SDS(Safety Data Sheet)

Product	Kixx PAO 100 0W-40		
MSDS Number	List No.	Issuing date	Last revised date
-	LB3732	2013-01-01	2026-02-25

1. IDENTIFICATION

1) Product name

Kixx PAO 100 0W-40

2) Recommended use of the chemical and restriction on use

- Recommended use: Lubricants, Engine oil
- Restrictions on use: Do not use for any other purpose.

3) Details of the supplier of the safety data sheet

○ **Manufacturer**

- Company name: GS Caltex Corporation
- Address: GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Emergency telephone number: +82-1899-5145

2. HAZARDS IDENTIFICATION

1) Classification of the product

- Not applicable

2) 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**

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

Product name	Health	Flammable	Reaction
Kixx PAO 100 0W-40	0	1	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
1-Decene, homopolymer, hydrogenated	Hydrogenated decene homopolymer	68037-01-4	500-183-1	65 ~ 75
Distillates (petroleum), hydrotreated heavy paraffinic	Emulsifiable oil	64742-54-7	265-157-1	5 ~ 15
Business Secret				10 ~ 15
Fatty acids, (C=8-10), triesters with trimethylolpropane	Priolube 370	91050-89-4	293-036-3	3 ~ 10
Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt		722503-70-0		0.4 ~ 3
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	Octyl-3,5-di-tert-butyl-4-hydroxy-hydrocinnamate	125643-61-0	406-040-9	0.1 ~ 1
Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts	DI-C1-14 ALKYL DITHIOPHOSPHORIC ACID, ZINC SALT ; Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts;Dialkyl(C1-C14)dithiophosphoric acid, zinc salt	68649-42-3	272-028-3	0.1 ~ 1
Calcium tetraborate	Boric acid (H2B4O7), calcium salt (1:1) (8CI)	12007-56-6	234-511-7	0.1 ~ 0.3

※ Except for the above components, all components are not listed as they do not meet the criteria for hazardous risk classification in Article 104 (Classification of Hazardous Factors) of Regulated Acts and Occupational Safety and Health Act.

※ This product has less than 3% DMSO extract as measured by the IP346 method.

4. FIRST AID MEASURES

1) Eye contact

- In case of contact with material, immediately flush eyes with running water for at least 15 minutes.
- If eye irritation persists: Get medical advice/attention.

2) 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. - If skin irritation occurs: Get medical advice/attention.
3) Inhalation	- Move victim to fresh air. - Give artificial respiration if victim is not breathing. - Administer oxygen if breathing is difficult. - If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
4) Ingestion	- If unconscious but breathing, never give anything by mouth - If swallowed do not induce vomiting, seek medical advice immediat. - Get immediate medical advice/attention. - Rinse mouth.
5) Indication of any immediate medical attention and special treatment needed	- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media	- Small fire: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO2 (Suitable extinguishing media) - Large fire: Water spray/fog, regular foam (Suitable extinguishing media) - High-pressure water (Unsuitable extinguishing media)
2) Special hazards arising from the substance or mixture	- May be ignited by heat, sparks or flames. - Fire may produce irritating and/or toxic gases. - May cause toxic effects if inhaled.
3) Special protective equipment and precautions 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	- Do not touch or walk through spilled material. - ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate

area).
- Ventilate the contaminated area.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Please note that materials and conditions to be avoided.

2) Environmental precautions

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

3) Methods and material for containment and cleaning up

- Small Spill: Flush area with flooding quantities of water.
- 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.
- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

7. HANDLING AND STORAGE

1) Precautions for safe handling

- Wash ... thoroughly after handling.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- Cuation: High temperature

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 in a closed container.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Control parameters

Chemical name	Exposure limits	ACGIH TLV	OSHA PEL	Biological limit values(BLV)
1-Decene, homopolymer, hydrogenated	Not available	Not available	Not available	Not available
Distillates (petroleum), hydrotreated heavy paraffinic	TWA :Not available	TWA 5 mg/m3, Inhalable particulate matter(Mineral oil, Pure, highly and severely refined)	Not available	Not available
Trade secret	Not available	Not available	Not available	Not available
Fatty acids, (C=8-10), triesters with trimethylolpropane	Not available	Not available	Not available	Not available

Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt	Not available	Not available	Not available	Not available
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	Not available	Not available	Not available	Not available
Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts	Not available	Not available	Not available	Not available
Calcium tetraborate	Not available	Not available	Not available	Not available

2) Appropriate engineering controls

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

3) Personal protection equipment

○ **Respiratory protection**
- Wear a adequate respiratory protection equipment with certificate by considering physicochemical properties of exposured particulate material.
- In case exposured to particulate material, the respiratory protective equipments as follow are recommended. - facepiece filtering respirator or air-putifying respirator, high-efficiency particulate air(HEPA) filter media or resporator equipped with power
- In lack of oxigan(<19.6%), wear the supplied-air respiratior or self-contained breathing apparatus.
- Consider the warning characteristics beforehand.

○ **Eye protection**
- Wear breathable safety goggles to protect from material causing eye irritation or other disorder.
- An eye wash unit and safety shower station should be available nearby work place.
- In case of direct exposure or potential exposure to the substance, wear safety glasses for chemicals approved in the country.

○ **Hand protection**
- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.
- In case of direct exposure or potential exposure to the substance, wear safety gloves for chemicals approved in the country.

○ **Body protection**
- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.
- In case of direct exposure or potential exposure to the substance, wear protective clothing for chemicals approved in the country.

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Apperance	Liquid
Color	Light yellow
Smell	a specific smell of hydrocarbon

Smell Threshold	No Data
pH (Numerical value)	No Data
Melting/Freezing Point	No Data
Boilling Point	No Data
Flash Point	214 ℃
Evaporating Rate	No Data
Flammability(Solid, Gas)	No Data
Explosibility Range	No Data
Steam Pressure	No Data
Solubility	No Data
Vapor Density	No Data
Specific Gravity	0.847
Distribution Coefficient	No Data
SelfIgnition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	14.8 mm2/s (at 100℃)
Molecular Weight	No Data

10. STABILITY AND REACTIVITY

1) Chemical Stability and hazardous reactivity
- Stable under normal temperatures and pressures.
- Containers may explode when heated.
- Some may burn but none ignite readily.

2) Conditions to avoid
- Ignition source(heat, spark, flame)

3) Incompatible materials
- Combustibles
- Irritating and/or toxic gas

4) Hazardous decomposition products
- Not available

11. TOXICOLOGICAL INFORMATION

1) Information on the likely routes of exposures

○ **Inhalation**

- No inhalation effects through respiratory system.

○ **Skin contact**

- No effect on skin contact.

○ **Eye contact**

- No effect on eye contact.

○ **Ingestion**

- No ingestion effect through mouth.

2) Health hazard information

○ **Acute toxicity**

*** Oral - Not classified (ATEmix > 2000 mg/kg)**

- 1-Decene, homopolymer, hydrogenated : rat(male/female); LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 423, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : rat(male/female), LD50 > 5,000 mg/kg bw, no deaths (read-across: 64742-56-9) (OECD TG 401, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : rat(male/female); LD50 > 2000 ㎎/kg bw, no deaths (OECD TG 401) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rat(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 401, GLP) ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : rat; LD50 = 3100 mg/kg bw (read across: zinc bis(O,O?diisooctyl) bis(dithiophosphate) (ECHA)
- Calcium tetraborate : rat(female); LD50 > 2000 mg/kg bw (OECD TG 423) (ECHA)

*** Dermal - Not classified (ATEmix > 2000 mg/kg)**

- 1-Decene, homopolymer, hydrogenated : rat(male/female); LD50 > 2000 ㎎/kg bw, no deaths (OECD TG 402, GLP) (read across: Oronite XS 1010) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : rabbit(male/female), LD50 > 5,000 mg/kg bw, no deaths (read-across: 64742-56-9) (OECD TG 402, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : rabbit(male/female); LD50 > 2000 ㎎/kg bw, no deaths (OECD TG 402, GLP) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rat(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : rabbit(male/female); LD50 > 3160 mg/kg bw, no deaths (ECHA)
- Calcium tetraborate : Not available

