SDS(Safety Data Sheet)

Product	Kixx Therm 46		
MSDS Number	List No.	Issuing date	Last revised date
-	LB3948	2024-08-28	2026-02-19

1. IDENTIFICATION

1) Product name

Kixx Therm 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 Therm 46	0	0	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	97 ~ 99.5
2,6-di-tert-butylphenol	Isonox 103	128-39-2	204-884-0	0 ~ 0.5
Solvent naphtha (petroleum), heavy arom.	(Polyethyl)benzenes ;Heavy aromatic naphtha	64742-94-5	265-198-5	0 ~ 0.5
ar-Nonyl-N-(nonylphenyl)benzenamine	DINONYL DIPHENYLAMINE	36878-20-3	253-249-4	0 ~ 0.3
N-Phenyl-1-naphthalamine	1-(N-Phenylamino)-naphthalene ; 1-Anilinonaphthalene ; 1-Naphthylphenylamine	90-30-2	201-983-0	0 ~ 0.3
2-Methylnaphthalene	beta-Methylnaphthalene ; Naphthalene, 2-methyl- ;2-Methylnaphthalene	91-57-6	202-078-3	0 ~ 0.3
1-Methylnaphthalene	Naphthalene, alpha-methyl-	90-12-0	201-966-8	0 ~ 0.1

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

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

4. FIRST AID MEASURES

1) Eye contact

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

2) Skin contact

- In case of contact with material, immediately flush skin with running water for at least 15 minutes.
- Remove and isolate contaminated clothing and shoes.
- Launder contaminated clothing and shoes before re-use.
- If skin irritation occurs: Get medical advice/attention.

3) Inhalation

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

- If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

4) Ingestion

- If unconscious but breathing, never give anything by mouth
- If swallowed do not induce vomiting, seek medical advice immediat.
- Get immediate medical advice/attention.
- Rinse mouth.

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

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

- Small fire: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO2 (Suitable extinguishing media)
- Large fire: Water spray/fog, regular foam (Suitable extinguishing media)
- High-pressure water (Unsuitable extinguishing media)

2) Special hazards arising from the substance or mixture

- May be ignited by heat, sparks or flames.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.

3) Special protective equipment and precautions for firefighters

- Substance may be transported hot.
- Runoff may cause pollution.
- Contact may cause burns to skin and eyes.
- Dike fire-control water for later disposal; do not scatter the material.
- Move containers from fire area if you can do it without risk.
- Fire involving Tanks: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.

6. ACCIDENTAL RELEASE MEASURES

1) Health considerations and protective equipment

- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Ventilate the contaminated area.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Please note that materials and conditions to be avoided.

2) Environmental precautions

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

3) Methods and material for containment and cleaning

- Small Spill: Flush area with flooding quantities of water.
- Large Spill: Dike far ahead of liquid spill for later disposal.

up

- 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)
Distillates (petroleum), hydrotreated heavy paraffinic	TWA : 0.8 mg/m3	TWA 5 mg/m3, Inhalable particulate matter(Mineral oil, Pure, highly and severely refined)	Not available	Not available
2,6-di-tert-butylphenol	Not available	Not available	Not available	Not available
Solvent naphtha (petroleum), heavy arom.	TWA : 0.8 mg/m3	Not available	Not available	Not available
ar-Nonyl-N-(nonylphenyl)benzenamine	Not available	Not available	Not available	Not available
N-Phenyl-1-naphthalamine	Not available	Not available	Not available	Not available
2-Methylnaphthalene	Not available	TWA, 0.5 ppm (3 mg/m3)	Not available	Not available
1-Methylnaphthalene	Not available	TWA, 0.5 ppm (3 mg/m3)	Not available	Not available

2) Appropriate engineering controls

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

3) Personal protection equipment

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

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

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

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Apperance	Liquid
Color	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	No Data
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	No Data
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)**

- 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)
- 2,6-di-tert-butylphenol : rat(male/female); LD50 > 5000 mg/kg bw, no deaths (OECD TG 401, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : rat(male/female); LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 420, GLP) (read across: 68333-23-3) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 401)

(ECHA)

