

Material Safety Data Sheet

Product	Kixx PSF 3		
List No.	Issuing date	Last revised date	Department
LB2676	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 3

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

Hazardous to the aquatic environment, long-term (chronic) Chronic 3

2) Allocation label elements

Hazard pictograms

- Not applicable

Signal word

- Not applicable

Hazard statements

- H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

1) Prevention

- P273 Avoid release to the environment.

2) Response

- Not applicable

3) Storage

- Not applicable

4) Disposal

- P501 Dispose of contents/container to

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
- Distillates (petroleum), hydrotreated light paraffinic : Health=1, Flammable=1, Reaction=0
- Business Secret1 : Health=0, Flammable=0, 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Health=1, Flammable=1, Reaction=0
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Health=0, Flammable=0, Reaction=0
- Tallow alkylamines : Health=1, Flammable=0, Reaction=0

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	75 ~ 80
Distillates (petroleum), hydrotreated light paraffinic		64742-55-8	265-158-7	15 ~ 20
Business Secret1				5 ~ 10
2,2'-Iminobisethanol, N-tallow alkyl derivs.		61791-44-4	263-177-5	0.1 ~ 1.0
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester		125643-61-0		0.1 ~ 1.0
ar-Nonyl-N-(nonylphenyl)benzenamine		36878-20-3	253-249-4	0.1 ~ 1.0
Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased		68784-26-9	272-234-3	0.1 ~ 0.7
Tallow alkylamines		61790-33-8	263-125-1	0 ~ 0.2

4. FIRST AID MEASURES

1) Following eye contact

- Seek immediate medical assistance.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

2) Following skin contact

- Seek immediate medical assistance.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

3) Following inhalation

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

4) Following ingestion

- Seek immediate medical assistance.

5) Advice to physician

- 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

Suitable extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.
- Dry chemical.
- Regular foam.

Unsuitable extinguishing media

- High-pressure water.

2) Special hazards arising from the substance or mixture

- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.

3) Special protective equipment for firefighters

- Evacuate area and fight fire from a safe distance.
- Substance may be transported hot.
- 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

- Clean up spills immediately, observing precautions in Protective Equipment section.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Please note that materials and conditions to be avoided.

2) Environmental precautions

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

3) For cleaning up

- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and 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

- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- CAUTION: High temperature.

2) Conditions for safe storage (including any incompatibilities)

- Not available

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
- Distillates (petroleum), hydrotreated light paraffinic : TWA Not applicable, STEL Not applicable
- Business Secret1 : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : TWA Not applicable, STEL Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : TWA Not applicable, STEL Not applicable
- Tallow alkylamines : TWA Not applicable, STEL Not applicable

○ Occupational exposure limits (ACGIH)

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA 5mg/m³, STEL Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : TWA 5mg/m³, STEL Not applicable
- Business Secret2 : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : TWA Not applicable, STEL Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : TWA Not applicable, STEL Not applicable
- Tallow alkylamines : TWA Not applicable, STEL Not applicable

○ Biological limit values

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable

- Distillates (petroleum), hydrotreated light paraffinic : Not applicable
- Business Secret3 : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Tallow alkylamines : 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.
- 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	Clear, Red liquid
Smell	a specific smell of Hydrocarbon
Smell Threshold	No Data
pH	Notapplicable
Melting/Freezing Point	No Data
Boiling Point	>200 °C
Flash Point	208 °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
Self Ignition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	7.4 mm ² /s (at 100°C)
Molecular Weight	No Data

10. STABILITY AND REACTIVITY

1) Stability and hazardous reactivity

- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.

2) Conditions to avoid

- Heat.

3) Incompatible materials

- Not available

4) Hazardous decomposition products

- Irritating and/or toxic gas.

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
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : LD50 >5000 mg/kg Species : Rat
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rat; LD50 >5000 mg/kg, no deaths (OECD TG 401, GLP)
- Tallow alkylamines : LD50 = 1900 mg/kg (rat)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >5000 mg/kg Species : Rabbit
- Distillates (petroleum), hydrotreated light paraffinic : LD50 >2000 mg/kg Species : Rabbit
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : LD50 > 2000 mg/kg bw (Rat; male/female; OECD Guideline 402; 1988)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rabbit; LD50 >4000 mg/kg, no deaths (OECD TG 402, GLP)
- Tallow alkylamines : No data

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

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

*** Inhalation(Vapour) - PRODUCT : No data**

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

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

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 5.53 mg/L 4h Rat
- Distillates (petroleum), hydrotreated light paraffinic : LC50 > 5.53 mg/L 4h Rat
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

○ Skin corrosion/Irritation

- 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)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Slightly irritating
- 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)

- Tallow alkylamines : Rabbit: corrosive

○ **Serious eye damage/irritation**

- 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)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Rabbit - not irritating
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Rabbit, non-irritating (OECD TG 405, GLP)
- Tallow alkylamines : Rabbit: skin corrosive

○ **Respiratory sensitization**

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

○ **Skin sensitization**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not sensitising (Guinea Pig)
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not sensitising (Guinea pig)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not sensitising (Guinea Pig) (OECD TG 406, GLP)
- Tallow alkylamines : No data

○ **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
- 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
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

○ **Germ cell mutagenicity**

- Distillates (petroleum), hydrotreated heavy paraffinic : CHO cell - Negative
- Distillates (petroleum), hydrotreated light paraffinic : Negative (Mouse)
- 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

