

# Material Safety Data Sheet

Product	Kixx DCTF		
List No.	Issuing date	Last revised date	Department
LB2710	2017-02-22	2018-01-01	Finished Lubricants R&D Team

## 1. Identification of the substance/mixture and of the company/undertaking

### 1) Product identifier

- Kixx DCTF

### 2) Relevant identified uses of the substance or mixture and uses advised against

- Relevant identified uses : (Lubricants and additives)

- Uses advised against : Do not use for any other purpose.

### 3) Supplier information

#### Manufacturer information

- Company name : GS Caltex Corporation  
[Manufacture]

- Address : GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea

- Emergency telephone number : 1899-5145

## 2. HAZARD IDENTIFICATION

### 1) Hazard classification

- Not applicable

### 2) Allocation label elements

#### Hazard pictograms

- Not applicable

#### Signal word

- Not applicable

#### Hazard statements

- Not applicable

#### Precautionary statements

##### 1) Prevention

- Not applicable

##### 2) Response

- Not applicable

##### 3) Storage

- Not applicable

##### 4) Disposal

- Not applicable

### 3) Other hazards

#### ○ Product NFPA Level : Health , Flammability , Reactivity

(※ 0-Lack, 1-Low, 2-Moderate, 3-High, 4-Very High)

※ Chemical NFPA Level.

- Distillates (petroleum), hydrotreated heavy paraffinic : Health=1, Flammable=1, Reaction=0
- Business Secret1 : Health=0, Flammable=0, Reaction=0
- Boric acid, crude natural : Health=2, Flammable=0, Reaction=0
- Diphenylamine : Health=2, Flammable=1, Reaction=0
- Dodecylmethacrylate : Health=1, Flammable=1, Reaction=2

### 3. Composition/Information on ingredients

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
Distillates (petroleum), hydrotreated heavy paraffinic		64742-54-7	265-157-1	80 ~ 90
Business Secret1				5 ~ 10
Boric acid, crude natural		10043-35-3	233-139-2	0.01 ~ 0.05
Diphenylamine		122-39-4	204-539-4	0.01 ~ 0.05
Dodecylmethacrylate		142-90-5	205-570-6	0.1 ~ 0.5

### 4. FIRST AID MEASURES

#### 1) Following eye contact

- In case of contact with material, immediately flush eyes with running water for at least 15 minutes.
- Get medical aid immediately.

#### 2) Following skin contact

- In case of contact with material, immediately flush skin with running water for at least 15 minutes.
- Remove and isolate contaminated clothing and shoes.
- Launder contaminated clothing and shoes before re-use.
- Get medical aid immediately.

#### 3) Following inhalation

- Move to fresh air.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Seek immediate medical assistance.

#### 4) Following ingestion

- If unconscious but breathing, never give anything by mouth.
- Get medical aid immediately.

#### 5) Advice to physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Do not apply drugs of the adrenaline ephedrine group.

## 5. FIRE FIGHTING MEASURES

### 1) Suitable (and unsuitable) extinguishing media

#### ○ Suitable extinguishing media

- Small fire: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO<sub>2</sub> (Suitable extinguishing media).
- Large fire: Water spray/fog, regular foam (Suitable extinguishing media).

#### ○ Unsuitable extinguishing media

- High-pressure water (Unsuitable extinguishing media).

### 2) Special hazards arising from the substance or mixture

- May ignited from heat, friction or contamination.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.
- May ignited from heat, friction or contamination.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.

### 3) Special protective equipment for firefighters

- Substance may be transported hot.
- Runoff may cause pollution.
- Contact may cause burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.

## 6. ACCIDENTAL RELEASE MEASURES

### 1) Health considerations and protective equipment

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Please note that materials and conditions to be avoided.
- Ventilate the contaminated area.
- Do not touch or walk through spilled material.
- Prevent dust cloud.
- Do not enter areas which have more than 23.5% oxygen in the atmosphere, without respirator or air supplied mask.