- N-Phenyl-1-naphthalamine : rat(male); LD50 = 1625 mg/kg (OECD TG 401) (ECHA)
- 2-Methylnaphthalene : rat; LD50 = 1630 ㎎/㎏ bw (HSDB)
- 1-Methylnaphthalene : Rat; LD50 = 1840 ㎎/㎏ (HSDB)

*** 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)
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : rabbit(male/female); LD50 > 2000 ㎎/㎏ bw, no deaths (OECD TG 402, GLP) (read across: 68333-23-3) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rat(male/female); LD50 > 2000 ㎎/㎏ bw (OECD TG 402) (ECHA)
- N-Phenyl-1-naphthalamine : rabbit(male); LD50 > 5000 mg/kg (OECD TG 402) (ECHA)
- 2-Methylnaphthalene : rat; LD50 > 2000 ㎎/㎏ bw (OECD TG 402) (OECD SIDS)
- 1-Methylnaphthalene : Not available

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : rat(male/female); inhalation: vapour; LC50 > 5.28 mg/L air /4h, no deaths (OECD TG 403, GLP) (read across: 8008-20-6) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

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

- Distillates (petroleum), hydrotreated heavy paraffinic : inhalation: aerosol; rat(male/female); 4h-LC50 > 5.53 mg/L. No deaths (read-across: MRD-87-102) (OECD TG 403)(ECHA)
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : 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)

- 2,6-di-tert-butylphenol : rabbit; irritating (OECD TG 404, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : rabbit; not irritating (EPA OTS 798.4470, GLP) (read across: low viscosity liquid hydrocarbon) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rabbit; slightly irritating (OECD TG 404, GLP) (read across: TK12340) (ECHA)
- N-Phenyl-1-naphthalamine : rabbit; not irritating (OECD TG 404) (ECHA)
- 2-Methylnaphthalene : The only reported effects of methylated naphthalene in man are skin irritation. (HSDB)
- 1-Methylnaphthalene : A skin irritant (HSDB)

○ **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) (equivalent or similar to guideline OECD TG 405, GLP) (ECHA)
- 2,6-di-tert-butylphenol : rabbit; not irritating (OECD TG 405, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : rabbit; not irritating (EPA OTS 798.4500, GLP) (read across: 68333-23-3) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : rabbit; not irritating (OECD TG 405, GLP) (read across: TK12340) (ECHA)
- N-Phenyl-1-naphthalamine : rabbit; not irritating (OECD TG 405) (ECHA)
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Liquid causes irritation of the eyes. (HSDB)

○ **Respiratory sensitization : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : 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 for guinea-pigs. (read-aross: 64742-56-9) (OECD TG 406, GLP) (ECHA)
- 2,6-di-tert-butylphenol : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : guinea pig; not sensitising (OECD TG 406, GLP) (read across: 68333-23-3) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- N-Phenyl-1-naphthalamine : guinea pig; sensitising (90 % of the animals were sensitized under the

experimental conditions employed.) (OECD TG 406) (ECHA)

- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

○ **Carcinogenicity : Not classified**

- 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)
- 2,6-di-tert-butylphenol : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- Solvent naphtha (petroleum), heavy arom. : 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
- N-Phenyl-1-naphthalamine : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- 2-Methylnaphthalene : ACGIH : A4 (Not Classifiable as a Human Carcinogen)
- 1-Methylnaphthalene : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed

