SDS(Safety Data Sheet)

Product	Kixx DX9 PAO 15W-40		
MSDS Number	List No.	Issuing date	Last revised date
-	LB3972	2024-11-20	2024-11-20

1. IDENTIFICATION

1) Product name

Kixx DX9 PAO 15W-40

2) Recommended use of the chemical and restriction on use

- Recommended use: Lubricants; Diesel Engine Oil
- Restrictions on use: Do not use for any other purpose.

3) Details of the supplier of the safety data sheet

○ **Manufacturer**

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

2. HAZARDS IDENTIFICATION

1) Classification of the product

CARCINOGENICITY : Category 1B

2) Label elements

○ **Hazard pictograms**



○ **Signal word**

Danger

○ **Hazard statements**

- H350 May cause cancer.

○ **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

2) Response

- P308 + P313 IF exposed or concerned: Get medical advice/attention.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container to ....

3) Other hazards

○ **Product NFPA Level**

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

Product name	Health	Flammable	Reaction
Kixx DX9 PAO 15W-40	0	1	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
Distillates (petroleum), hydrotreated heavy paraffinic	Emulsifiable oil	64742-54-7	265-157-1	75 ~ 85
Trade secret				3 ~ 13
Distillates (petroleum), solvent-dewaxed heavy paraffinic	Adriatic spindle oil; Mineral oil, petroleum distillates, solvent dewaxed heavy paraffinic (severe solvent-refining and/or hydrotreatment) ; Solvent dewaxed heavy paraffinic distillate	64742-65-0	265-169-7	1 ~ 3
(Alkylalkyl(C=2-6))-substituted benzene alkanoic (C=3-7) acid branched alkyl(C=7-9) ester	Octyl-3,5-di-tert-butyl-4-hydroxy-hydrocinnamate	125643-61-0		0.5 ~ 1.5
ar-Nonyl-N-(nonylphenyl)benzenamine	DINONYL DIPHENYLAMINE	36878-20-3	253-249-4	0.5 ~ 1.5
Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased		122384-87-6		0.5 ~ 1.5
Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts		85940-28-9	288-917-4	0.1 ~ 1.0
Alkyl(C=1~5)ene bis(dialkyl substituted carbamate)	Methylene dibutyldithiocarbamate	10254-57-6	233-593-1	0.1 ~ 0.6

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

4. FIRST AID MEASURES

1) Eye contact - In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.

- If eye irritation persists: Get medical advice/attention.

2) Skin contact

- In case of contact with substance, immediately flush skin with running water for at least 20 minutes.
- If skin irritation occurs: Get medical advice/attention.

3) Inhalation

- Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- IF exposed or concerned: Get medical advice/attention.

4) Ingestion

- Do not use mouth-to-mouth method if victim ingested the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

5) Indication of any immediate medical attention and special treatment needed

- Exposures require specialized first aid with contact and medical follow-up.
- 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

- Use dry sand or earth to smother fire.
- Direct water (Unsuitable extinguishing media)

2) Special hazards arising from the substance or mixture

- Fire may produce irritating, corrosive and/or toxic gases.
- Heating may cause a fire or explosion.

3) Special protective equipment and precautions for firefighters

- Rescuers should put on appropriate protective gear.
- In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
- Eliminate all ignition sources if safe to do so.

6. ACCIDENTAL RELEASE MEASURES

1) Health considerations and protective equipment

- Clean up spills immediately, observing precautions in Protective Equipment section.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Please note that materials and conditions to be avoided.

2) Environmental precautions

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

3) Methods and material for

- Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical

containment and cleaning up

waste container.
- Absorb the liquid and scrub the area with detergent and water.

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.
- Avoid breathing vapors from heated material.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- Use only outdoors or in a well-ventilated area.

2) Conditions for safe storage (including any incompatibilities)

- Please note that materials and conditions to be avoided.
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Store in a well-ventilated place. Keep container tightly closed.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Control parameters

Chemical name	Exposure limits	ACGIH TLV	OSHA PEL	Biological limit values(BLV)
Distillates (petroleum), hydrotreated heavy paraffinic	TWA :Not available	Not available	Not available	Not available
Trade secret	Not available	Not available	Not available	Not available
Distillates (petroleum), solvent-dewaxed heavy paraffinic	TWA :Not available	Not available	Not available	Not available
3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	Not available	Not available	Not available	Not available
ar-Nonyl-N-(nonylphenyl)benzenamine	Not available	Not available	Not available	Not available
Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased	Not available	Not available	Not available	Not available
Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts	Not available	Not available	Not available	Not available
Dibutylcarbamodithioic acid methylene ester	Not available	Not available	Not available	Not available

2) Appropriate engineering controls

- Install local exhaust ventilation system.
- Check legal suitability of exposure level.