## 2) Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

## 3) For cleaning up

- Small Spill: Flush area with flooding quantities of water.
- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Large Spill: Dike far ahead of liquid spill for later disposal.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

## 7. HANDLING AND STORAGE

### 1) Precautions for safe handling

- Please note that materials and conditions to be avoided.
- Wash ... thoroughly after handling.
- Handling refer to engineering control/personal protection section.
- CAUTION: High temperature.
- CAUTION: This material does not contain oxygen and may cause asphyxia if released in a confined area.
- High concentration of this gas will create an oxygen-deficient atmosphere, creating the risk of asphyxiation. Check oxygen content before entering area.
- CAUTION: Vapors displace air and can cause asphyxiation in confined spaces if released material.
- Keep under 20°C. This material evaporate slowly at 20°C and reach toxic concentration.
- Do not spray. This material does not easily evaporated. But can be reach toxic concentration quickly in air if sprayed.
- Check oxygen content before entering area.
- Use adequate machine for prevention when package handling.
- Avoid any skin and eye contact when insert undiluted solution. Wash ... thoroughly after handling.
- Caution: Dangerous fire hazard when exposed to heat, or flame, sparks.
- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)

### 2) Conditions for safe storage (including any incompatibilities)

- Store in a dry place. Store in a closed container.
- Please note that materials and conditions to be avoided.
- Store containers: AVOID the place where can be damage and contamination.
- Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources}
- Choose a place that can be protected from strong oxidizers and acid.
- Drum Handling: Must work at safe place., Loading more than 3 stack is prohibited.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### 1) Chemical exposure limits, Biological exposure standard

#### ○ Occupational exposure limits (Domestic)

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA Not applicable, STEL Not applicable
- Business Secret1 : TWA Not applicable, STEL Not applicable
- Boric acid, crude natural : TWA Not applicable, STEL Not applicable
- Diphenylamine : TWA 10 mg/m<sup>3</sup>, STEL Not applicable

- Dodecylmethacrylate : TWA Not applicable, STEL Not applicable

**○ Occupational exposure limits (ACGIH)**

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA 5mg/m<sup>3</sup>, STEL Not applicable
- Business Secret2 : TWA Not applicable, STEL Not applicable
- Boric acid, crude natural : TWA Not applicable, STEL Not applicable
- Diphenylamine : TWA 10 mg/m<sup>3</sup>, STEL Not applicable
- Dodecylmethacrylate : TWA Not applicable, STEL Not applicable

**○ Biological limit values**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret3 : Not applicable
- Boric acid, crude natural : Not applicable
- Diphenylamine : Not applicable
- Dodecylmethacrylate : Not applicable

**2) Appropriate engineering controls**

- Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**3) Personal protection equipment**

**○ Respiratory protection**

- If high frequency of use or exposure, wear air respirator.
- Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health Agency.

**○ Eye protection**

- Wear suitable protective goggles and face shields.
- Wear face shield to protect eyes from scattering dust or hazardous liquid.
- Wear Non-moisture permeable goggle for dust protection.
- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

**○ Hand protection**

- Wear insulated gloves.
- Wear Non-moisture permeable chemical resistance protective gloves(latex, nitrile rubber, PVC) for prevent skin contact.

**○ Body protection**

- When contact is likely wear chemical resistant, oil and grease resistant, non-moisture permeable shoes and clothes.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Item	Input Value
Appearance	Liquid(Clear, Brown)
Smell	a specific smell of Hydrocarbon
Smell Threshold	No Data
pH	Notapplicable
Melting/Freezing Point	No Data
Boiling Point	250~500 °C

Flash Point	210 °C
Evaporating Rate	No Data
Flammability	Not applicable
Explosibility Range	No Data
Steam Pressure	<0.1 kPa (at 20°C)
Solubility	No Data
Vapor Density	No Data
Specific Gravity	0.85
Distribution Coefficient	No Data
Selfignition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	7.2 mm <sup>2</sup> /s (at 100°C)
Molecular Weight	No Data

## 10. STABILITY AND REACTIVITY

### 1) Stability and hazardous reactivity

- Stable under normal temperatures and pressures.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.

### 2) Conditions to avoid

- Ignition source(heat, spark, flame, etc.).

### 3) Incompatible materials

- Combustibles.
- Irritating and/or toxic gas.