○ **Germ cell mutagenicity : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : In vitro bacterial reverse mutation assay: negative (equivalent or similar to guideline OECD TG 471) (ECHA)
  In vitro mammalian chromosome aberration test: negative (read-aross : 64742-53-6) (equivalent or similar to guideline OECD TG 473, GLP) (ECHA)
  In vivo micronucleus assay : negative (read-across : 64741-62-4, 64741-53-3) (equivalent or similar to guideline OECD TG 474) (ECHA)
- 2,6-di-tert-butylphenol : In vitro bacterial reverse mutation assay : negative (GLP) (ECHA), In vitro In Vitro Mammalian Chromosome Aberration Test : negative (OECD TG 473, GLP) (ECHA), In Vitro Mammalian Cell Gene Mutation Test : negative (OECD TG 476, GLP) (ECHA)
  in vivo : Not available
- Solvent naphtha (petroleum), heavy arom. : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471) (read across: 8008-20-6) (ECHA), In Vitro Sister Chromatid Exchange Assay in Mammalian Cells : negative (OECD TG 479, GLP) (read across: 64742-81-0) (ECHA)
  In vivo sister chromatid exchange assay : negative (female) / positive (male) (OECD TG 479, GLP) (ECHA), In vivo Mammalian Bone Marrow Chromosome Aberration Test : negative (OECD TG 475, GLP) (read across: 64742-81-0) (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)
- N-Phenyl-1-naphthalamine : In vitro bacterial reverse mutation assay : negative (OECD TG 471) (ECHA), In Vitro Mammalian Chromosome Aberration Test : negative (OECD TG 473) (ECHA), In Vitro Mammalian Cell Gene Mutation Test : negative (OECD TG 476) (ECHA)
  In vivo rodent dominant lethal assay : negative (OECD TG 478) (ECHA)
- 2-Methylnaphthalene : in vitro bacterial reverse mutation assay : negative (OECD SIDS)
  In Vitro Mammalian Chromosome Aberration Test : negative (OECD SIDS)

In vivo : not available

- 1-Methylnaphthalene : Not available

○ **Reproductive toxicity : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : rat; screening for reproductive / developmental toxicity; Reproductive performance was not adversely affected at any dose level evaluated. There were no neonatal toxicity observed at any dose level. There were no differences in terms of systemic toxicity between either of the dose formulations. (read-aross : Chevron 100 Neutral) (OECD TG 421, GLP) (ECHA)
- 2,6-di-tert-butylphenol : rat(male/female); 30, 150, 750 mg/kg bw/day (P m & f); With respect to the reproduction parameters, no effects were noted up to and including 750 mg/kg body weight/day. No teratogenic effect was observed at external examination and necropsy of the pups in any group. (OECD Preliminary Reproduction Toxicity Screening Test, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : rat(male/female); One-Generation Reproduction Toxicity Study; The study LOAEL for systemic effects is 1500 mg/kg/day and the NOAEL for systemic effects is 750 mg/kg/day, based on reduced body weight in dams and in pups. The LOAEL for adult males rats exposed to JP-8 orally was 750 mg/kg/day due to changes in clinical pathology, body weight, organ weights and the same irritation seen in female rats. The reproduction NOAEL was 3000 and 1500 mg/kg/day in males and females, respectively. (OECD TG 415, GLP) (read across: JP-8 jet fuel) (ECHA)
  rat; It can be concluded that the test substance is not toxic to development. (OECD TG 414) (read across: JP-8 jet fuel) (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)
- N-Phenyl-1-naphthalamine : rat(male/female); 15, 50, 150 mg/kg bw/day; NOAEL = 150 mg/kg bw/day (no adverse effects, highest dose tested) (OECD TG 414, GLP) (ECHA)
- 2-Methylnaphthalene : There is no standard study for reproductive toxicity. The only available information comes from histopathological
  investigations of reproductive tissues in repeated dose toxicity. No adverse histopathological changes in gonads were
  observed in repeated dose dietary study (81 weeks) at the highest dose tested (113.8 mg/kg/day and 107.6 mg/kg/day in
  male and female mice, respectively) in mice. (OECD SIDS)
  rat and rabbit; developmental toxicity; Based on the studies conducted with naphthalene, 2-methyl naphthalene is not predicted to be a developmental toxicant. Additional studies on the developmental toxicity are not considered to be necessary due to low exposure. (read across : naphthalene) (OECD SIDS)
- 1-Methylnaphthalene : Oral; rat; 0, 10, 50, 250 mg/kg/day; NOAEL(P, F1)=250 mg/kg/day (NO adverse effect.) (OECD TG 422, GLP) (J-CHECK)

○ **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)