3) Personal protection equipment

○ **Respiratory protection**

- If exposure consentration of the material is lower than 100 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposured particulate material ; such
- If exposure consentration of the paticle material is lower than 250 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposured particulate material
- If exposure consentration of the particle material is lower than 500 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposured particulate materia
- If exposure consentration of the particle material is lower than 10000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposured particulate mater
- If exposure consentration of the material is lower than 100000 ppm of the permitted exposure standards, Wear a respiratory protective device, equipped with an adequate filter by considering physicochemical properties of exposured particulate material ; su
- If exposure consentration of the material exceeds the permitted exposure standards, Wear European Standard EN 149 approved full or half face piece (with goggles) respireatory protective equipment.

○ **Eye protection**

- An eye wash unit and safety shower station should be available nearby work place.
- Wear breathable safety goggles to protect from vapour state organic material causing eye irritation or other disorder.

○ **Hand protection**

- Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

○ **Body protection**

- Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Apperance	Liquid
Color	No Data
Smell	a specific smell of Hydrocarbon
Smell Threshold	No Data
pH (Numerical value)	No Data
Melting/Freezing Point	No Data
Boilling Point	No Data

Flash Point	240 ℃
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	0.872
Distribution Coefficient	No Data
SelfIgnition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	120.8 mm2/s (at 40℃)
Molecular Weight	No Data

10. STABILITY AND REACTIVITY

1) Chemical Stability and hazardous reactivity
- Can form explosive mixtures at temperatures at or above the flashpoint.
- Fire may produce irritating, corrosive and/or toxic gases.

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

3) Incompatible materials
- Combustibles

4) Hazardous decomposition products
- During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

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)**

- Distillates (petroleum), hydrotreated heavy paraffinic : rat(male/female), LD50 > 5,000 mg/kg bw, no deaths

(read-across: 64742-56-9) (OECD TG 401, GLP)(ECHA)

- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : rat(male/female); LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 401, GLP) (read across: 64742-56-9) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rat(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 401, GLP) ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 401) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : LD50 >5000 ~ < 16000 mg/kg (OECD TG 401) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : rat(male/female); LD50 = 3080 mg/kg bw (OECD TG 401, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : rat(male); LD50 > 16000 mg/kg bw. No mortalities were observed. (OECD TG 401) (ECHA)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : rabbit(male/female), LD50 > 5,000 mg/kg bw, no deaths (read-across: 64742-56-9) (OECD TG 402, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : rabbit(male/female); LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 402, GLP) (read across: 64742-56-9) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rat(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 2000 ㎎/㎏ bw (OECD TG 402) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : LD50 > 2000 mg/kg, no deaths (OECD TG 402) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : rabbit(male/female); LD50 > 20000 mg/kg bw (OECD TG 402, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : rabbit; LD50 > 2000 mg/kg bw. No mortalities were observed.(OECD TG 402) (ECHA)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

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

- Distillates (petroleum), hydrotreated heavy paraffinic : rat(male/female), LC50 > 5.53 mg/L air /4h No deaths (read-across: MRD-87-102) (OECD TG 403)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : LC50 >1.67 mg/L (OECD TG 403)

(SIDS)

- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : inhalation: vapour; rat(male/female); no deaths; LC50 > 2.3 mg/L air 4hrs (read-across: CAS No. 84605-29-8) (OECD TG 403) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : Not available

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : rat(male/female); inhalation: aerosol; LC50 > 5.53 mg/L air /4h, no deaths (OECD TG 403) (read across: MRD-87-102) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene ester : Not available

