Xylene] : Steam LC50 6700 ppm 4 hr Rat (Equivalents : 29.09 mg/L)
- [n-Butyl acetate] : Steam LC50 = 0.74 mg/L/4hr Rat (GLP)
- [4-Methyl-2-pentanone] : LC50 = 8.2 mg/l Rat
- [Ethyleneglycol monoethyl ether acetate] : LC50 = 17.1 mg/l/4hr Rat
- [Silicon dioxide] : Steam LC50 > 2.0 mg/l Rat
- [Ethylbenzene] : Steam LC50 = 9.6 mg/L/4 hr Rat
- [Acetic acid ethyl ester] : Steam LC50 100 mg/l 4 hr Rat (LC50 = 200 mg/L/1hr conversion  $\frac{2}{3}$ )
- [Methyl Ethyl Ketone] : Steam LC50 32 mg/l 4 hr Mouse
- [Dichlorodimethylsilane reaction products with silica] : dust LC50  $\geq$  0.477 mg/L 4 hr Rat
- [Titanium dioxide] : LC50 > 6.82 mg/l 4 hr Rat
- [Ethanol] : LC50 = 59.59 mg/L/4hr Rat





- [Propylene glycol methyl ether acetate] : Steam LC50 = 28.8 mg/L/4 hr Rat
- [1-Octene] : Steam LC50 36.9 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**
    - [Toluene] : Group 3
    - [Xylene] : Group 3
    - [4-Methyl-2-pentanone] : Group 2B
    - [Silicon dioxide] : Group 3 (Silica, amorphous)
    - [Ethylbenzene] : Group 2B
    - [Carbon black] : Group 2B
    - [Titanium dioxide] : Group 2B
    - [Ethanol] : Group 1
    - [Silicon dioxide] : Group 3
  - \* **OSHA**
    - Not available
  - \* **ACGIH**
    - [Toluene] : A4
    - [Xylene] : A4
    - [4-Methyl-2-pentanone] : A3
    - [Ethylbenzene] : A3
    - [Carbon black] : A3
    - [Titanium dioxide] : A4
    - [Ethanol] : A3
  - \* **NTP**
    - Not available
  - \* **EU CLP**
    - [Naphtha (petroleum), hydrotreated heavy] : 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)
  - May cause drowsiness and dizziness.
  - May cause respiratory irritation.
- **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**
  - [Toluene] : LC50 24 mg/ℓ 96 hr Oncorhynchus mykiss
  - [Isobutyl acetate] : LC50 = 17 mg/ℓ 96 hr



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- [n-Butyl acetate] : LC50 = 62 mg/ℓ 96 hr
- [4-Methyl-2-pentanone] : LC50 = 540 mg/ℓ 96 hr
- [Ethyleneglycol monoethyl ether acetate] : LC50 = 40 mg/ℓ 96 hr
- [Ethylbenzene] : LC50 = 9.09 mg/ℓ 96 hr
- [Acetic acid ethyl ester] : LC50 230 mg/ℓ 96 hr *Pimephales promelas*
- [Methyl Ethyl Ketone] : LC50 3220 mg/ℓ 96 hr *Pimephales promelas*
- [Naphtha (petroleum), hydrotreated heavy] : LC50 = 2200 mg/ℓ 96 hr *Pimephales promelas*
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : LC50 = 4.234 mg/ℓ 96 hr (No accurate information on Species)
- [Ethanol] : LC50 = 42 mg/ℓ 96 hr *Oncorhynchus mykiss*
- [Propylene glycol methyl ether acetate] : LC50 ≥ 100 mg/ℓ 96 hr *Oryzias latipes*
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : LC50 = 0.97 mg/ℓ 96 hr *Lepomis macrochirus*
- [ $\alpha$ -Hydro- $\omega$ -hydroxypoly(oxy-1,2-ethanediyl)] : LC50 > 20000 mg/ℓ 96 hr *Oncorhynchus mykiss*
- [Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate] : LC50 = 0.996 mg/ℓ 96 hr
- [Lithium chloride] : LC50 = 315 mg/ℓ 96 hr *Fundulus heteroclitus*
- [Aluminium hydroxide] : LC50 > 100 mg/ℓ 96 hr Other (*Salmo trutta*)
- [1-Octene] : LC50 4.8 mg/ℓ 96 hr *Brachydanio rerio*
- [2-Methoxypropyl acetate] : LC50 = 123.852 mg/ℓ 96 hr