*** Inhalation(Gas) - Not applicable**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

*** Inhalation(Vapour) - Not classified (ATEmix > 20 mg/L)**

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available

- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : rat; LC50 > 5 mg/L air, no deaths (no data for exposure time)(ECHA)
- Calcium tetraborate : Not available

*** Inhalation(Dust, mist) - Not classified (ATEmix > 5 mg/L)**

- 1-Decene, homopolymer, hydrogenated : rat(male/female); inhalation: aerosol; LC50 > 5.2 mg/L air /4h, no deaths (OECD TG 403, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : inhalation: aerosol; rat(male/female); 4h-LC50 > 5.53 mg/L. No deaths (read-across: MRD-87-102) (OECD TG 403)(ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : rat(male/female); inhalation: aerosol; LC50 > 5.1 mg/L air /4h, no deaths (OECD TG 403) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : Not available

○ Skin corrosion/Irritation : Not classified

- 1-Decene, homopolymer, hydrogenated	:	rabbit; not irritating (OECD TG 404, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic	:	Solvent dewaxed light paraffinic oil is not considered to be irritating to the skin of rabbits. (read across : 64742-56-9) (GLP) (ECHA)
- Trade secret	:	Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane	:	rabbit; not irritating (OECD TG 404) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt	:	Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	:	rabbit; not irritating (OECD TG 404, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts	:	rabbit; irritating (PDII = 4) (read across: Cetrimonium chloride (CAS No: 112-02-7))(ECHA)
- Calcium tetraborate	:	Reconstructed Human Epidermis; not irritating (OECD TG 439, GLP) (ECHA)

○ Serious eye damage/irritation : Not classified

- 1-Decene, homopolymer, hydrogenated	:	rabbit; not irritating (OECD TG 405, GLP) (ECHA)

- Distillates (petroleum), hydrotreated heavy paraffinic : Solvent dewaxed light paraffinic oil is not considered to be an ocular irritant. (read-aross: 64742-56-9) (equivalent or similar to guideline OECD TG 405, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : rabbit; not irritating (OECD TG 405) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Rabbit; not irritating (OECD TG 405, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : rabbit; irritating (read across: Stearyltrimethylammonium chloride) (OECD TG 405)(ECHA)
- Calcium tetraborate : not irritating (ECHA)

○ **Respiratory sensitization : Not classified**

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : Not available

○ **Skin sensitization : Not classified**

- 1-Decene, homopolymer, : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)

hydrogenated

- Distillates (petroleum), hydrotreated heavy paraffinic : Under the conditions of the test, Solvent dewaxed light paraffinic oil is considered non-sensitizing for guinea-pigs. (read-aross: 64742-56-9) (OECD TG 406, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Human(patch test); not sensitising(positive reaction index=0) (read across: Cetrimonium chloride (CAS No: 112-02-7))(ECHA)
- Calcium tetraborate : Based on the available in vivo test data for analogous substances which indicate an absence of skin sensitising effect, an absence of evidence from widespread consumer and occupational use of inorganic borates and very low dermal penetration, it can be concluded that all calcium borates are unlikely to cause sensitisation by skin contact. (ECHA)

○ **Carcinogenicity : Not classified**

- 1-Decene, homopolymer, hydrogenated : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Distillates (petroleum), hydrotreated heavy paraffinic : EU CLP 1272/2008 : Carc. 1B (Note L : The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed

zinc salts

- Calcium tetraborate : IARC, NTP; UES EPA IRIS, ACGIH, EU CLP 1272/2008 : not listed

