# SDS(Safety Data Sheet)

| Product | Kixx RD BIO 46 | | |
|---|---|---|---|
| MSDS Number | List No. | Issuing date | Last revised date |
| - | LB3637 | 2022-11-01 | 2026-01-28 |

## 1. IDENTIFICATION

**1) Product name**

Kixx RD BIO 46

**2) Recommended use of the chemical and restriction on use**

- Recommended use Lubricants
- Restrictions on use Do not use for any other purpose.

**3) Details of the supplier of the safety data sheet**

○ **Manufacturer**

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

## 2. HAZARDS IDENTIFICATION

**1) Classification of the product**

- Not applicable

**2) Label elements**

○ **Hazard pictograms**

- Not applicable

○ **Signal word**

- Not applicable

○ **Hazard statements**

- Not applicable

○ **Precautionary statements**

**1) Prevention**

- Not applicable

**2) Response**

- Not applicable

**3) Storage**

- Not applicable

**4) Disposal**

- Not applicable

**3) Other hazards**

○ **Product NFPA Level**

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

| Product name | Health | Flammable | Reaction |
|---|---|---|---|
| Kixx RD BIO 46 | 0 | 1 | 0 |

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical name | Trade names and Synonyms | CAS No. | EC No. | Contain Ratio(%) |
|---|---|---|---|---|
| Trade secret | | | | 98.6 ~ 99.1 |
| N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine | N-[(1,1,3,3-Tetramethylbutyl)phenyl]naphthalen-1-amine | 51772-35-1 | 257-406-8 | 0.6 ~ 0.5 |
| N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene | | 68411-46-1 | 270-128-1 | 0.2 ~ 0.3 |
| 2,6-di-tert-butyl-p-cresol | 2,6-Di-tert-butyl-1-hydroxy-4-methylbenzene ; 2,6-Di-tert-butyl-P-methylphenol ; 2,6-tert-Butyl-4-methylphenol | 128-37-0 | 204-881-4 | 0.05 ~ 0.15 |
| N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine | Reomet 39 | 94270-86-7 | | 0.05 ~ 0.15 |

※ 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 up**

- Small Spill: Flush area with flooding quantities of water.
- Large Spill: Dike far ahead of liquid spill for later disposal.
- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.
- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

## 7. HANDLING AND STORAGE

**1) Precautions for safe handling**

- Wash ... thoroughly after handling.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- Cuation: High temperature

**2) Conditions for safe storage (including any incompatibilities)**

- Store in a dry place. Store in a closed container.
- Please note that materials and conditions to be avoided.
- Store in a closed container.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

**1) Control parameters**

| Chemical name | Exposure limits | ACGIH TLV | OSHA PEL | Biological limit values(BLV) |
|---|---|---|---|---|
| Trade secret | Not available | Not available | Not available | Not available |
| N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine | Not available | Not available | Not available | Not available |
| N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene | Not available | Not available | Not available | Not available |
| 2,6-di-tert-butyl-p-cresol | TWA : 2 mg/m3 | TWA, 2 mg/m3, Inhalable particulate and vapor | Not available | Not available |
| N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine | Not available | Not available | 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 | No Data |
| Smell Threshold | No Data |
| pH (Numerical value) | No Data |
| Melting/Freezing Point | No Data |
| Boilling Point | No Data |
| Flash Point | 268 ℃ |
| 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 | 0.90 |
| 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)**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : rat(female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 423, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rat(male/female); LD50 > 5000 mg/kg bw, no deaths (OECD TG 401) (ECHA)
- 2,6-di-tert-butyl-p-cresol : rat; LD50 > 6000 mg/kg bw, no deaths (OECD TG 401, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : rat; LD50 > 2000 mg/kg bw, no deaths (OECD TG 402 GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rat(male/female); LD50 > 2000 mg/kg bw, no deaths (OECD TG 402) (ECHA)
- 2,6-di-tert-butyl-p-cresol : rat; LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) (ECHA)

- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not available
- 2,6-di-tert-butyl-p-cresol : Not available
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not available
- 2,6-di-tert-butyl-p-cresol : rat; inhalation : dust; LC50 > 2 mg/L 4 hr (산업안전보건연구원)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**○ Skin corrosion/Irritation : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : human skin model; not irritating (OECD TG 439, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rabbit; not irritating (OECD TG 404) (ECHA)
- 2,6-di-tert-butyl-p-cresol : rabbit; very mild irritating (Total stimulus index : 0.3 - 0.7/8) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**○ Serious eye damage/irritation : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : cattle; not irritating (OECD TG 437, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rabbit; not irritating (OECD TG 405) (ECHA)
- 2,6-di-tert-butyl-p-cresol : rabbit; very mild irritating; all effects disappearing within 72 hours (conjunctiva score : 0.5/3, cornea score : 0/2, iris score : 0/2, chemosis score : 0.1/4) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

○ **Respiratory sensitization : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not available
- 2,6-di-tert-butyl-p-cresol : Not available
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

○ **Skin sensitization : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)
- 2,6-di-tert-butyl-p-cresol : human; BHT was assessed as negative in the patch test with 11454 patients. (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