#### ○ Crustaceans

- [Toluene] : EC50 11.5 mg/ℓ 48 hr *Daphnia magna*
- [n-Butyl acetate] : LC50 = 32 mg/ℓ 48 hr
- [4-Methyl-2-pentanone] : EC50 = 170 mg/ℓ 48 hr
- [Ethylbenzene] : LC50 = 0.4 mg/ℓ 96 hr
- [Acetic acid ethyl ester] : EC50 717 mg/ℓ 48 hr *Daphnia magna*
- [Carbon black] : EC50 = 5600 mg/ℓ 24 hr
- [Methyl Ethyl Ketone] : EC50 5091 mg/ℓ 48 hr *Daphnia magna*
- [Naphtha (petroleum), hydrotreated heavy] : LC50 = 2.6 mg/ℓ 96 hr (Species: *Chaetogammarus marinus*)
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : LC50 = 3.455 mg/ℓ 48 hr (No accurate information on Species)
- [Titanium dioxide] : EC50 > 1000 mg/ℓ 48 hr
- [Ethanol] : EC50 = 2 mg/ℓ 48 hr *Daphnia magna*
- [Propylene glycol methyl ether acetate] : EC50 = 373 mg/ℓ 48 hr *Daphnia magna*
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : EC50 = 20 mg/ℓ 24 hr
- [Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate] : LC50 = 0.110 mg/ℓ 48 hr
- [Lithium chloride] : EC50 = 1.2 mg/ℓ 64 hr *Daphnia magna*
- [Aluminium hydroxide] : EC50 > 100 mg/ℓ 48 hr *Daphnia magna*
- [1-Octene] : EC50 ≥ 3.2 mg/ℓ 48 hr *Daphnia magna*
- [2-Methoxypropyl acetate] : LC50 = 2332.935 mg/ℓ 48 hr

#### ○ Algae

- [Acetic acid ethyl ester] : EC50 1800 ~ 3200 mg/ℓ 72 hr (*Selenastrum* sp.)
- [Methyl Ethyl Ketone] : EC50 > 500 mg/ℓ 96 hr *Skeletonema costatum*
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : EC50 = 5.056 mg/ℓ 96 hr (No accurate information on Species)
- [Propylene glycol methyl ether acetate] : EC50 ≥ 1000 mg/ℓ 72 hr *Selenastrum capricornutum*
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : EC50 = 0.017 mg/ℓ 96 hr
- [Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate] : EC50 = 0.615 mg/ℓ 96 hr
- [Aluminium hydroxide] : EC50 > 100 mg/ℓ 72 hr *Selenastrum capricornutum*
- [2-Methoxypropyl acetate] : EC50 = 9.337 mg/ℓ 96 hr

## B. Persistence and degradability

#### ○ Persistence

- [Toluene] : log Kow 2.73
- [Isobutyl acetate] : log Kow = 1.78
- [n-Butyl acetate] : log Kow = 1.78
- [4-Methyl-2-pentanone] : log Kow = 1.38
- [Ethyleneglycol monoethyl ether acetate] : log Kow = 0.59



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- [Acetic acid ethyl ester] : log Kow 0.73
- [Methyl Ethyl Ketone] : log Kow 0.29
- [Naphtha (petroleum), hydrotreated heavy] : log Kow = 2.1 ~ 6 (Estimates)
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : log Kow = 1.9 (Estimates)
- [Propylene glycol methyl ether acetate] : log Kow = 0.43
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : log Kow = 0.37 (at 25 °C)
- [Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate] : log Kow = 5.14
- [Silicon dioxide] : log Kow = 0.53
- [Lithium chloride] : log Kow = -2.7
- [1-Octene] : log Kow 4.57
- [2-Methoxypropyl acetate] : log Kow = 0.52

○ **Degradability**

- [Acetic acid ethyl ester] : BOD5/COD 0.81
- [Ethanol] : BOD5/COD = 0.57

### C. Bioaccumulative potential

○ **Bioaccumulative potential**

- [Acetic acid ethyl ester] : BCF 30
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : BCF = 1351
- [Methyl 1,2,2,6,6-pentamethyl-4-piperidyl sebacate] : BCF = 180.1
- [Silicon dioxide] : BCF = 3.162
- [Aluminium hydroxide] : BCF = 3.162
- [2-Methoxypropyl acetate] : BCF = 3.162

○ **Biodegradation**

- [Toluene] : 86 (%) 20 day
- [Xylene] : 39 (%)
- [n-Butyl acetate] : Biodegradability = 98 (%)
- [Ethylene glycol monoethyl ether acetate] : Biodegradability = 86.9 (%)
- [Acetic acid ethyl ester] : 100 (%) 28 day
- [Methyl Ethyl Ketone] : 89 (%) 20 day
- [Naphtha (petroleum), hydrotreated heavy] : Biodegradability = 10 (%) 28 day (Aerobic, Activated Sludge, Domestic wastewater, Does not decompose easily)
- [Ethanol] : Biodegradability = 75 (%) 20 day (Aerobic, Other, Easily decomposed)
- [Propylene glycol methyl ether acetate] : Biodegradability > 60 (%) 28 day
- [Decanedioic acid bis(1,2,2,6,6-pentamethyl-4-piperidiny) ester] : Biodegradability = 38 (%) 28 day
- [1-Octene] : 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)
- [5,12-Dihydroquino[2,3-b]acridine-7,14-dione] : Koc = 3827
- [Ethanol] : Koc = 1
- [2-Methoxypropyl acetate] : Koc = 1.838