○ **Germ cell mutagenicity : Not classified**

- 1-Decene, homopolymer, hydrogenated : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471, GLP) (ECHA)
  In vivo Mammalian Erythrocyte Micronucleus Test : negative (OECD TG 474, GLP) (read across: Oronite XS 101) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : In vitro bacterial reverse mutation assay: negative (equivalent or similar to guideline OECD TG 471) (ECHA)
  In vitro mammalian chromosome aberration test: negative (read-aross : 64742-53-6) (equivalent or similar to guideline OECD TG 473, GLP) (ECHA)
  In vivo micronucleus assay : negative (read-across : 64741-62-4, 64741-53-3) (equivalent or similar to guideline OECD TG 474) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471, GLP) (ECHA)
  In vivo : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : In vitro Bacterial Reverse Mutation Assay; negative (OECD TG 471, GLP) (ECHA)
  In vivo Mammalian Erythrocyte Micronucleus Test; negative (OECD TG 474, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : In vitro - Bacterial reverse mutation test ; Negative (OECD TG 471) (read across; Cetrimonium chloride (CAS No: 112-02-7), 2',4',5',7'-tetrabromo-4,5,6,7-tetrachloro-3',6'-dihydroxy-3H-spiro[2-benzofuran-1,9'-xanthen]-3-one) (ECHA)
  In vivo: Not available
- Calcium tetraborate : In Vitro Bacterial Reverse Mutation Assay : negative / positive (OECD TG 471) (ECHA)
  In vivo : not available

○ **Reproductive toxicity : Not classified**

- 1-Decene, homopolymer, hydrogenated : rat(male/female); 0, 100, 500, or 1000 mg/kg/day; one-generation reproductive toxicity; Ethylflo 166 did not appear to have any effects on reproduction. (OECD TG 415, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : rat; screening for reproductive / developmental toxicity; Reproductive performance was not adversely affected at any dose level evaluated. There were no neonatal toxicity observed at any dose level. There were no differences in terms of systemic toxicity between either of the dose formulations. (read-aross : Chevron 100 Neutral) (OECD TG 421, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : rat; 800 and 2000 mg/kg bw/day; No adverse effects were observed in any maternal or reproductive parameter nor on external and skeletal development of fetuses. (OECD TG 414) (read across: Stock 59) (ECHA)

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rabbit; oral; 20, 40, 80 mg/kg bw/day; It is not thought that the increase in post implantation loss is due to the slight maternal toxicity recorded. However, due to a deficiency in the food consumption data it is not possible to draw a firm conclusion based on an incomplete maternal data set. Therefore Evernox 1135 will not be classified at this stage but an embryo-fetal study, on a second species, namely the rat, will be triggered at the next tonnage band so that a firm and definitive conclusion can be drawn regarding Evernox 1135 and whether it does, or does not, warrant classification as a Reproductive Toxicant. (OECD TG 414, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : In a developmental toxicity study, Sprague-Dawley female rats were treated with Quat-Silsesquioxane in the concentration of 0, 100, 300, or 1000 mg/kg/day orally by gavage in corn oil.No maternal mortality and clinical signs or behavioral changes were observed in treated female rats as compared to control. NOAEL(P)=300 mg/kg bw, NOAEL(F1)=1000 mg/kg bw (read across : Quaternary Silsesquioxane)(ECHA)
- Calcium tetraborate : Not available

○ **Specific target organ toxicity (single exposure) : Not classified**

- 1-Decene, homopolymer, hydrogenated : oral; rat(male/female); Clinical observations included transient mild depression and oily hair coats. Animals appeared grossly normal by day 5 post-exposure. LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 423, GLP) (ECHA)
  dermal; rat(male/female); Necropsy at the end of the 14 day observation period revealed a dilated pelvis in the kidney of one male rat treated at 2000 mg/kg, but this was not considered to be a treatment-related. LD50 > 2000 ㎎/㎏ bw, no deaths (OECD TG 402, GLP) (read across: Oronite XS 1010) (ECHA)
  inhalation: aerosol; rat(male/female); No treatment-related changes in pathology were observed. LC50 > 5.2 mg/L air /4h, no deaths (OECD TG 403, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : Hydronephrosis of the right kidney was observed in one rat but was not considered treatment-related by the study authors. No other abnormalities were observed in any male or female rats. (read-across: 64742-56-9) (OECD TG 401, GLP)(ECHA)
  Dermal administration of API 78-9 at 5000 mg/kg did not result in any dermal irritation or signs of clinical toxicity. Gross necroscopy did not reveal any signs of systemic toxicity at the 5000 mg/kg dose level. (read-across: 64742-56-9) (OECD TG 402, GLP)(ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : oral; rat(male/female); No clinical signs of toxicity were observed up to the end of the 14-day observation period. LD50 > 2000 ㎎/㎏ bw, no deaths (OECD TG 401) (ECHA)
  dermal; rabbit(male/female); No clinical signs of toxicity were observed up to the end of the 14-day observtion period. LD50 > 2000 ㎎/㎏ bw, no deaths (OECD TG 402, GLP) (ECHA)
  inhalation: aerosol; rat(male/female); Necropsy and histopathological

examination revealed no substance-related findings. LC50 > 5.1 mg/L air /4h, no deaths (OECD TG 403) (ECHA)