○ Skin corrosion/Irritation : Not classified

- Distillates (petroleum), hydrotreated heavy paraffinic	:	Solvent dewaxed light paraffinic oil is not considered to be irritating to the skin of rabbits. (read across : 64742-56-9) (GLP)(ECHA)
- Trade secret	:	Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic	:	rabbit; not irritating (GLP) (read across: 64742-56-9) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	:	rabbit; not irritating (OECD TG 404, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	rabbit; slightly irritating (OECD TG 404, GLP) (read across: TK12340) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased	:	Cause slight irritation to skin. (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts	:	rabbit; not irritaing (OECD TG 404, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester	:	rabbit; not irritating (OECD TG 404) (ECHA)

○ Serious eye damage/irritation : Not classified

- Distillates (petroleum), hydrotreated heavy paraffinic	:	Solvent dewaxed light paraffinic oil is not considered to be an ocular irritant. (read-aross: 64742-56-9) (OECD TG 405, GLP)(ECHA)
- Trade secret	:	Not available
- Distillates (petroleum),	:	rabbit; not irritating (OECD TG 405, GLP) (read across: 64742-56-9) (ECHA)

solvent-dewaxed heavy paraffinic

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Rabbit; not irritating (OECD TG 405, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rabbit; not irritating (OECD TG 405, GLP) (read across: TK12340) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Cause slight irritation to the eye. (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : rabbit; irritating (conjunctivae score: 2) (OECD TG 405, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : rabbit; not irritating (OECD TG 405) (ECHA)

○ **Respiratory sensitization : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene ester : Not available

○ **Skin sensitization : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : Under the conditions of the test, Solvent dewaxed light paraffinic oil is considered non-sensitizing. (read-aross: 64742-56-9) (OECD TG 406, GLP)(ECHA)

- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : guinea pig; not sensitising (OECD TG 406, GLP) (read across: 64742-53-6) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : It is not considered to be sensitisers in humans. (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : mouse; not sensitising (OECD TG 429, GLP) (ECHA)

○ **Carcinogenicity : Category 1B**

- Distillates (petroleum), hydrotreated heavy paraffinic : EU CLP 1272/2008 : Carc. 1B (Note L : The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : EU CLP 1272/2008 : Carc. 1B (Note L : The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- ar-Nonyl-N-(nonylphenyl)benzenamine : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : There is no information on the carcinogenic potential. (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Dibutylcarbamodithioic acid methylene ester : IARC, NTP; UES EPA IRIS, ACGIH, EU CLP 1272/2008 : not listed

○ **Germ cell mutagenicity : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : In vitro(CHO cell) Chromosome Aberration Test: negative (read-aross : 64742-53-6) (OECD TG 473, GLP)
  In vivo (mouse micronucleus assay) : negative (read-across : SDPO = solvent-extracted, dewaxed paraffin oil) (OECD TG 474)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : In vitro Bacterial Reverse Mutation Assay : positive (OECD TG 471) (read across: 64741-50-0) (ECHA), In Vitro Mammalian Chromosome Aberration Test : negative (OECD TG 473) (read across: L-06 Light Hydrotreated Feedstock) (ECHA)
  In vivo Mammalian Erythrocyte Micronucleus Test : negative (OECD TG 474) (read across: solvent-extracted, dewaxed paraffin oil) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : In vitro Bacterial Reverse Mutation Assay; negative (OECD TG 471, GLP) (ECHA)
  In vivo Mammalian Erythrocyte Micronucleus Test; negative (OECD TG 474, GLP) (ECHA)
- 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)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : In vitro- Negative (Bacterial Reverse Mutation Assay; OECD TG 471), In vitro - Negative (Mutation test; OECD TG 476)
  In vivo - Negative (Mouse micronucleus assay; OECD TG 474) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : in vitro bacterial reverse mutation assay: negative with or without metabollic activation (read-across: CAS No. 84605-29-8) (OECD TG 471, GLP) (ECHA)
  in vivo mammalian erythrocyte micronucleus assay: negative (OECD TG 474, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471, GLP) (ECHA)
  in vitro mammalian chromosome aberration test : negative (OECD TG 473, GLP) (ECHA)
  In vitro mammalian cell gene mutation assay : negative (OECD TG 476, GLP) (ECHA)
  In vivo : not available

