SDS(Safety Data Sheet)

Product	Kixx RD BIO E 46		
MSDS Number	List No.	Issuing date	Last revised date
-	LB3899	2024-06-17	2026-01-28

1. IDENTIFICATION

1) Product name

Kixx RD BIO E 46

2) Recommended use of the chemical and restriction on use

- Recommended use Lubricants
- 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 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 RD BIO E 46	0	1	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	9-Octadecenoic acid (Z)-,2-ethyl-2-[[(1-oxo-9-octadecenyl)oxy]methyl]-1,3-propanediyl ester, (Z)-;9-Octadecenoicacid (9Z)-, 2-ethyl-2-[[[(9Z)-1-oxo-9-octadecenyl]oxy]methyl]-1,3-propanediylester (9CI)	57675-44-2	260-895-0	98.0 ~ 99.5
Trade secret				0.2 ~ 1.7
ar-Nonyl-N-(nonylphenyl)benzenamine	DINONYL DIPHENYLAMINE	36878-20-3	253-249-4	0.2 ~ 0.4
3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	ANTIOXIDANT 1035	41484-35-9	255-392-8	0.1 ~ 0.3

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

- Ensure that medical personnel are aware of the material(s) involved and take

immediate medical attention and special treatment needed	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)
2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	Not available	Not available	Not available	Not available
Trade secret	Not available	Not available	Not available	Not available
ar-Nonyl-N-(nonylphenyl)benzenamine	Not available	Not available	Not available	Not available
3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	Not available	Not available	Not available	Not available

2) Appropriate engineering controls

- Adjust the ventilation rate to suit the condition.
- If the exposure limits are not set, keep the air level at an acceptable level.

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	No Data
Smell	No Data
Smell Threshold	No Data
pH (Numerical value)	No Data
Melting/Freezing Point	No Data
Boilling Point	No Data
Flash Point	290 ℃
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	0.9
Distribution Coefficient	No Data
SelfIgnition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	46 mm2/s (at 40℃)
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)**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 401) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : rat; LD50 > 5000 mg/kg bw, no deaths (OECD TG 401) (ECHA)

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 2000 ㎎/kg bw (OECD TG 402) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : rat; LD50 > 2000 mg/kg bw, no deaths (read across: 36443-68-2) (OECD TG 402, GLP) (ECHA)

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not available

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not available

○ Skin corrosion/Irritation : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available
- Trade secret	:	Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	rabbit; slightly irritating (OECD TG 404, GLP) (read across: TK12340) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	:	Rabbit; not irritating (read across: 36443-68-2) (equivalent or similar to guideline OECD TG 404) (ECHA)

○ Serious eye damage/irritation : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available
- Trade secret	:	Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	rabbit; not irritating (OECD TG 405, GLP) (read across: TK12340) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	:	Rabbit; not irritating (equivalent or similar to guideline OECD TG 405) (ECHA)

○ Respiratory sensitization : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available
- Trade secret	:	Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	:	Not available

○ Skin sensitization : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available

- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Guinea pig; not sensitizing (OECD TG 406, GLP) (ECHA)

○ Carcinogenicity : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed

○ Germ cell mutagenicity : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471) (read across: TK12340) (ECHA), In Vitro Mammalian Cell Gene Mutation Test : negative (OECD TG 476) (read across: 4,4-dioctyldiphenylamine) (ECHA)
  In vivo rodent dominant lethal assay : negative (OECD TG 478) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : in vitro bacterial reverse mutation assay : negative (equivalent or similar to guideline OECD TG 471) (ECHA)
  In vitro Mammalian Cell Gene Mutation Test : negative (read across: 36443-68-2) (OECD TG 476, GLP) (ECHA)
  In vivo micronucleus assay : negative (equivalent or similar to guideline OECD TG 474) (ECHA)

○ Reproductive toxicity : Not classified

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat; 50, 150 and 500 mg/kg bw; The substance is not teratogenic and not embryotoxic in rats. It causes maternal toxicity at a dose level of 500 mg/kg bw. (OECD TG 414, GLP) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4- : rat; two-generation reproductive toxicity; 300, 900, 1800 ppm; Reproductive effects observed: not specified (read across: 36443-68-2) (equivalent or similar

hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	to guideline OECD TG 416, GLP) (ECHA) rat; developmental toxicity; The substance was devoid of embryotoxic activity and did not reveal teratogenic potency in the rat under the present experimental conditions. Some delay of physiological growth was noted for the foetuses of a 300 mg/kg and, in particular, the foetuses of the 900 mg/kg group but considered to be non-specific and related to maternal toxicity; the low-dose (100 mg/kg) was unaffected in this respect. (read across: 36443-68-2) (equivalent or similar to guideline OECD TG 414, GLP) (ECHA)