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : oral; rat(male/female); Effects on organs: No deviations from the normal morphology. (OECD TG 401, GLP) ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Significant effects not observed. (ECHA)
- Calcium tetraborate : Not available

○ **Specific target organ toxicity (repeated exposure) : Not classified**

- 1-Decene, homopolymer, hydrogenated : oral; rat(male/female); 91 days; 0, 100, 500, or 1000 mg/kg/day; The subchronic NOAEL for ethylflo 166 in rats is 1000 mg/kg/day. (OECD TG 408, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : Dermal; The systemic toxicity NOAEL for this 28-day dermal toxicity study in the rabbit is 1,000 mg/kg, based on the lack of adverse systemic effects observed at this dose level. (read-aross : 64742-53-6) (OECD TG 410, GLP) (ECHA)
  Inhalation; rat; 4 weeks; 0, 50, 220 or 1000 mg/m3; No systemic effects were observed. The NOAEL for lung changes associated with oil deposition in the lungs was 220 mg/m3. As no systemic toxicity was observed, the overall NOAEL for systemic effects was > 980 mg/m3. (equivalent or similar to guideline OECD TG 412) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : dermal; rat(male/female); 13 weeks; 800 and 2000 mg/kg bw/day; NOAEL>=2000 mg/kg bw/day (highest dose tested) (OECD TG 411) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rat(male/female); oral; 90 days; no effects (OECD TG 408, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Sprague-Dawley female rats were treated with Quat-Silsesquioxane in the concentration of 0, 100, 300, or 1000 mg/kg/day orally by gavage in corn oil.No maternal mortality and clinical signs or behavioral changes were observed in treated female rats as compared to control. NOAEL(P)=300 mg/kg bw, NOAEL(F1)=1000 mg/kg bw (read across : Quaternary Silsesquioxane)(ECHA)
- Calcium tetraborate : Not available

○ **Aspiration hazard : Not classified**

- 1-Decene, homopolymer, hydrogenated : 31.0 mm2/s (40°C) (ECHA) & hydrocarbons
- Distillates (petroleum), hydrotreated heavy paraffinic : Viscosity: 73.9 mm2/s (40°C)(ECHA) & hydrocarbons
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : 19.4 mm²/s at 40 °C (ECHA) & not hydrocarbons
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Viscosity : 110-115 mPa s (40°C) (OECD TG 114) (ECHA) & not hydrocarbons
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Viscosity: > 9 - < 15 mm2/s (100°C; OECD TG 114)(ECHA) & not hydrocarbons
- Calcium tetraborate : Not available

12. ECOLOGICAL INFORMATION

1) Ecotoxicity

- Acute toxicity : Not classfied (ATEmix>1mg/L)
- Chronic toxicity : Not classfied

○ **Acute (short-term) aquatic hazard:**

Fish

- 1-Decene, homopolymer, hydrogenated : Water solubility:< 0.1 mg/L (ECHA), 96h-LL50(Oncorhynchus mykiss) > 1000 mg/L (US EPA, GLP) (ECHA); No toxic effects up to the limit of water solubility
- Distillates (petroleum), hydrotreated heavy paraffinic : 96h-LL50(Pimephales promelas) > 100 mg/L (OECD TG 203, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : No toxic effects up to the limit of water solubility (<0.05 mg/L)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 96h-LC50(Danio rerio) > 94 mg/L (OECD TG 203, GLP) (ECHA); no short-term toxicity
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Water solubility : not soluble (0.000000000005072 mg/L at 25° C)(ECHA)
- Calcium tetraborate : Not available