○ **Carcinogenicity : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed
- 2,6-di-tert-butyl-p-cresol : IARC : Group 3 (Not Classifiable)
  ACGIH : A4 (Not Classifiable as a Human Carcinogen)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : IARC, EU CLP 1272/2008, OSHA, ACGIH, US EPA IRIS, NTP : not listed

○ **Germ cell mutagenicity : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : 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 Test : negative (OECD TG 476,

GLP) (ECHA)
In vivo : not available

- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : In vitro Bacterial Reverse Mutation Assay : negative (OECD TG 471) (ECHA)
In vivo rodent dominant lethal assay : negative (OECD TG 478) (ECHA)
- 2,6-di-tert-butyl-p-cresol : in vitro Bacterial reverse mutation assay, with/without metabolic activation : Negative (OECD TG 471).
in vitro Mammalian Chromosome Aberration Test, with/without metabolic activation : Negative (OECD TG 473, GLP).
in vitro Mammalian reverse mutation assay, with/without metabolic activation : Negative (OECD TG 476).
in vivo Mammalian Hepatocyte Unscheduled DNA Synthesis(UDS) : Negative (OECD TG 486, GLP).
in vivo mouse bone marrow micronucleus test : Negative (OECD TG 474, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

○ **Reproductive toxicity : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : rat; screening for reproductive / developmental toxicity; 62.5, 250, 1000 mg/kg bw/day; Based on these results, a parental, reproduction and developmental No Observed Adverse Effect Level (NOAEL) of at least 1000 mg/kg bw/day was derived. (OECD TG 422, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rat(male/female); 25, 75 and 225 mg/kg bw; No toxicologically relevant effects on reproductive parameters were noted with treatment up to 225 mg/kg bw/day. The mating, fertility and conception indices, precoital time, and number of corpora lutea and implantation sites were unaffected by treatment. No toxicologically relevant effects on the gestation index and duration, parturition, maternal care or on most aspects of early postnatal pup development (clinical signs, body weight and macroscopy) were observed up to 225 mg/kg bw/day. (OECD TG 422, GLP) (ECHA)
- 2,6-di-tert-butyl-p-cresol : rat; 25, 100, 500 mg/kg; two-genaration carcinogenic test : No side effects to reproductive ability (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : dermal; rat; No systemic clinical signs were observed during clinical examination. No local skin effects were observed. LD50 > 2000 mg/kg bw, no deaths (OECD TG 402 GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : oral; rat(male/female); No compound related gross organ changes were observed. LD50 > 5000 ㎎/kg bw, no deaths (OECD TG 401) (ECHA)
dermal; rat(male/female); No adverse findings noted. LD50 > 2000 ㎎/kg bw, no

deaths (OECD TG 402) (ECHA)

- 2,6-di-tert-butyl-p-cresol : oral; rat; The substance did not cause any remarkable symptoms which were due to the applicated compound. LD50 > 6000 mg/kg bw, no deaths (OECD TG 401, GLP) (ECHA)
  dermal; rat; There were no clinical signs observed. LD50 > 2000 mg/kg bw, no deaths (OECD TG 402, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

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

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : rat; Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test; 62.5, 250, 1000 mg/kg bw/day; Based on the results presented, a No Observed Adverse Effect Level (NOAEL) of at least 1000 mg/kg bw/day was derived. (OECD TG 422, GLP) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : rat(male); oral; 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)
- 2,6-di-tert-butyl-p-cresol : rat; 2nd generation carcinogenicity test; Increased F1 generation liver enzymes, weight gain, hepatocellular lesions, hyperthyroidism, hepatomegaly; NOAEL(F1,male) = 25 mg/kg bw/day (GLP)
  mouse, rat, hamster; dermal; Liver damage observed (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

○ **Aspiration hazard : Not classified**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 352.7 mm²/s (40°C) (ECHA) & not hydrocarbons
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

## 12. ECOLOGICAL INFORMATION

**1) Ecotoxicity**

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

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

**Fish**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : No acute toxic effects occur within the range of solubility. (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 96h-LC50(Danio rerio) > 100 mg/L (OECD TG 203) (ECHA); No toxic effects occur within the range of water solubility.
- 2,6-di-tert-butyl-p-cresol : 96h-LC50(Oryzias latipes) = 1.1 mg/L (OECD TG 203, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : 96h-LC50 = 0.003 mg/L (estimated) (Neutral Organic SAR) (ECOSAR)

**Invertebrates**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : No acute toxic effects occur within the range of solubility. (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 48h-EC50(Daphnia magna) = 51 mg/L (OECD TG 202, GLP) (ECHA); No toxic effects occur within the range of water solubility.
- 2,6-di-tert-butyl-p-cresol : 48h-EC50(Daphnia magna) = 0.48 mg/L (OECD TG 202, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : 48h-LC50(Daphnid) = 0.003 mg/L (estimated) (Neutral Organic SAR) (ECOSAR)