### 4) Hazardous decomposition products

- Not available

## 11. TOXICOLOGICAL INFORMATION

### 1) Exposure route information

#### Inhalation

- After inhalation: No data

#### Skin Contact

- Following skin contact: No data

#### Eye Contact

- After eye contact: No data

#### Ingestion

- After ingestion: No data

## 2) Health hazard information

### ○ Acute toxicity

#### \* Oral - PRODUCT : Not applicable (ATEMix > 2,000 mg/kg)

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >15000 mg/kg Species : Rat
- Boric acid, crude natural : LD50 2660 mg/kg (Rat)
- Diphenylamine : LD50 > 800 mg/kg bw Rat
- Dodecylmethacrylate : LD50 >87250 mg/kg(Mouse)

#### \* Dermal - PRODUCT : Not applicable (ATEMix > 2,000 mg/kg)

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >5000 mg/kg Species : Rabbit
- Boric acid, crude natural : LD50 >2000 mg/kg (Rabbit)
- Diphenylamine : LD50 > 2000 mg/kg Rabbit
- Dodecylmethacrylate : LD50>3000 mg/kg bw; deaths 2/6 for 14 observation period(rabbit OSHA Toxicity Screening Test)

#### \* Inhalation(Gas) - PRODUCT : Not applicable

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : No data

#### \* Inhalation(Vapour) - PRODUCT : Not applicable (ATEMix > 20 mg/L)

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : No data

#### \* Inhalation(Dust, mist) - PRODUCT : Not applicable (ATEMix > 5 mg/L)

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 5.53 mg/L 4h Rat
- Boric acid, crude natural : LC50 > 2.538 mg/l Rat
- Diphenylamine : No data
- Dodecylmethacrylate : No data

### ○ Skin corrosion/Irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit - slightly irritating
- Boric acid, crude natural : Guinea pig; moderately irritant
- Diphenylamine : No data
- Dodecylmethacrylate : It has some mild irritating potential to rabbit skin.(OECD TG 404)

### ○ Serious eye damage/irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit, not irritating, OECD TG 405 GLP (Read-across CAS No. 64742-53-6)
- Boric acid, crude natural : Human; irritating
- Diphenylamine : rabbit: slightly irritating(OECD TG 405) -
- Dodecylmethacrylate : It showed no signs of irritation. (OECD TG 405)

### ○ Respiratory sensitization

- Distillates (petroleum), hydrotreated heavy paraffinic : No data

- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : No data

#### ○ **Skin sensitization**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not sensitising (Guinea Pig)
- Boric acid, crude natural : Human; not sensitising
- Diphenylamine : No data
- Dodecylmethacrylate : mouse; not sensitising (OECD TG 429)

#### ○ **Carcinogenicity**

- Distillates (petroleum), hydrotreated heavy paraffinic : EU CLP:1B The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measure by IP 346
- Boric acid, crude natural : ACGIH:A4
- Diphenylamine : ACGIH:A4
- Dodecylmethacrylate : No data

#### ○ **Germ cell mutagenicity**

- Distillates (petroleum), hydrotreated heavy paraffinic : CHO cell - Negative
- Boric acid, crude natural : in vivo bacterial reverse mutation assay; negative, in vivo micronucleus assay; negative
- Diphenylamine : Rat; negative
- Dodecylmethacrylate : in vitro gene mutation study in bacteria(OECD 471 GLP); negative

#### ○ **Reproductive toxicity**

- Distillates (petroleum), hydrotreated heavy paraffinic : Reproductive performance was not adversely affected at any dose level evaluated. (Rat)
- Boric acid, crude natural : Reported no adverse effects on fertility, lactation, litter size, progeny weight or appearance in rats exposed to either 5.9 or 17.5 mg B/kg bw. The teratogenicity of the test substance was assessed a
- Diphenylamine : Rabbit; not adversely affected at any dose level evaluated.
- Dodecylmethacrylate : Rat(m/f); Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test; No adverse effect observed. NOAEL(reproduction/developmental)=1000 mg/kg bw/day (OECD TG 42)