Invertebrates

- 1-Decene, homopolymer, hydrogenated : Water solubility:< 0.1 mg/L (ECHA), 48h-EL50(Daphnia magna) > 1000 mg/L (OECD TG 202, GLP) (ECHA); No toxic effects up to the limit of water solubility
- Distillates (petroleum), hydrotreated heavy paraffinic : 48h-EL50(Daphnia magna) > 10,000 mg/L (read across : 64742-53-6 or 64741-97-5) (equivalent or similar to guideline OECD TG 202) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : No toxic effects up to the limit of water solubility (<0.05 mg/L)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 24h-EC50(Daphnia magna) = 4.3 mg/L (OECD TG 202, GLP) (ECHA); no short-term toxicity
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Water solubility : not soluble (0.000000000005072 mg/L at 25° C)(ECHA)
- Calcium tetraborate : 48h-EC50(Daphnia magna) > 100 mg/L (ECHA)

Aquatic algae

- 1-Decene, homopolymer, hydrogenated : Water solubility:< 0.1 mg/L (ECHA), 72h-ErL50(Scenedesmus capricornutum) > 1000 mg/L (OECD TG 201, GLP) (ECHA); No toxic effects up to the limit of water solubility
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : No toxic effects up to the limit of water solubility (<0.05 mg/L)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 72h-ErC50(Desmodesmus subspicatus) > 3 mg/L (OECD TG 201, GLP) (ECHA); no short-term toxicity
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Water solubility : not soluble (0.000000000005072 mg/L at 25° C)(ECHA)
- Calcium tetraborate : 72h-ErC50(Pseudokirchneriella subcapitata) > 100 mg/L (ECHA)

○ **Chronic (Long-term) aquatic hazard:**

Fish

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 36d-NOEC(Danio rerio) = 0.001 mg/L (OECD TG 210, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : Not available

Invertebrates

- 1-Decene, homopolymer, hydrogenated : 21d-NOELR(Daphnia magna) = 125 mg/L (OECD TG 211, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : 21d-NOEL(Daphnia magna)=10 mg/L (read across: 64742-53-6) (equivalent or similar to guideline OECD TG 211, GLP) (ECHA)
- Trade secret : Not available

- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 21d-NOEC(Daphnia magna) <= 0.01 mg/L (OECD TG 211, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : Not available

Aquatic algae

- 1-Decene, homopolymer, hydrogenated : 72h-NOErLR(Scenedesmus capricornutum) = 1000 mg/L (OECD TG 201, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : 72h-NOErL(Pseudokirchnerella subcapitata) >= 100 mg/L (read across: 72623-87-1) (OECD TG 201) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 72h-NOErC(Desmodesmus subspicatus) > 3 mg/L (OECD TG 201, GLP) (ECHA); no short-term toxicity
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : 72h-ErC10(Pseudokirchneriella subcapitata) = 79 mg/L (ECHA)

2) Persistence and degradability

○ **Persistence**

- 1-Decene, homopolymer, hydrogenated : log Kow > 6.5 (20 °C; pH:7) (OECD TG 117, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so it is not applicable. (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : log Kow=10.64 (QSAR) (ECHA); not valid (over -4<log Kow<8)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : log Kow = 9.2 (0 °C) (EU Method A.8, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : log Kow=14.876 (estimated)(EPISUITE); not valid (over -4<log Kow < 8)(ECHA)
- Calcium tetraborate : Not available

○ **Degradability**

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : The chemical constituents that comprise the other lubricant base oils category consist entirely of carbon and hydrogen and do not contain hydrolyzable groups. As such, they have a very low potential to hydrolyze. Therefore, this degradative process will not contribute to their removal from the environment. (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Hydrolysis; In accordance with REACH Annex VIII column 2, the study does not need to be conducted as the substance is highly insoluble in water, < 0.03 mg / l.
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available

- Calcium tetraborate : Not available

3) Bioaccumulative potential

○ **Bioaccumulation**

- 1-Decene, homopolymer, hydrogenated : Members of this category are not expected to be bioaccumulative. (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so it is not applicable. (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : BCF=258 (OECD TG 305, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : BCF=3.162(ECHA)
- Calcium tetraborate : Not available