○ **Reproductive toxicity : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : Reproductive performance was not adversely affected at any dose level evaluated. There were no neonatal toxicity observed at any dose level. There were no differences in terms of systemic toxicity between either of the dose formulations. (read-aross : Chevron 100 Neutral) (OECD TG 421, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : rat(male/female); 1000 mg/kg/day; Reproduction / Developmental Toxicity Screening Test; Reproductive performance was not adversely affected at any dose level evaluated. There were no neonatal toxicity observed at any dose level. There were no differences in terms of systemic toxicity between either of the dose formulations. (OECD TG 421, GLP) (read across: Chevron 100 Neutral) (ECHA)

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : rabbit; oral; 20, 40, 80 mg/kg bw/day; It is not thought that the increase in post implantation loss is due to the slight maternal toxicity recorded. However, due to a deficiency in the food consumption data it is not possible to draw a firm conclusion based on an incomplete maternal data set. Therefore Evernox 1135 will not be classified at this stage but an embryo-fetal study, on a second species, namely the rat, will be triggered at the next tonnage band so that a firm and definitive conclusion can be drawn regarding Evernox 1135 and whether it does, or does not, warrant classification as a Reproductive Toxicant. (OECD TG 414, GLP) (ECHA)
- 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)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : They are of low concern for developmental toxicity. Alkyl phenate sulfides cause a reduction in fertility in rats(M/F), a reduction in mean live litter size, and a reduction in the size of M/F reproductive organs. (NOAEL(developmental)=300mg/kg bw/day) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : rat; 30, 100, 200 mg/kg/day; screening for reproductive/developmental toxicity; Reproductive performance (fertility, mating, days between pairing and coitus, gestation and parturition) was unaffected by treatment at the 30 and 100 mg/kg/day dose levels. No neonatal toxicity was observed at a dose level of 30 mg/kg/day (read-across: CAS No. 4259-15-8) (OECD TG 421, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : rat; 0, 1000, 5000, 20000 ppm; one-generation reproductive toxicity; The "No Observed Adverse Effect Level" for effects upon adults was 1000 ppm and for reproductive performance and offspring viability was in excess of 20000 ppm. (OECD TG 422, GLP) (ECHA)
  rat; developmental toxicity; 0, 100, 330, 1,000 mg/kg bw/day; According to an OECD 414 study, the No-Adverse-Effect-Level for maternal toxicity and fetal development and growth is considered to be 1000 mg/kg/day. (OECD TG 414, GLP) (ECHA)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Hydronephrosis of the right kidney was observed in one rat but was not considered treatment-related by the study authors. No other abnormalities were observed in any male or female rats. (read-across: 64742-56-9) (OECD TG 401, GLP)(ECHA)
  Dermal administration of API 78-9 at 5000 mg/kg did not result in any dermal irritation or signs of clinical toxicity. Gross necroscopy did not reveal any signs of systemic toxicity at the 5000 mg/kg dose level. (read-across: 64742-56-9) (OECD TG 402, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : oral; rat(male/female); No clinical signs of toxicity observed in either male or female rats. LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 401, GLP) (read across: 64742-56-9) (ECHA)
  dermal; rabbit(male/female); No visible signs of clinical toxicity were observed in male and female rabbits dosed with API 78-9 at 5000 mg/kg. LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 402, GLP) (read across: 64742-56-9) (ECHA)
  inhalation: aerosol; rat(male/female); The test material which was deposited on

the animal fur during exposure diminished by observation Day 10. No mortality in either the control or exposed group was reported. There were no statistically significant differences in mean body weight between groups. LC50 > 5.53 mg/L air /4h, no deaths (OECD TG 403) (read across: MRD-87-102) (ECHA)

- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : oral; rat(male/female); Effects on organs: No deviations from the normal morphology. (OECD TG 401, GLP) ECHA)
- 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)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : oral; rat; Lethargy, diarrhea, ptosis, and brown staining at the anogenital area were observed in all dose groups and cleared within the first week at the 2 lowest doses. Ataxia was also noted in the higher dose groups. LD50 = 3080 mg/kg bw (OECD TG 401, GLP) (ECHA)
  dermal; rabbit; Well defined to severe redness and edema were observed throughout the study period and were not reversible by Day 14. While there were many local effects at the treatment site, there was no evidence of systemic toxicity. LD50 > 20000 mg/kg bw, no deaths (OECD TG 402) (ECHA)
  inhalation: vapour; rat; Diarrhea was noted in one rat following exposure. All remaining rats appeared normal. The test material did not produce significant toxicity. LC50 > 2.3 mg/L 4hrs, no deaths (read-across: CAS No. 84605-29-8) (OECD TG 403) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : oral; rat(male); Gross pathologic examination revealed nothing remarkable. LD50 > 16000 mg/kg bw. No mortalities were observed. (OECD TG 401) (ECHA)
  dermal; rabbit; There were no unusual behavioral signs noted. LD50 > 2000 mg/kg bw. No mortalities were observed. (OECD TG 402) (ECHA)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : The systemic toxicity NOAEL for this 28-day dermal toxicity study in the rabbit is 1,000 mg/kg, based on the lack of adverse systemic effects observed at this dose level. (read-aross : 64742-53-6) (OECD TG 410, GLP)(ECHA)
  No systemic effects were observed. The NOAEL for lung changes associated with oil deposition in the lungs was 220 mg/m3. As no systemic toxicity was observed, the overall NOAEL for systemic effects was > 980 mg/m3. (read-aross : 64742-70-7) (OECD TG 412)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), : rabbit(male/female); dermal; The systemic toxicity NOAEL for this 28-day dermal

solvent-dewaxed heavy paraffinic		toxicity study in the rabbit is 1,000 mg/kg, based on the lack of adverse systemic effects observed at this dose level. (OECD TG 410, GLP) (read across: 64742-53-6) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	:	rat(male/female); oral; 90 days; no effects (OECD TG 408, GLP) (ECHA)
- 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)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased	:	2 human repeated-insult patch tests, no evidence of skin irritation was observed. In the two oral developmental toxicity studies in rats, no deaths or signs of toxicity attributable to the test substance were observed in the screening study, and treatment-related signs of toxicity observed in the definitive study were limited to clear, red, yellow and/or tan staining/matting/material around the nose and mouth in the high-dose group. The systemic NOAEL=250 mg/kg bw/day. (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts	:	oral; rat; 10, 50, 125, 250 mg/kg; Treatment-related increases in mean absolute and relative adrenal gland weights were occurred at the 250 and 500 mg/kg/day dose levels. However, no test article-related histopathological lesions were observed in the adrenal glands to account for the increases. Based on these findings, the No Adverse Effect Level NOAEL was determined to be 125 mg/kg/day (OECD TG 407, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester	:	oral; rat; 13 weeks (at least 90 days); 0, 100, 330, 1,000 mg/kg bw/day; Accumulation of hyaline droplets in the proximal convoluted tubules of the kidney was observed in males treated with 1000 mg/kg/day, a phenomenon specific to male rats that is not relevant to humans, and therefore, is considered non-adverse. Under the conditions of this study, the No Observed Adverse Effect Level (NOAEL) is considered to be 1000 mg/kg/day. (OECD TG 408, GLP) (ECHA)

○ **Aspiration hazard : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic	:	Viscosity: 73.9 mm2/s (40°C)(ECHA) & hydrocarbons
- Trade secret	:	Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic	:	52.1 mm2/s (40°C) & hydrocarbons
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester	:	Viscosity : 110-115 mPa s (40°C) (OECD TG 114) (ECHA) & not hydrocarbons
- ar-Nonyl-N-(nonylphenyl)benzenamine	:	585 mPa.s at 40°C (ECHA) & not hydrocarbons

- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene ester : 1383 mm²/s (25.0°C) (ECHA) & not hydrocarbons

12. ECOLOGICAL INFORMATION

1) Ecotoxicity

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

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

Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : 96h-LL50(Pimephales promelas) > 100 mg/L (OECD TG 203, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 96h-LL50(Pimephales promelas) > 100 mg/L (OECD TG 203, GLP) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 96h-LC50(Danio rerio) > 94 mg/L (OECD TG 203, GLP) (ECHA); no short-term toxicity
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : 96h-LL50(Oncorhynchus mykiss) > 1000 mg/l (read-across: 122384-85-4) (OECD TG 203) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 96h-LL50(Oncorhynchus mykiss) = 4.5 mg/L (OECD TG 203, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : No toxicity effects observed within the limit of water solubility(0.243 mg/L). (ECHA)

