

# Material Safety Data Sheet

Product	Kixx PSF 4		
List No.	Issuing date	Last revised date	Department
LB2984	2012-11-30	2018-09-01	Finished Lubricants R&D Team

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

### 1) Product identifier

- Kixx PSF 4

### 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.

- 1-Decene, dimer, hydrogenated : Health=2, Flammable=1, Reaction=0
- Distillates (petroleum), hydrotreated heavy paraffinic : Health=1, Flammable=1, Reaction=0
- Distillates (petroleum), hydrotreated light paraffinic : Health=1, Flammable=1, Reaction=0
- ar-Nonyl-N-(nonylphenyl)benzenamine : Health=1, Flammable=1, Reaction=0
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Health=1, Flammable=1, Reaction=0
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Health=0, Flammable=0, Reaction=0
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Health=0, Flammable=0, Reaction=0

### 3. Composition/Information on ingredients

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
1-Decene, dimer, hydrogenated		68649-11-6	500-228-5	40 ~ 50
Distillates (petroleum), hydrotreated heavy paraffinic		64742-54-7	265-157-1	20 ~ 25
Distillates (petroleum), hydrotreated light paraffinic		64742-55-8	265-158-7	10 ~ 15
ar-Nonyl-N-(nonylphenyl)benzenamine		36878-20-3	253-249-4	0.1 ~ 1.0
2,2'-Iminobisethanol, N-tallow alkyl derivs.		61791-44-4	263-177-5	0.05 ~ 0.5
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester		125643-61-0		0.1 ~ 0.3
Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased		68784-26-9	272-234-3	0.1 ~ 0.3

### 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)

- 1-Decene, dimer, hydrogenated : TWA Not applicable, STEL Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : TWA Not applicable, STEL Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : TWA Not applicable, STEL Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : TWA Not applicable, STEL Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : TWA Not applicable, STEL Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : TWA Not applicable, STEL Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : TWA Not applicable, STEL Not applicable

### ○ Occupational exposure limits (ACGIH)

- 1-Decene, dimer, hydrogenated : TWA Not applicable, STEL Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : TWA 5mg/m<sup>3</sup>, STEL Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : TWA 5mg/m<sup>3</sup>, STEL Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : TWA Not applicable, STEL Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : TWA Not applicable, STEL Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : TWA Not applicable, STEL Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : TWA Not applicable, STEL Not applicable

### ○ Biological limit values

- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
Apperance	Liquid (Clear, Green)
Smell	a specific smell of Hydrocarbon
Smell Threshold	No Data
pH	Notapplicable
Melting/Freezing Poing	No Data
Boilling Point	>200 °C
Flash Point	193 °C
Evaporating Rate	No Data
Flammability	Notapplicable
Explosibility Range	No Data
Steam Pressure	No Data
Solubility	No Data
Vapor Density	No Data
Specific Gravity	0.84
Distribution Coefficient	No Data
SelfIgnition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	7.4 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)**

- 1-Decene, dimer, hydrogenated : LD50>5000 mg/kg bw(rat; m/f)(16 CFR 1500; 1988)
- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >15000 mg/kg Species : Rat
- Distillates (petroleum), hydrotreated light paraffinic : LD50 >5000 mg/kg Species : Rat
- ar-Nonyl-N-(nonylphenyl)benzenamine : LD50 >5000 mg/kg Species : Rat
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : LD50 630 mg/kg(Rat)(GLP)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rat; LD50 >5000 mg/kg, no deaths (OECD TG 401, GLP)

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

- 1-Decene, dimer, hydrogenated : LD50>3000 mg/kg bw(rabbit; m/f)(OECD Guideline 402)
- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >5000 mg/kg Species : Rabbit
- Distillates (petroleum), hydrotreated light paraffinic : LD50 >2000 mg/kg Species : Rabbit
- ar-Nonyl-N-(nonylphenyl)benzenamine : LD50> 2000 mg/kg bw (Rat; male/female; OECD Guideline 402; 1988)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rabbit; LD50 >4000 mg/kg, no deaths (OECD TG 402, GLP)

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

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

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

- 1-Decene, dimer, hydrogenated : LC50>5.06 mg/l 4 hr, no deaths. (Rat, M/F)(OECD TG 403, GLP) (read-across: Alkane 4)
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

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

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 5.53 mg/L 4h Rat
- Distillates (petroleum), hydrotreated light paraffinic : LC50 > 5.53 mg/L 4h Rat
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

**○ Skin corrosion/Irritation**

- 1-Decene, dimer, hydrogenated : Rabbit, non-irritating (15 CFR 1600; 1988)
- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit - slightly irritating
- Distillates (petroleum), hydrotreated light paraffinic : non-irritating(rabbit) (read-across: 64742-56-9; solvent dewaxed light paraffinic oil)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Slightly irritating
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : A 24-hour exposure to rabbits resulted in a mild erythema to a clear erythema and weak edema. (OECD TG 404, GLP)