- 2,6-di-tert-butylphenol : oral; rat(male/female); No abnormalities were noted at necropsy of animals killed at the end of the study (day 14). LD50 > 5000 mg/kg bw, no deaths (OECD TG 401, GLP) (ECHA)
  dermal; rat(male/female); No treatment-related macroscopic findings were observed. LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : oral; rat(male/female); Based on lack of mortality and systemic effects, LD50 > 5000 ㎎/㎏ bw, no deaths (OECD TG 420, GLP) (read across: 68333-23-3) (ECHA)
  dermal; rabbit(male/female); At necropsy, dermal irritation at the test site was the only abnormal observation. LD50 > 2000 ㎎/㎏ bw, no deaths (OECD TG 402, GLP) (read across: 68333-23-3) (ECHA)
  inhalation: vapour; rat(male/female); During gross pathology observations, four sections of the lung were examined. The pathology report indicated that no significant histological alternations were seen. LC50 > 5.28 mg/L air /4h, no deaths (OECD TG 403, GLP) (read across: 8008-20-6) (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)
- N-Phenyl-1-naphthalamine : dermal; rabbit(male); Livers congested and mottled; spleens dark; kidneys khaki brown in colour. LD50 > 5000 mg/kg (OECD TG 401) (ECHA)
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : This substance is irritating to the respiratory tract (ACGIH, HSDB)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Dermal; The systemic toxicity NOAEL for this 28-day dermal toxicity study in the rabbit is 1,000 mg/kg, based on the lack of adverse systemic effects observed at this dose level. (read-aross : 64742-53-6) (OECD TG 410, GLP) (ECHA)
  Inhalation; rat; 4 weeks; 0, 50, 220 or 1000 mg/m3; No systemic effects were observed. The NOAEL for lung changes associated with oil deposition in the lungs was 220 mg/m3. As no systemic toxicity was observed, the overall NOAEL for systemic effects was > 980 mg/m3. (equivalent or similar to guideline OECD TG 412) (ECHA)
- 2,6-di-tert-butylphenol : oral; rat(male/female); 91 days; Based on these findings the no observed adverse effect level (NOAEL) was considered to be 4000 ppm for both males and females equating to 270 mg 2,6-di-tert-butylphenol/k/day in males and 298 mg 2,6-di-tert-butylphenol/kg/day for females. (OECD TG 408, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : oral; rat(male/female); 90 days; The study LOAEL for systemic effects is 1500 mg/kg/day and the NOAEL for systemic effects is 750 mg/kg/day, based on

reduced body weight in dams and in pups. The LOAEL for adult males rats exposed to JP-8 orally was 750 mg/kg/day due to changes in clinical pathology, body weight, organ weights and the same irritation seen in female rats. The reproduction NOAEL was 3000 and 1500 mg/kg/day in males and females, respectively. (OECD TG 408, GLP) (read across: JP-8 jet fuel) (ECHA)

inhalation; rat(male/female); 90 days; 0, 500, or 1000 mg/m3; Male rats developed hydrocarbon-induced nephropathy and decreased body weight. Therefore, the LOAEL in male rats is 500 mg/m3. There were no significant treatment-related effects in female rats; therefore, the NOAEL in female rats is greater than or equal to 1000 mg/m3. However, effects seen in male rats were due to alpha-2u globulin-mediated nephropathy, and, as such, are not relevant to human exposure. (OECD TG 413) (read across: JP-8 jet fuel) (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)
- N-Phenyl-1-naphthalamine : oral; rat(male/female); 5, 25, 125 mg/kg bw/day; The oral administration of the test item to Wistar rats over a period of 3 months revealed signs of systemic toxicity in male animals at a dose level of 25 mg/kg bw/d and above as well as in female animals at a dose level of 125 mg/kg bw/d taking pathology and hematology findings into account. However, no adverse neurobehavioral effects in male and female Wistar rats were observed at any dose level. In addition, no test substance related effects were observed during the neurohistopathology investigation at any dose level. Under the conditions of this study, the no observed adverse effect level (NOAEL) for systemic toxicity was 5 mg/kg bw/d in male and 25 mg/kg bw/d in female animals. The NOAEL for neurotoxicity was 125 mg/kg bw/d in male and female animals (highest dose tested). (OECD TG 409, GLP) (ECHA)