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available
- Trade secret	:	Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	oral; rat(male/female); No compound related gross organ changes were observed. LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 401) (ECHA) dermal; rat(male/female); Piloerection, abnormal body positions, and dyspnea were seen, being common symptoms in acute toxicity testing. The animals recovered within 9 days. LD50 > 2000 ㎎/㎏ bw (OECD TG 402) (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)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	:	oral; rat; No compound related gross organ changes were observed. LD50 > 5000 mg/kg bw, no deaths (OECD TG 401) (ECHA)

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not available
- Trade secret	:	Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	oral; rat(male); 28 days; Based on the absence of clinical findings and effects on body weight, dose levels of 100, 300 and 1000 mg/kg bw were chosen for subchronic dosing. (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester	:	oral; rat; 93 - 103 days; 60, 200, 600, 2000 ppm; Because the observed changes were considered adaptive in nature, the NOAEL was set 138 mg/kg body weight (highest dose tested) (OECD TG 408, GLP) (ECHA)

○ **Aspiration hazard : Not classified**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate	:	Not applicable
- Trade secret	:	Not available
- ar-Nonyl-N-	:	585 mPa.s at 40°C (ECHA) & not hydrocarbons

(nonylphenyl)benzenamine

- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

12. ECOLOGICAL INFORMATION

1) Ecotoxicity

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

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

Fish

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : No toxicity effects observed within the limit of water solubility(0.00000000000000000000007841 mg/L). (ECOSAR)
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : No toxicity effects observed within the limit of water solubility(<1 mg/L). (ECHA)

Invertebrates

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : No toxicity effects observed within the limit of water solubility(0.00000000000000000000007841 mg/L). (ECOSAR)
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : No toxicity effects observed within the limit of water solubility(<1 mg/L). (ECHA)

Aquatic algae

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : No toxicity effects observed within the limit of water solubility(0.00000000000000000000007841 mg/L). (ECOSAR)
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : No toxicity effects observed within the limit of water solubility(<1 mg/L). (ECHA)

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

Fish

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not available

Invertebrates

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : No toxicity effects

observed within the limit of water solubility(<1 mg/L). (ECHA)

Aquatic algae

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : No toxicity effects observed within the limit of water solubility(<1 mg/L). (ECHA)

2) Persistence and degradability

○ **Persistence**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : log Kow = 24.73 (estimated) (EPISUITE); not valid data (exceeds the range of "-4<log Kow<8")
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : log Kow=12.24 (estimated) (EPISUITE); not valid (over -4<log Kow<8)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : log Kow = 9.98 (25 °C; calculated) (ECHA)

○ **Degradability**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : In contact with water no hydrolysis is expected. (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not available

3) Bioaccumulative potential

○ **Bioaccumulation**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : BCF = 3.162 (estimated) (EPISUITE); not valid data (values derived from modeling figures outside the range of "-4<log Kow<8")
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : BCF=35.87 (estimated) (EPISUITE)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : BCF > 60 - < 223, > 121 - < 532 (Conc. In environment: 1 mg/L and 0.1 mg/L) (read across: 20170-32-5) (OECD TG 305C) (ECHA)

○ **Biodegradation**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : 1% degradation after 28 days; under test conditions no biodegradation observed (OECD TG 301B, GLP) (read across: TK12340) (ECHA)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : 2% degradation (CO_2 evolution) after 28days (OECD TG 301B, GLP) (ECHA)

4) Mobility in soil

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Koc=44900000 (EPISUITE)
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Koc = 7212000 (est) (EPISUITE)

5) Hazard to the ozone layer

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not available

- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

6) Other adverse effects

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not available
- Trade secret : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : 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)

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : European EINECS phase-in substance
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : European EINECS phase-in substance
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Not applicable

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable

- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

Substances restricted under REACH

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

○ **Occupational Safety and Health Act**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **K-REACH**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **Chemical Control Act in Korea**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **Safety Control of Dangerous Substances Act**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

U.S.A

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

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

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **CERCLA Section 302 regulation**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable

- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **CERCLA Section 304 regulation**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **CERCLA Section 313 regulation**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

Interntional Convention on Environment

○ **Rotterdam Convention list**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **Stockholm Convention list**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **Montreal Protocol list**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

National Inventory

○ **Korea**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Not applicable
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Not applicable

○ **U.S.A**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : US TSCA phase-in substance
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : US TSCA phase-in substance
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : US TSCA phase-in substance

○ **China**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : China phase-in substance
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : China phase-in substance
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : China phase-in substance

○ **Japan**

- 2-Ethyl-2-[[(1-oxooleyl)oxy]methyl]-1,3-propanediyl dioleate : Japan ENCS phase-in substance
- Trade secret : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Japan ENCS phase-in substance
- 3,5-Bis(1,1-dimethylethyl)-4-hydroxybenzenepropanoic acid thiodi-2,1-ethanediyl ester : Japan ENCS phase-in substance

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

- 2024-06-17

3) Revision number and Last date revised

○ **Number of revised**

- 1

○ **Date of last revision**

- 2026-01-05

○ **Last Revision History**

- Reflection of the 2025-year notices from Ministry of Employment and Labor and National Institute of Chemical Safety

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.