- ar-Nonyl-N-(nonylphenyl)benzenamine : in vitro - Negative (Bacterial Reverse Mutation Assay, *S. typhimurium* TA 1535, TA 1537, TA 98 and TA 100)
- 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)
- Tallow alkylamines : in vivo Bone Marrow Chromosomal Aberration(OECD 474 ; 1981); negative

○ Reproductive toxicity

- 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)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Parental toxicity was observed at 500 mg/kg bw (Rat; OECD Guideline 414 ; 2014)
- 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
- Tallow alkylamines : No data

○ Specific target organ toxicity (single exposure)

- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

○ Specific target organ toxicity (repeated exposure)

- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed.
- Distillates (petroleum), hydrotreated light paraffinic : No systemic effects were observed (Rat)
- 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
- 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
- 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
- Tallow alkylamines : 28d, oral, rat, 0, 12.2, 50, 150 mg/kg bw/day; The predominant toxic effects were dilation & mucosal erosion of the gastrointestinal tract associated with poor health status and unscheduled deaths. Ef

○ Aspiration hazard

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

- Distillates (petroleum), hydrotreated light paraffinic : Viscosity: 1.99-847 mm²/s (at 40°C), hydrocarbons
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : viscosity; 206820 cSt (206820 mm²/s (static))(OECD TG 114, GLP)
- Tallow alkylamines : No data

12. ECOLOGICAL INFORMATION

1) Aquatic toxicity

○ Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 100 mg/L Fish(Pimephales promelas)
- Distillates (petroleum), hydrotreated light paraffinic : LC50 > 5000 mg/L Fish(Oncorhynchus mykiss)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : LC50>100 mg/L (Danio rerio; 96h; OECD Guideline 203; 1989)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : LC50 >1000 mg/l 96 hr Pimephales promelas(LL50 OECD 203 GLP)
- Tallow alkylamines : LC50 0.25 mg/l ~ 0.18 mg/l 96 hr Brachydanio rerio()

○ Crustacean

- 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)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : EC50> 100 mg/L(Daphnia magna; 48h; OECD Guideline 202; 2004)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : EC50 >1000 mg/l 48 hr Daphnia magna((EL50) OECD 202 GLP)
- Tallow alkylamines : EC50<0.25 mg/l (Daphnia magna; 48h; OECD 202; 1995)

○ Aquatic algae

- 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)
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : EC50 > 100 mg/L (Desmodesmus subspicatus; 72h; OECD Guideline 201; 2006)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : EC50 >500 mg/l 96 hr Selenastrum capricornutum(OECD 201 GLP)
- Tallow alkylamines : EC50 0.068 mg/l 72 hr other

2) Persistence and degradation

○ Persistence

- Distillates (petroleum), hydrotreated heavy paraffinic : log Kow 6
- Distillates (petroleum), hydrotreated light paraffinic : log Kow 6
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : 12.24 log Kow
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 9.5 log Kow
- Tallow alkylamines : 5.75 log Kow (estimated)

○ Degradation

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : No data
- Tallow alkylamines : No data

○ biodegradation

- Distillates (petroleum), hydrotreated heavy paraffinic : BOD 77 %
- Distillates (petroleum), hydrotreated light paraffinic : BOD 6 %
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : 15 (%) 28 day
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 10.8 (%) 28 day
- Tallow alkylamines : 56% (28d; OECD Guideline 301D, 1991)

3) Bioaccumulative potential

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- 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)
- ar-Nonyl-N-(nonylphenyl)benzenamine : 27400 BCF
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 2.2
- Tallow alkylamines : 1927

4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Distillates (petroleum), hydrotreated light paraffinic : No data
- 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)
- ar-Nonyl-N-(nonylphenyl)benzenamine : 35900000 (estimated)
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 3.615E+12
- Tallow alkylamines : Koc=197100

5) Hazard to the ozone layer

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Tallow alkylamines : Not applicable

6) Other adverse effects

- 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
- 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
- ar-Nonyl-N-(nonylphenyl)benzenamine : No data
- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : algae: Selenastrum capricornutum 96hr NOELR=500 mg/L OECD 201 GLP (ECHA)
- Tallow alkylamines : 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 :

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : 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
- Business Secret : No data

2) Toxic Chemical Control Act in Korea - PRODUCT :

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : 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
- Business Secret : No data

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

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : 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
- 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)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : 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
- Business Secret : No data

○ EU Classification (CLASSIFICATION)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : Acute Tox. 4, Skin Corr. 1B, STOT RE 2, Asp. Tox. 1, Aquatic Acute 1, Aquatic Chronic 1
- 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
- Business Secret : No data

○ EU Classification (Risk Phrases)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Distillates (petroleum), hydrotreated light paraffinic : H350
- Distillates (petroleum), hydrotreated heavy paraffinic : H350
- 2,2'-Iminobisethanol, N-tallow alkyl derivs. : Not applicable
- Tallow alkylamines : H302, H314, H373, H304, H400, H410
- 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
- Business Secret : No data

○ EU Classification (Safety Phrases)

- Dodecyl phenol, sulfurized, carbonates, calcium salts, overbased : 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
- Tallow alkylamines : S:(1/2)-26-36/37/39-45-60-61-62
- 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
- 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

- 2012-11-30

3) Revision date

Number of revised

- 5

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.