  Affected organs: kidney, blood system
- 2-Methylnaphthalene : oral; mouse; In the chronic oral dietary study in mice, mortality was observed in males and females at all dose groups. Body weight gains were decreased in males of 113.8 mg/kg/day group. 2-methylnaphthalene revealed systemic effects at all dose levels on kidney and brain weights in males. The most sensitive effects were neutral fat level and pulmonary alveolar proteinosis at all treated groups. A LOAEL of 54.3 and 50.3 mg/kg/day 2-methylnaphthalene (0.075% in diet) was noted in males and females respectively. In sub-chronic dermal examinations in B6C3F1 mice (50-week), methylnaphthalene (1-methyl and 2-methylnaphthalene mixture) revealed some pulmonary toxicity at all dose levels (118.8 or 237.6 mg/kg/day) with proteinnosis and increased cholesterol and dipalmitoylglycerophosphocholine contents in the lung. The LOAEL of methylnaphthalene was estimated to be 29.7 mg/kg bw/day in female mice based on the increase in lipid pneumonia. (OECD SIDS)
- 1-Methylnaphthalene : Oral; rat; 0, 10, 50, 250 mg/kg/day; NOAEL=250 mg/kg/day (NO adverse effect.) (OECD TG 422, GLP) (J-CHECK)

○ **Aspiration hazard : Not classified**

- Distillates (petroleum), hydrotreated heavy paraffinic : Viscosity: 73.9 mm2/s (40°C)(ECHA) & hydrocarbons

- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : 1 to 2.4 cSt at 40°C (ECHA) & hydrocarbons
- ar-Nonyl-N-(nonylphenyl)benzenamine : 585 mPa.s at 40°C (ECHA) & not hydrocarbons
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

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)
- 2,6-di-tert-butylphenol : 96h-LC50(Pimephales promelas) = 1.4 mg/l (OECD TG 204, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : 96h-LL50(Oncorhynchus mykiss) = 2 - 5 mg/L (OECD TG 203, GLP) (read across: 64742-94-5) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- N-Phenyl-1-naphthalamine : 96h-LC50(Oncorhynchus mykiss) = 0.44 mg/l (ECHA)
- 2-Methylnaphthalene : 96h-LC50(Oncorhynchus mykiss) = 1.46 mg/L (OECD SIDS)
- 1-Methylnaphthalene : 96h-LC50(Oryzias latipes) = 5.66 mg/L (OECD TG 203) (J-CHECK)

Invertebrates

- Distillates (petroleum), hydrotreated heavy paraffinic : 48h-EL50(Daphnia magna) > 10,000 mg/L (read across : 64742-53-6 or 64741-97-5) (equivalent or similar to guideline OECD TG 202) (ECHA)
- 2,6-di-tert-butylphenol : 48h-EC50(Daphnia magna) = 0.45 mg/l (US EPA TSCA, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : 48h-EL50(Daphnia magna) = 1.4 mg/L (OECD TG 202, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- N-Phenyl-1-naphthalamine : 48h-EC50(Daphnia magna) = 0.3 mg/l (ECHA)
- 2-Methylnaphthalene : 48h-EC50(Daphnia magna) = 1.42-2.99 mg/L (OECD SIDS)
- 1-Methylnaphthalene : 48h-EC50(Daphnia magna) = 2.24 mg/L (OECD TG 202) (J-CHECK)

Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : 72h-ErL50(Pseudokirchneriella subcapitata) = 1-3 mg/L (OECD TG 201, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : No toxic effects up to the limit of water solubility (< 5 μg/L)
- N-Phenyl-1-naphthalamine : 96h-ErC50(Pseudokirchneriella subcapitata) = 0.93 mg/L (ECHA)
- 2-Methylnaphthalene : 72h-ErC50(Pseudokirchneriella subcapitata) = 2.3 mg/L (OECD SIDS)
- 1-Methylnaphthalene : 72h-ErC50 = 2.8 mg/L (J-CHECK)