**Aquatic algae**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : No acute toxic effects occur within the range of solubility. (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 72h-ErC50(Desmodesmus subspicatus) > 100 mg/L (OECD TG 201) (ECHA); No toxic effects occur within the range of water solubility.
- 2,6-di-tert-butyl-p-cresol : 72h-ErC50(Pseudokirchneriella subcapitata) > 0.24 mg/L (OECD TG 201, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : No toxicity effects observed within the limit of water solubility(0.01175 mg/L). (ECOSAR)

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

**Fish**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not available
- 2,6-di-tert-butyl-p-cresol : 30d-NOEC(Oryzias latipes) = 0.053 mg/L (OECD TG 210, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**Invertebrates**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 21d-EL10(Daphnia magna) = 1.69 mg/L (OECD TG 211, GLP) (ECHA)
- 2,6-di-tert-butyl-p-cresol : 21d-NOEC(Daphnia magna) = 0.069 mg/L (OECD TG 211, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**Aquatic algae**

- Trade secret : Not available

- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : No acute toxic effects occur within the range of solubility. (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 72h-NOErC(Desmodesmus subspicatus) = 10-100 mg/L (OECD TG 201) (ECHA); No toxic effects occur within the range of water solubility.
- 2,6-di-tert-butyl-p-cresol : 72h-NOErC(Pseudokirchneriella subcapitata) = 0.24 mg/L (OECD TG 201, GLP) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**2) Persistence and degradability**

○ **Persistence**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : log Kow = 8.23 (estimated) (EPISUITE); not valid data (over the range of "-4<log Kow<8")
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : log Kow=7.05 (estimated) (EPISUITE)
- 2,6-di-tert-butyl-p-cresol : log Kow = 5.2 (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : log Kow = 7.62 (estimated) (EPISUITE)

○ **Degradability**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : In contact with water no hydrolysis is expected. (ECHA)
- 2,6-di-tert-butyl-p-cresol : Not available
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**3) Bioaccumulative potential**

○ **Bioaccumulation**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : BCF=1730 (ECHA)
- 2,6-di-tert-butyl-p-cresol : BCF = 598.4 L/kg ww (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : BCF = 1676 (estimated) (EPISUITE)

○ **Biodegradation**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : 0% degradation after 28d; under test conditions no biodegradation observed (OECD Guideline 301 B) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : 1% degradation after 28 days; under test conditions no biodegradation observed (OECD TG 301B, GLP) (ECHA)
- 2,6-di-tert-butyl-p-cresol : 4.5% degradation after 28 days; not readily biodegradable (OECD TG 301 C) (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not available

**4) Mobility in soil**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Koc = 285600 (estimated) (ECHA)
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Koc=60460 (EPISUITE)
- 2,6-di-tert-butyl-p-cresol : Koc = 23030 (ECHA)
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Koc = 140400 (estimated) (EPISUITE)

**5) Hazard to the ozone layer**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**6) Other adverse effects**

- Trade secret : Not available
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not available
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not available
- 2,6-di-tert-butyl-p-cresol : Not available
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : 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)**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : European EINECS phase-in substance
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : European EINECS phase-in substance

- 2,6-di-tert-butyl-p-cresol : European EINECS phase-in substance
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**EU CLP (CLASSIFICATION) - PRODUCT : Not applicable**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**Substances restricted under REACH**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**Substances subject to authorization under REACH**

**REACH SVHC List**

**Korea**

○ **Occupational Safety and Health Act**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Substance subject to occupational exposure limits
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **K-REACH**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **Chemical Control Act in Korea**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : List of substance subjected to the PRTR
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **Safety Control of Dangerous Substances Act**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**U.S.A**

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

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

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

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **CERCLA Section 302 regulation**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **CERCLA Section 304 regulation**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **CERCLA Section 313 regulation**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**Interntional Convention on Environment**

○ **Rotterdam Convention list**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **Stockholm Convention list**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **Montreal Protocol list**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable

- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

**National Inventory**

○ **Korea**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Not applicable
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

○ **U.S.A**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : US TSCA phase-in substance
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : US TSCA phase-in substance
- 2,6-di-tert-butyl-p-cresol : US TSCA phase-in substance
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : US TSCA phase-in substance

○ **China**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : China phase-in substance
- 2,6-di-tert-butyl-p-cresol : China phase-in substance
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : China phase-in substance

○ **Japan**

- Trade secret : Not applicable
- N-[(1,1,3,3-tetramethylbutyl)phenyl]naphthalen-1-amine : Not applicable
- N-Phenylbenzenamine reaction products with 2,4,4-trimethylpentene : Not applicable
- 2,6-di-tert-butyl-p-cresol : Japan ENCS phase-in substance
- N,N-Bis(2-ethylhexyl)-ar-methyl-1H-benzotriazole-1-methanamine : Not applicable

## 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**

- 2022-11-01

**3) Revision number and Last date revised**

○ **Number of revised**

- 1

○ **Date of last revision**

- 2026-01-05

○ **Last Revision History**

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

**4) Other**

- The information contained in the Safety Data Sheet is at the date of its issuance to the best of our knowledge correct according to the data available to us. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.