**○ Serious eye damage/irritation**

- 1-Decene, dimer, hydrogenated : Rabbit, non-irritating (16 CFR 1500; 1988)
- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit, not irritating, OECD TG 405 GLP (Read-across CAS No. 64742-53-6)
- Distillates (petroleum), hydrotreated light paraffinic : Not irritating (Rabbit)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Rabbit - not irritating
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rabbit, non-irritating (OECD TG 405, GLP)

**○ Respiratory sensitization**

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data



- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

#### ○ Skin sensitization

- 1-Decene, dimer, hydrogenated : Not sensitising (Guinea Pig) (OECD Guideline 406)
- Distillates (petroleum), hydrotreated heavy paraffinic : Not sensitising (Guinea Pig)
- Distillates (petroleum), hydrotreated light paraffinic : Not sensitising (Guinea pig)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not sensitising (Guinea pig)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not sensitising (Guinea Pig) (OECD TG 406, GLP)

#### ○ Carcinogenicity

- 1-Decene, dimer, hydrogenated : No data
- 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
- Distillates (petroleum), hydrotreated light 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

#### ○ Germ cell mutagenicity

- 1-Decene, dimer, hydrogenated : in vitro Bacterial Reverse Mutation Assay; negative (OECD Guideline 471)
- Distillates (petroleum), hydrotreated heavy paraffinic : CHO cell - Negative
- Distillates (petroleum), hydrotreated light paraffinic : Negative (Mouse)
- ar-Nonyl-N-(nonylphenyl)benzenamine : in vitro - Negative (Bacterial Reverse Mutation Assay, S. typhimurium TA 1535, TA 1537, TA 98 and TA 100)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : in vivo Micronucleus assay; negative (OECD TG 474)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : in vitro Bacterial Reverse Mutation Assay; negative(OECD 471, GLP)(ECHA), in vitro Mammalian Cell Gene Mutation Test; negative(OECD TG 476, GLP)(ECHA), in vivo Micronucleus assay; negative (OECD TG 47)

#### ○ Reproductive toxicity

- 1-Decene, dimer, hydrogenated : Rat(m/f); No reproductive toxicity observed. NOAEL=1000 mg/kg bw/day. (0, 100, 500, 1000 mg/kg/day; oral) (OECD Guideline 415)
- Distillates (petroleum), hydrotreated heavy paraffinic : Reproductive performance was not adversely affected at any dose level evaluated. (Rat)
- Distillates (petroleum), hydrotreated light paraffinic : Reproductive performance was not adversely affected at any dose level evaluated. (Rat)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Parental toxicity was observed at 500 mg / kg bw (Rat; OECD Guideline 414 ; 2014)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : A dose level of 50 mg/kg/day was considered to be the clear NOAEL (no observable adverse effect level) for systemic parental and neonatal toxicity and 300 mg/kg/day was considered to be the NOAEL for

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

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Dermal; Dyspnea and dehydration occurred, and there was a change in the lungs but no symptoms of the disease were found.
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

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

- 1-Decene, dimer, hydrogenated : As result of 29-day repeated oral toxicity study at 0, 8000, 20,000, and 50,000 ppm with rat(m/f), systemic NOAEL=50,000 ppm(male: 6245 mg/kg/day, female: 6771 mg/kg/day) (OECD Guideline 407)
- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Distillates (petroleum), hydrotreated light paraffinic : No systemic effects were observed (Rat)
- ar-Nonyl-N-(nonylphenyl)benzenamine : NOEL < 100 mg/kg bw/day(Rat(m/f); OECD Guideline 408) Regarding clinical examination, incipient general systemic toxicity was observed in males of the high dose group(1000 mg/kg bw/d). These animals sho
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : rat NOAEL: 0.015%(ca. 12 mg/kg/day) (GLP), After 13 weeks of observation, weight loss and mesangial necrosis of the mesenteric artery lymph node were partially observed in some rats.
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rat, oral, 0, 50, 200, 1000 mg/kg bw/day; No other organ weights (brain, liver, kidneys, testes or ovaries) were adversely affected. The apparent NOAEL(subchronic toxicity & neurotoxicity)=200mg/kg/da

#### ○ Aspiration hazard

- 1-Decene, dimer, hydrogenated : 5.1 cSt(40 °C; ASTM D445; 2002)
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : Viscosity: 1.99-847 mm<sup>2</sup>/s (at 40°C), hydrocarbons
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : viscosity; 206820 cSt (206820 mm<sup>2</sup>/s (static))(OECD TG 114, GLP)

## 12. ECOLOGICAL INFORMATION

### 1) Aquatic toxicity

#### ○ Fish

- 1-Decene, dimer, hydrogenated : LL50 > 1000 mg/l (Oncorhynchus mykiss; 96h; OECD Guideline 203; 1995)
- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 100 mg/L Fish (Pimephales promelas)
- Distillates (petroleum), hydrotreated light paraffinic : LC50 > 5000 mg/L Fish (Oncorhynchus mykiss)

- ar-Nonyl-N-(nonylphenyl)benzenamine : LC50>100 mg/L (Danio rerio; 96h; OECD Guideline 203; 1989)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Acute toxicity Not classified because it is an insoluble substance (water solubility <1 mg / L)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : LC50 >1000 mg/l 96 hr Pimephales promelas((LL50) OECD 203 GLP)