Invertebrates

- Distillates (petroleum), hydrotreated heavy paraffinic : 48h-EL50(Daphnia magna) > 10,000 mg/L(read across : 64742-53-6 or 64741-97-5) (OECD TG 202)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 48h-EL50(Daphnia magna) > 10000 mg/L (OECD TG 202) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 24h-EC50(Daphnia magna) = 4.3 mg/L (OECD TG 202, GLP) (ECHA); no short-term toxicity
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : 48h-LL50(Daphnia magna) > 1000 mg/l (read-across: 122384-85-4) (OECD TG 202) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 48h-EC50(Daphnia magna) = 5.4 mg/L (OECD TG 202) (ECHA)

- Dibutylcarbamodithioic acid methylene ester : No toxicity effects observed within the limit of water solubility(0.243 mg/L). (ECHA)

Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 72h-ErC50(Desmodesmus subspicatus) > 3 mg/L (OECD TG 201, GLP) (ECHA); no short-term toxicity
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : 96h-LL50(Pseudokirchneriella subcapitata) > 1000 mg/l(read-across: 122384-85-4) (OECD TG 201) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 72h-ErC50(Selenastrum capricornutum UTEX 1648) = 2.1 mg/L (read-across: CAS No. 68909-93-3) (OECD TG 201, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : No toxicity effects observed within the limit of water solubility(0.243 mg/L). (ECHA)

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

Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 36d-NOEC(Danio rerio) = 0.001 mg/L (OECD TG 210, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene ester : No toxicity effects observed within the limit of water solubility(0.243 mg/L). (ECHA)

Invertebrates

- Distillates (petroleum), hydrotreated heavy paraffinic : 21d-NOEL(Daphnia magna)=10 mg/L(OECD TG 211, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 21d-NOEL(Daphnia magna) = 10 mg/L (OECD TG 211, GLP) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 21d-NOEC(Daphnia magna) <= 0.01 mg/L (OECD TG 211, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 21d-NOErC(Daphnia magna) = 0.8 mg/L (OECD TG 211, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : No toxicity effects observed within the limit of water solubility(0.243 mg/L). (ECHA)

Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : 72h-NOErL(Pseudokirchnerella subcapitata) >= 100

mg/L (OECD TG 201) (ECHA)

- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 72h-NOErL(Pseudokirchneriella subcapitata) >=100 mg/L (OECD TG 201) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : water solubility : < 0.03 mg/l (20°C, pH 6.4), 72h-NOErC(Desmodesmus subspicatus) > 3 mg/L (OECD TG 201, GLP) (ECHA); no short-term toxicity
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 72h-NOErC(Selenastrum capricornutum UTEX 1648) = 1 mg/L (OECD TG 201, GLP) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : 72h-NOErC(Desmodesmus subspicatus) = 0.033 mg/L (OECD TG 201, GLP) (ECHA); The test material is known to possess a low water solubility (0.243 mg/l at 20 ± 5 ºC). In the absence of any evidence of toxicity, and taking into consideration the difficulties in water solubility, it is considered that no evidence of toxicity is seen at the limit of solubility.

2) Persistence and degradability

○ **Persistence**

- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so not applicable.(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : log Kow = 6.13 (experimental) (EPISUITE)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : log Kow = 9.2 (0 °C) (EU Method A.8, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : log Kow=12.24 (estimated) (EPISUITE); not valid (over -4<log Kow<8)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : log Kow=8.5-14 (calculated) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : log Kow = 9.67 (estimated) (EPISUITE)
- Dibutylcarbamodithioic acid methylene ester : log Kow = 8.42 (35 °C) (OECD TG 117, GLP) ECHA)

○ **Degradability**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Hydrolysis; In accordance with REACH Annex VIII column 2, the study does not need to be conducted as the substance is highly insoluble in water, < 0.03 mg / l.
- ar-Nonyl-N-(nonylphenyl)benzenamine : In contact with water no hydrolysis is expected. (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not undergo hydrolysis. Atmospheric half-lives : 1.41~3 hours (calculated) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene ester : Not available

3) Bioaccumulative potential

○ **Bioaccumulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so not applicable.(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : BCF = 5147 (estimated) (EPISUITE)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : BCF=258 (OECD TG

305, GLP) (ECHA)

- ar-Nonyl-N-(nonylphenyl)benzenamine : BCF=35.87 (estimated) (EPISUITE)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : estimated BCF range 3.2 ? 656 (low bioaccumulation potential) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : BCF = 653.2 (estimated) (EPISUITE)
- Dibutylcarbamodithioic acid methylene ester : BCF = 540 (estimated) (EPISUITE)