### 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.



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- 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 dispose 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

- 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
  - Not applicable
- Information of EU Classification
  - \* Classification
    - [Toluene] : F; R11 Repr.Cat.3; R63 Xn; R48/20-65 Xi; R38 R67
    - [Isobutyl acetate] : F; R11 R66
    - [Xylene] : R10 Xn; R20/21 Xi; R38
    - [n-Butyl acetate] : R10 R66 R67
    - [4-Methyl-2-pentanone] : F; R11 Xn; R20 Xi; R36/37 R66
    - [Ethylene glycol monoethyl ether acetate] : R10 Repr. Cat. 2; R60-61 Xn; R20/21/22
    - [Ethylbenzene] : F; R11Xn; R20
    - [Acetic acid ethyl ester] : F; R11 Xi; R36 R66 R67
    - [Methyl Ethyl Ketone] : F; R11 Xi; R36 R66 R67
    - [Naphtha (petroleum), hydrotreated heavy] : Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
    - [Ethanol] : F; R11
    - [Propylene glycol methyl ether acetate] : R10
    - [2-Methoxypropyl acetate] : R10 Repr. Cat. 2; R61 Xi; R37
  - \* Risk Phrases
    - [Toluene] : R11, R38, R48/20, R63, R65, R67
    - [Isobutyl acetate] : R11, R66



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- [Xylene] : R10, R20/21, R38
- [n-Butyl acetate] : R10, R66, R67
- [4-Methyl-2-pentanone] : R11, R20, R36/37, R66
- [Ethyleneglycol monoethyl ether acetate] : R60, R61, R10, R20/21/22
- [Ethylbenzene] : R11, R20
- [Acetic acid ethyl ester] : R11, R36, R66, R67
- [Methyl Ethyl Ketone] : R11, R36, R66, R67
- [Naphtha (petroleum), hydrotreated heavy] : R45, R65, R46
- [Ethanol] : R11
- [Propylene glycol methyl ether acetate] : R10
- [2-Methoxypropyl acetate] : R61, R10, R37

**\* Safety Phrase**

- [Toluene] : S2, S36/37, S46, S62
- [Isobutyl acetate] : S2, S16, S23, S25, S29, S33
- [Xylene] : S2, S25
- [n-Butyl acetate] : S2, S25
- [4-Methyl-2-pentanone] : S2, S9, S16, S29
- [Ethyleneglycol monoethyl ether acetate] : S53, S45
- [Ethylbenzene] : S2, S16, S24/25, S29
- [Acetic acid ethyl ester] : S2, S16, S26, S33
- [Methyl Ethyl Ketone] : S2, S9, S16
- [Naphtha (petroleum), hydrotreated heavy] : S53, S45
- [Ethanol] : S2, S7, S16
- [Propylene glycol methyl ether acetate] : S2
- [2-Methoxypropyl acetate] : S53, S45

○ **U.S. Federal regulations**

**\* OSHA PROCESS SAFETY (29CFR1910.119)**

- Not applicable

**\* CERCLA Section 103 (40CFR302.4)**

- [Toluene] : 453.599 kg 1000 lb
- [Isobutyl acetate] : 2267.995 kg 5000 lb
- [Xylene] : 45.3599 kg 100 lb
- [n-Butyl acetate] : 2267.995 kg 5000 lb
- [4-Methyl-2-pentanone] : 2267.995 kg 5000 lb
- [Ethylbenzene] : 453.599 kg 1000 lb
- [Acetic acid ethyl ester] : 2267.995 kg 5000 lb
- [Methyl Ethyl Ketone] : 2267.995 kg 5000 lb

**\* EPCRA Section 302 (40CFR355.30)**

- Not applicable

**\* EPCRA Section 304 (40CFR355.40)**

- Not applicable

**\* EPCRA Section 313 (40CFR372.65)**

- [Toluene] : Applicable
- [Xylene] : Applicable
- [4-Methyl-2-pentanone] : Applicable
- [Ethylbenzene] : 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**

- 2013-06-26

**C. Revision number and Last date revised**

- 5 times, 2016-01-27

**D. Other**

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