#### ○ **Specific target organ toxicity (single exposure)**

- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Boric acid, crude natural : Rat; acute toxicity study; No clinical signs were observed.
- Diphenylamine : No data
- Dodecylmethacrylate : Specific target organ toxicity single exposure Category 3(Respiratory tract irritation) EU CLP Notice

#### ○ **Specific target organ toxicity (repeated exposure)**

- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Boric acid, crude natural : Testicular atrophy and seminiferous tubule degeneration was observed at 6, 12 and 24 months at the highest dose level only. No treatment related effects were observed in the mid and low dose groups. N
- Diphenylamine : There was no evidence of toxicity to rats ingesting an average of 2.25 g/kg DPA (0.01% DPA diet for 2 years). This corresponds to a NOAEL value of 3 mg/kg/day.
- Dodecylmethacrylate : Rat(m/f); Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test; No adverse effect observed. NOAEL=1000 mg/kg bw/day (OECD TG 422)

#### ○ **Aspiration hazard**



- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : 3.74 mm<sup>2</sup>/s(40°C; OECD Test Guideline 114; 2008)

## 12. ECOLOGICAL INFORMATION

### 1) Aquatic toxicity

#### ○ Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 100 mg/L Fish(Pimephales promelas)
- Boric acid, crude natural : LC50 74 mg/L Fish(Limanda limanda)
- Diphenylamine : LC50 3.78 mg/L Fish
- Dodecylmethacrylate : 96h-LC0>10000 mg/l (with restrictions(water solubility: <1 µg/L))

#### ○ Crustacean

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 10000 mg/L Aquatic invertebrates(Gammarus pulex)
- Boric acid, crude natural : EC50 >= 658 mg/L Aquatic invertebrates(Daphnia magna)
- Diphenylamine : EC50 2 mg/L Aquatic invertebrates(Daphnia magna)
- Dodecylmethacrylate : No data

#### ○ Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : NOEC >= 100 mg/L Aquatic algae(Pseudokirchnerella subcapitata)
- Boric acid, crude natural : EC50 66 mg/L Aquatic algae(Phaeodactylum tricornutum)
- Diphenylamine : ErC50=2.17 mg/L 72h Pseudokirchneriella subcapitata (OECD TG 201, GLP)
- Dodecylmethacrylate : ErC50>0.010 mg/L(Desmodesmus subspicatus; 72h; OECD TG 201)

### 2) Persistence and degradation

#### ○ Persistence

- Distillates (petroleum), hydrotreated heavy paraffinic : log Kow 6
- Boric acid, crude natural : log Kow -1.09
- Diphenylamine : log Kow 3.84
- Dodecylmethacrylate : 6.45 log Kow

#### ○ Degradation

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : BOD5/COD 0.68

#### ○ biodegradation

- Distillates (petroleum), hydrotreated heavy paraffinic : BOD 77 %
- Boric acid, crude natural : No data
- Diphenylamine : 26% degradation after 28d(OECD TG 301 D)
- Dodecylmethacrylate : ca. 88.5 % degradation after 28 d(OECD TG 301C)

### 3) Bioaccumulative potential

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : BCF 0 Fish(Oncorhynchus tshawytscha)
- Diphenylamine : BCF 242 Fish(Cyprinus carpio)
- Dodecylmethacrylate : BCF=37(OECD Guideline 305; 2006)

#### 4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Boric acid, crude natural : Koc >= 62
- Diphenylamine : Koc 1500
- Dodecylmethacrylate : Koc=31160

#### 5) Hazard to the ozone layer

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Boric acid, crude natural : Not applicable
- Diphenylamine : Not applicable
- Dodecylmethacrylate : Not applicable

#### 6) Other adverse effects

- Distillates (petroleum), hydrotreated heavy paraffinic : Fish: NOEC(Pimephales promelas) >5000 mg/L/7d
- Boric acid, crude natural : No data
- Diphenylamine : No data
- Dodecylmethacrylate : No data

### 13. DISPOSAL CONSIDERATIONS

#### 1) Disposal methods

- Every commercial waste producer shall either treat wastes generated from his/her place of business by him/herself or commission the treatment of such wastes to a person who has license for a waste treatment business under Article 26(3), a person who recycles of such wastes under Article 44(2), a person who has installed and operates a waste disposal facility under Article 4 or 5, a person who has completed the registration of a business of discharging wastes into the sea under Article 18 of the Marine Environment Management Act.