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

Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

Invertebrates

- Distillates (petroleum), hydrotreated heavy paraffinic : 21d-NOEL(Daphnia magna)=10 mg/L (read across: 64742-53-6) (equivalent or similar to guideline OECD TG 211, GLP) (ECHA)
- 2,6-di-tert-butylphenol : 21d-NOEC(Daphnia magna) = 0.035 mg/L (OECD TG 211, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : 21d-NOEL(Daphnia magna) = 0.48 mg/L (OECD TG 211, GLP) (ECHA)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : 21d-NOEC(Daphnia magna) = 0.02 mg/L (US EPA) (ECHA)
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : 21d-NOEC(Daphnia magna) = 0.223 mg/L (OECD TG 211) (J-CHECK)

Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : 72h-NOErL(Pseudokirchnerella subcapitata) >= 100 mg/L (read across: 72623-87-1) (OECD TG 201) (ECHA)
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : 72h-NOECr = 0.54 mg/L (J-CHECK)

2) Persistence and degradability

○ **Persistence**

- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so it is not applicable. (ECHA)
- 2,6-di-tert-butylphenol : log Kow = 4.5 (24 °C) (OECD TG 117, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : log Kow = 3.30 (experimental) (EPISUITE)
- ar-Nonyl-N-(nonylphenyl)benzenamine : log Kow=12.24 (estimated) (EPISUITE); not valid (over -4<log Kow<8)
- N-Phenyl-1-naphthalamine : log Kow = 4.28 (ECHA)
- 2-Methylnaphthalene : log Kow = 3.86 (25°C) (OECD SIDS)
- 1-Methylnaphthalene : log Kow = 3.87 (HSDB)

○ **Degradability**

- Distillates (petroleum), hydrotreated heavy paraffinic : The chemical constituents that comprise the other lubricant base oils category consist entirely of carbon and hydrogen and do not contain hydrolyzable groups. As such, they have a very low potential to hydrolyze. Therefore, this degradative process will not contribute to their removal from the environment. (ECHA)
- 2,6-di-tert-butylphenol : Air - DT50: 0.22 d
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : In contact with water no hydrolysis is expected. (ECHA)

- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

3) Bioaccumulative potential

○ **Bioaccumulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : This substance is UVCB, so it is not applicable. (ECHA)
- 2,6-di-tert-butylphenol : BCF=ca. 660 L/kg (ECHA)
- Solvent naphtha (petroleum), heavy arom. : BCF = 69.88 (estimated) (EPISUITE)
- ar-Nonyl-N-(nonylphenyl)benzenamine : BCF=35.87 (estimated) (EPISUITE)
- N-Phenyl-1-naphthalamine : BCF = 274.3 (estimated) (EPISUITE)
- 2-Methylnaphthalene : BCF = 100-895 (OECD SIDS)
- 1-Methylnaphthalene : BCF = 360~810 L/kg (Conc. 1 ug/L) (OECD TG 305) (J-CHECK)

○ **Biodegradation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Another lubricant base oil, Solvent Neutral 600 Base Oil (MRD-94 -981), was determined to be inherently biodegradable but not readily biodegradable with a mean degradation of 31.13% by day 28. (read across: Solvent Neutral 600 Base Oil (MRD-94-981)) (OECD TG 301F, GLP) (ECHA)
- 2,6-di-tert-butylphenol : >= 12 - <= 24 % degradation after 28d; not inherently biodegradable (OECD TG 302C, GLP) (ECHA)
- Solvent naphtha (petroleum), heavy arom. : 58.6 % degradation after 28d; not readily biodegradable (OECD TG 301F) (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)
- N-Phenyl-1-naphthalamine : 0 % degradation after 28 days; under test conditions no biodegradation observed (OECD TG 301C, GLP) (ECHA)
- 2-Methylnaphthalene : 61.9% degradation after 28d; readily biodegradable (OECD TG 301C) (OECD SIDS)
- 1-Methylnaphthalene : BOD = 2 (%) after 28 day (Non-biodegradability) (J-CHECK)

4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Koc = 6506 (EPISUITE)
- Solvent naphtha (petroleum), heavy arom. : Koc = 730.6 (EPISUITE)
- ar-Nonyl-N-(nonylphenyl)benzenamine : Koc=44900000 (EPISUITE)
- N-Phenyl-1-naphthalamine : Koc = 1685 (EPISUITE)
- 2-Methylnaphthalene : Koc = 4400 ~ 8500 (OECD SIDS)
- 1-Methylnaphthalene : Koc = 2290 (HSDB)