#### ○ Crustacean

- 1-Decene, dimer, hydrogenated : EL50>1000mg/l(Daphnia magna; 48h; OECD Guideline 202; 1995)
- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 10000 mg/L Aquatic invertebrates(Gammarus pulex)
- Distillates (petroleum), hydrotreated light paraffinic : EC50 > 1000 mg/L Aquatic invertebrates(Daphnia magna)
- ar-Nonyl-N-(nonylphenyl)benzenamine : EC50> 100 mg/L(Daphnia magna; 48h; OECD Guideline 202; 2004)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : LC50=0.013mg/l (48h)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : EC50 >1000 mg/l 48 hr Daphnia magna((EL50) OECD 202 GLP)

#### ○ Aquatic algae

- 1-Decene, dimer, hydrogenated : ErL50>1000mg/l(Scenedesmus capricornutum; 72h; OECD Guideline 201; 1995)
- Distillates (petroleum), hydrotreated heavy paraffinic : NOEC >= 100 mg/L Aquatic algae(Pseudokirchnerella subcapitata)
- Distillates (petroleum), hydrotreated light paraffinic : NOEC >= 100 mg/L Aquatic algae(Pseudokirchnerella subcapitata)
- ar-Nonyl-N-(nonylphenyl)benzenamine : EC50 > 100 mg/L (Desmodesmus subspicatus; 72h; OECD Guideline 201; 2006)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : EC50=0.004 mg/l (48h)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : EC50 >500 mg/l 96 hr Selenastrum capricornutum(OECD 201 GLP)

## 2) Persistence and degradation

#### ○ Persistence

- 1-Decene, dimer, hydrogenated : 10.09 log Kow (추정값)
- Distillates (petroleum), hydrotreated heavy paraffinic : log Kow 6
- Distillates (petroleum), hydrotreated light paraffinic : log Kow 6
- ar-Nonyl-N-(nonylphenyl)benzenamine : 12.24 log Kow
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : 6.63 log Kow (estimated)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : log Kow=7.93
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 9.5 log Kow

#### ○ Degradation

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data

#### ○ biodegradation

- 1-Decene, dimer, hydrogenated : 28일후 15%생분해됨(OECD Guideline 301 D; 1983)
- Distillates (petroleum), hydrotreated heavy paraffinic : BOD 77 %
- Distillates (petroleum), hydrotreated light paraffinic : BOD 6 %
- ar-Nonyl-N-(nonylphenyl)benzenamine : 15 (%) 28 day
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : (not readily biodegradable(EPISUTIE, BIOWIN 2,7))
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 10.8 (%) 28 day

### 3) Bioaccumulative potential

- 1-Decene, dimer, hydrogenated : 103.1 (추정치)
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : 27400 BCF
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : 465.6
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : 2782 (Possibility of bioconcentration)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 2.2

### 4) Mobility in soil

- 1-Decene, dimer, hydrogenated : 571100000 (추정치)
- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- ar-Nonyl-N-(nonylphenyl)benzenamine : 35900000 (estimated)
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Koc=5778
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : 258600 (Can be adsorbed on soil)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 3.615E+12

### 5) Hazard to the ozone layer

- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable

### 6) Other adverse effects

- 1-Decene, dimer, hydrogenated : No data
- Distillates (petroleum), hydrotreated heavy paraffinic : Fish: NOEC(Pimephales promelas) >5000 mg/L/7d
- Distillates (petroleum), hydrotreated light paraffinic : Fish: NOEC(Pimephales promelas) >5000 mg/L/7d
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data

- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : No data
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : algae: Selenastrum capricornutum 96hr NOELR=500 mg/L OECD 201 GLP (ECHA)

## 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 :

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable

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

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Existing Commercial Chemical Substances
- 1-Decene, dimer, hydrogenated : Existing Commercial Chemical Substances
- Distillates (petroleum), hydrotreated light paraffinic : Existing Commercial Chemical Substances
- Distillates (petroleum), hydrotreated heavy paraffinic : Existing Commercial Chemical Substances
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Existing Commercial Chemical Substances
- ar-Nonyl-N-(nonylphenyl)benzenamine : Existing Commercial Chemical Substances
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Existing Commercial Chemical Substances

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

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable

## 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)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable

### ○ EU Classification (CLASSIFICATION)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : Carc. 1B
- Distillates (petroleum), hydrotreated heavy paraffinic : Carc. 1B
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Aquatic Chronic 4

### ○ EU Classification (Risk Phrases)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable

- Distillates (petroleum), hydrotreated light paraffinic : H350
- Distillates (petroleum), hydrotreated heavy paraffinic : H350
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : H413

**○ EU Classification (Safety Phrases)**

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- 1-Decene, dimer, hydrogenated : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : S:53-45
- Distillates (petroleum), hydrotreated heavy paraffinic : S:53-45
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : S:61

## 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

- 2012-11-30

### 3) Revision date

- Number of revised
  - 6
- Date of last revision
  - 2018-09-01
- Last Revision History
  - No revision information

### 4) Other

- This information is based on current available databases to protect the health, environment and safety of workers.