○ **Biodegradation**

- Distillates (petroleum), hydrotreated heavy paraffinic : 31% degradation after 28 days (OECD TG 301F) (read across: Solvent Neutral 600 Base Oil (MRD-94-981)) (OECD TG 301F, GLP)(ECHA)
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 31 % degradation after 28d; not readily biodegradable (OECD TG 301F, GLP) (ECHA)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : not inherently biodegradable (EU Method C.9, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : 1% degradation after 28 days; under test conditions no biodegradation observed (OECD TG 301B, GLP) (read across: TK12340) (ECHA)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Do not readily biodegrade. 4.7%~13.4% biodegradation after 28 days (OECD TG 301B) (read across : 122384-85-4) (SIDS)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : 1.5% degradation after 28 days; Not readily biodegradable (OECD TG 301B) (ECHA)
- Dibutylcarbamodithioic acid methylene ester : 21% degradation after 28d; not readily biodegradable (OECD TG 301B, GLP) (ECHA)

4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Koc=208800 (EPISUITE)
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Koc=258600 (EPISUITE)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Koc=44900000 (EPISUITE)
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Koc=1218000000000 (EPISUITE)
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Koc = 1231000 (estimated) (EPISUITE)
- Dibutylcarbamodithioic acid methylene ester : Koc = 15135612 (OECD TG 121, GLP) (ECHA)

5) Hazard to the ozone layer

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

6) Other adverse effects

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

- Trade secret : Not available
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Not available
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not available
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not available
- Dibutylcarbamodithioic acid methylene 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)

- Distillates (petroleum), hydrotreated heavy paraffinic : European EINECS phase-in substance
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : European EINECS phase-in substance
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : European EINECS phase-in substance
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : European EINECS phase-in substance
- Dibutylcarbamodithioic acid methylene ester : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Not applicable

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

Substances restricted under REACH

- Distillates (petroleum), hydrotreated heavy paraffinic : Substances restricted under REACH
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Substances restricted under REACH
- 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

○ **Occupational Safety and Health Act**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Hazardous substance subject to control
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **K-REACH**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **Chemical Control Act in Korea**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : List of substance subjected to the PRTR
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **Safety Control of Dangerous Substances Act**

- Distillates (petroleum), hydrotreated heavy paraffinic : Dangerous substance
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

U.S.A

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **CERCLA Section 302 regulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **CERCLA Section 304 regulation**

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

- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **CERCLA Section 313 regulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

Interntional Convention on Environment

○ **Rotterdam Convention list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **Stockholm Convention list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **Montreal Protocol list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

National Inventory

○ **Korea**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : 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
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene ester : Not applicable

○ **U.S.A**

- Distillates (petroleum), hydrotreated heavy paraffinic : US TSCA phase-in substance
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : US TSCA phase-in substance
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : US TSCA phase-in substance
- ar-Nonyl-N-(nonylphenyl)benzenamine : US TSCA phase-in substance
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : US TSCA phase-in substance
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : US TSCA phase-in substance
- Dibutylcarbamodithioic acid methylene ester : US TSCA phase-in substance

○ **China**

- Distillates (petroleum), hydrotreated heavy paraffinic : China phase-in substance
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : China phase-in substance
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : China phase-in substance
- ar-Nonyl-N-(nonylphenyl)benzenamine : China phase-in substance
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : China phase-in substance
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : China phase-in substance
- Dibutylcarbamodithioic acid methylene ester : China phase-in substance

○ **Japan**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Trade secret : Not applicable
- Distillates (petroleum), solvent-dewaxed heavy paraffinic : Japan ENCS phase-in substance
- 3,5-Bis(1,1-Dimethylethyl)-4-hydroxy benzene propanoic acid branched alkyl (C=7-9) ester : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Japan ENCS phase-in substance
- Phenol, tetrapropylene-, sulfurized, carbonates, calcium salts, overbased : Not applicable
- Phosphorodithioic acid mixed O,O-bis(2-ethylhexyl and iso-Bu and iso-Pr) esters, zinc salts : Not applicable
- Dibutylcarbamodithioic acid methylene 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

- 2024-11-20

3) Revision number and Last date revised

○ **Number of revised**

- 0

○ **Date of last revision**

- 2024-09-20

○ **Last Revision History**

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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.