5) Hazard to the ozone layer

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

6) Other adverse effects

- Distillates (petroleum), hydrotreated heavy paraffinic : Not available
- 2,6-di-tert-butylphenol : Not available
- Solvent naphtha (petroleum), heavy arom. : Not available
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not available
- N-Phenyl-1-naphthalamine : Not available
- 2-Methylnaphthalene : Not available
- 1-Methylnaphthalene : Not available

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Not available

2) Special precaution for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

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
- 2,6-di-tert-butylphenol : European EINECS phase-in substance
- Solvent naphtha (petroleum), heavy arom. : European EINECS phase-in substance
- ar-Nonyl-N-(nonylphenyl)benzenamine : European EINECS phase-in substance
- N-Phenyl-1-naphthalamine : European EINECS phase-in substance
- 2-Methylnaphthalene : European EINECS phase-in substance
- 1-Methylnaphthalene : European EINECS phase-in substance

EU CLP (CLASSIFICATION) - PRODUCT : Not applicable

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

Substances restricted under REACH

- Distillates (petroleum), hydrotreated heavy paraffinic : Substances restricted under REACH
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

Substances subject to authorization under REACH

REACH SVHC List

Korea

○ **Occupational Safety and Health Act**

- Distillates (petroleum), hydrotreated heavy paraffinic : Substance subject to occupational exposure limits, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Substance subject to occupational exposure limits, Harmful agents subject to work environment monitoring, Harmful agents subject to workers requiring health examination
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **K-REACH**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Phase-in Substances subject to Registration
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **Chemical Control Act in Korea**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Ecologically hazardous substances
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Ecologically hazardous substances
- 2-Methylnaphthalene : Not applicable

- 1-Methylnaphthalene : Not applicable

○ **Safety Control of Dangerous Substances Act**

- Distillates (petroleum), hydrotreated heavy paraffinic : Dangerous substance
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

U.S.A

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

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

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **CERCLA Section 302 regulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **CERCLA Section 304 regulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **CERCLA Section 313 regulation**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable

- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

Interntional Convention on Environment

○ **Rotterdam Convention list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **Stockholm Convention list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **Montreal Protocol list**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

National Inventory

○ **Korea**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Not applicable
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Not applicable
- N-Phenyl-1-naphthalamine : Not applicable
- 2-Methylnaphthalene : Not applicable
- 1-Methylnaphthalene : Not applicable

○ **U.S.A**

- Distillates (petroleum), hydrotreated heavy paraffinic : US TSCA phase-in substance
- 2,6-di-tert-butylphenol : US TSCA phase-in substance
- Solvent naphtha (petroleum), heavy arom. : US TSCA phase-in substance
- ar-Nonyl-N-(nonylphenyl)benzenamine : US TSCA phase-in substance
- N-Phenyl-1-naphthalamine : US TSCA phase-in substance

- 2-Methylnaphthalene : US TSCA phase-in substance
- 1-Methylnaphthalene : US TSCA phase-in substance

○ **China**

- Distillates (petroleum), hydrotreated heavy paraffinic : China phase-in substance
- 2,6-di-tert-butylphenol : China phase-in substance
- Solvent naphtha (petroleum), heavy arom. : China phase-in substance
- ar-Nonyl-N-(nonylphenyl)benzenamine : China phase-in substance
- N-Phenyl-1-naphthalamine : China phase-in substance
- 2-Methylnaphthalene : China phase-in substance
- 1-Methylnaphthalene : China phase-in substance

○ **Japan**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- 2,6-di-tert-butylphenol : Japan ENCS phase-in substance
- Solvent naphtha (petroleum), heavy arom. : Not applicable
- ar-Nonyl-N-(nonylphenyl)benzenamine : Japan ENCS phase-in substance
- N-Phenyl-1-naphthalamine : Japan ENCS phase-in substance
- 2-Methylnaphthalene : Japan ENCS phase-in substance
- 1-Methylnaphthalene : 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

- 2024-08-28

3) Revision number and Last date revised

○ **Number of revised**

- 1

○ **Date of last revision**

- 2026-01-05

○ **Last Revision History**

- update

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.