○ **Biodegradation**

- 1-Decene, homopolymer, hydrogenated : 2 % degradation after 28d; Not readily biodegradable (OECD TG 301D, GLP) (ECHA)
- Distillates (petroleum), hydrotreated heavy paraffinic : Another lubricant base oil, Solvent Neutral 600 Base Oil (MRD-94 -981), was determined to be inherently biodegradable but not readily biodegradable with a mean degradation of 31.13% by day 28. (read across: Solvent Neutral 600 Base Oil (MRD-94-981)) (OECD TG 301F, GLP) (ECHA)
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : 78% degradation after 28 days; readily biodegradable (OECD TG 301F, GLP) (ECHA)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : not inherently biodegradable (EU Method C.9, GLP) (ECHA)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : 0% degradation after 28 days (Not biodegradable) (read across : Didecyl dimethyl ammonium chloride) (OECD TG 301C)(ECHA)
- Calcium tetraborate : Not available

4) Mobility in soil

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Koc=316600 (EPISUITE)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Koc=258600 (EPISUITE)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Koc=3268000000
- Calcium tetraborate : Not available

5) Hazard to the ozone layer

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

6) Other adverse effects

- 1-Decene, homopolymer, hydrogenated : Not available
- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not available
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not available
- Calcium tetraborate : Not available

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Waste must be disposed of in accordance with federal, state and local environmental control regulation.

2) Special precaution for disposal

- Consider the required attentions in accordance with waste treatment management regulation.

14. TRANSPORT INFORMATION

1) UN No.

- Not applicable

2) Proper shipping name

- Not applicable

3) Transport hazard class(es)

- 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
- Transport regulations according to ADR/RID, AND, IMDG and ICAO/IATA : Not applicable

15. REGULATORY INFORMATION

EINECS(or ELINCS)

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : European EINECS phase-in substance
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : European EINECS phase-in substance

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : European EINECS phase-in substance
- Calcium tetraborate : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Not applicable

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

Substances restricted under REACH

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Substances restricted under REACH
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

○ **Occupational Safety and Health Act**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Hazardous substance subject to control
- Calcium tetraborate : Not applicable

○ **K-REACH**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **Chemical Control Act in Korea**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : List of substance subjected to the PRTR
- Calcium tetraborate : List of substance subjected to the PRTR

○ **Safety Control of Dangerous Substances Act**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Dangerous substance
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

U.S.A

○ **US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **CERCLA Designation of hazardous substances (40 CFR 302.4)**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **CERCLA Section 302 regulation**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **CERCLA Section 304 regulation**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **CERCLA Section 313 regulation**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

Interntional Convention on Environment

○ **Rotterdam Convention list**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **Stockholm Convention list**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **Montreal Protocol list**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable

- Calcium tetraborate : Not applicable

National Inventory

○ **Korea**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

○ **U.S.A**

- 1-Decene, homopolymer, hydrogenated : US TSCA phase-in substance
- Distillates (petroleum), hydrotreated heavy paraffinic : US TSCA phase-in substance
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : US TSCA phase-in substance
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : US TSCA phase-in substance
- Calcium tetraborate : US TSCA phase-in substance

○ **China**

- 1-Decene, homopolymer, hydrogenated : China phase-in substance
- Distillates (petroleum), hydrotreated heavy paraffinic : China phase-in substance
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : China phase-in substance
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : China phase-in substance
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : China phase-in substance
- Calcium tetraborate : China phase-in substance

○ **Japan**

- 1-Decene, homopolymer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Fatty acids, (C=8-10), triesters with trimethylolpropane : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Calcium tetraborate : Not applicable

16. OTHER INFORMATION

1) Reference

- Sources of information used in preparing this SDS included one or more of the following: Internal technical

data, data from OECD eChemPortal, ECHA, NITE, TOXNET, IPCS and KOSHA search results.

2) Issue Date

- 2013-01-01

3) Revision number and Last date revised

○ **Number of revised**

- 4

○ **Date of last revision**

- 2026-01-05

○ **Last Revision History**

- Revision of chemical composition and company information

4) Other

- The information contained in the Safety Data Sheet is at the date of its issuance to the best of our knowledge correct according to the data available to us. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.