#### 2) Precautions (including disposal of contaminated container of package)

- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)
- Do not allow spill material to enter sewers, storm water drains, soil, etc.
- Empty containers recycled under environmental laws.
- Empty containers may rupture when pressured.
- Empty containers may explode and residues can be ignited when pressured, cut, weld, heated.

### 14. TRANSPORT INFORMATION

#### 1) UN No.

- Not applicable

#### 2) Proper shipping name

- Not applicable

#### 3) Class or division

- Not applicable

#### 4) Packing group

- Not applicable

#### 5) Marine pollutant

- Not applicable

#### 6) Special safety response for transportation or transportation measure

- Types of Emergency Measures in Case of Fire : Not applicable
- Types of Emergency Measures in Leakage : Not applicable
- This product is not regulated for carriage according to ADR/RID, ADN, IMDG, ICAO/IATA.

### 15. REGULATORY INFORMATION

#### 1) Occupational Safety and Health Act in Korea - PRODUCT :

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Dodecylmethacrylate : Not applicable
- Diphenylamine : Substance exposure limits
- Boric acid, crude natural : Not applicable
- Business Secret : No data

#### 2) Toxic Chemical Control Act in Korea - PRODUCT :

- Distillates (petroleum), hydrotreated heavy paraffinic : Existing Commercial Chemical Substances
- Dodecylmethacrylate : Existing Commercial Chemical Substances
- Diphenylamine : Existing Commercial Chemical Substances
- Boric acid, crude natural : Pollutant release and transfer register substances, Existing Commercial Chemical Substances
- Business Secret : No data

#### 3) Safety Control of Dangerous Substances Act in Korea - PRODUCT :

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Dodecylmethacrylate : Not applicable
- Diphenylamine : Not applicable
- Boric acid, crude natural : Not applicable
- Business Secret : No data

#### 4) Wastes Control Act in Korea - PRODUCT : 지정 폐기물

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#### 5) Other regulations in KOREA and Abroad regulations

##### ○ U.S.A. management information(OSHA regulation)

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Dodecylmethacrylate : Not applicable
- Diphenylamine : Not applicable
- Boric acid, crude natural : Not applicable
- Business Secret : No data

##### ○ EU Classification (CLASSIFICATION)

- Distillates (petroleum), hydrotreated heavy paraffinic : Carc. 1B
- Dodecylmethacrylate : Skin Irrit. 2, Eye Irrit. 2, STOT SE 3, Aquatic Acute 1, Aquatic Chronic 1
- Diphenylamine : Acute Tox. 3, Acute Tox. 3, STOT RE 2, Acute Tox. 3, Aquatic Acute 1, Aquatic Chronic 1
- Boric acid, crude natural : Repr. 1B

- Business Secret : No data

**○ EU Classification (Risk Phrases)**

- Distillates (petroleum), hydrotreated heavy paraffinic : H350

- Dodecylmethacrylate : H315,H319,H335,H400,H410

- Diphenylamine : H301,H311,H373,H331,H400,H410

- Boric acid, crude natural : H360FD

- Business Secret : No data

**○ EU Classification (Safety Phrases)**

- Distillates (petroleum), hydrotreated heavy paraffinic : S:53-45

- Dodecylmethacrylate : S:(2)-26-28-60-61

- Diphenylamine : S:(1/2)-28-36/37-45-60-61

- Boric acid, crude natural : S:53-45

- Business Secret : No data

## 16. OTHER INFORMATION

### 1) 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

### 2) Print date

- 2017-02-22

### 3) Revision date

○ Number of revised

- 3

○ Date of last revision

- 2018-01-01

○ Last Revision History

- No revision information

### 4) Other

- 이 정보는 근로자 건강, 환경, 안전을 보호하고자, 현재 가용할 수 있는 DB를 근거로 하여 작성하였음.