

KUMHO PETROCHEMICAL

SAFETY DATA SHEET

KUMHO 1799

According to Regulation (EC) No 1907/2006, Annex II, as amended by Regulation (EU) No 453/2010, COMMISSION REGULATION (EU) 2015/830 of 28 May 2015.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name KUMHO 1799

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Raw materials for rubber products (tires, rubber shoes, sneakers, rubber hoses, belts)

Uses advised against Not available.

1.3. Details of the supplier of the safety data sheet

Supplier OR of KOREA KUMHO Petrochemical Co., Ltd.
KIST Europe Forschungsgesellschaft mbH
Campus E71
66123 Saarbruecken
Germany

Tel: +49 681 9382 334
Fax: +49 681 9382 319
e-mail: reach.it@kist-europe.de

Manufacturer Korea Kumho Petrochemical Co., Ltd.
64, Sanggae-ro, Nam-gu
Ulsan, Korea
680-180

Tel : +82-52-259-6051~7
Fax : +82-52-259-6053

1.4. Emergency telephone number

Emergency telephone +49 551 19240
GIZ-Nord, Goettingen, Germany (English only)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC/1272/2008)

Physical hazards Not Classified

Health hazards Carc. 2 - H351

Environmental hazards Aquatic Chronic 2 - H411

2.2. Label elements

KUMHO 1799**Pictogram****Signal word**

Warning

Hazard statements

H351 Suspected of causing cancer.

H411 Toxic to aquatic life with long lasting effects.

EUH208 Contains N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamine. May produce an allergic reaction.

Precautionary statements

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

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

P391 Collect spillage.

P405 Store locked up.

P501 Dispose of contents/ container in accordance with national regulations.

Contains

Extracts (petroleum), residual oil solvent

2.3. Other hazards**SECTION 3: Composition/information on ingredients****3.2. Mixtures**

| | | | |
|--|--|----------------------|--|
| Styrene-Butadiene Copolymer | | | 60-100% |
| CAS number: 9003-55-8 | | | |
| Classification Not Classified | | | |
| Extracts (petroleum), residual oil solvent | | | 10-30% |
| CAS number: 64742-10-5 | | EC number: 265-110-5 | REACH registration number: 01-2119488175-30-XXXX |
| Classification Carc. 2 - H351 | | | |
| Resin acids and Rosin acids, potassium salts | | | 1-5% |
| CAS number: 61790-50-9 | | EC number: 263-142-4 | |
| Classification Not Classified | | | |
| Facid | | | 1-5% |
| CAS number: 68911-24-0 | | | |
| Classification Not Classified | | | |

KUMHO 1799

| | | | |
|---|-------------------------|--|-----|
| N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamine | | | <1% |
| CAS number: 793-24-8 | EC number: 212-344-0 | REACH registration number: 01-2119485839-15-XXXX | |
| M factor (Acute) = 10 | M factor (Chronic) = 10 | | |
| Classification Acute Tox. 4 - H302 Skin Sens. 1 - H317 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410 | | | |

The full text for all hazard statements is displayed in Section 16.

Composition comments Monomer is registered instead of Styrene-Butadiene-Styrene copolymer. (Registration number of monomer: 1,3-Butadiene; 01-2119471988-16-****, Styrene; 01-2119457861-32-****)

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------|---|
| Inhalation | Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. If breathing stops, provide artificial respiration. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention if any discomfort continues. |
| Ingestion | Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Give plenty of water to drink. Give milk instead of water if readily available. Never give anything by mouth to an unconscious person. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if any discomfort continues. |
| Skin contact | Rinse immediately with plenty of water. Remove contaminated clothing. Continue to rinse for at least 15 minutes. Remove contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if any discomfort continues. Chemical burns must be treated by a physician. |
| Eye contact | Rinse immediately with plenty of water. Continue to rinse for at least 10 minutes. Get medical attention if any discomfort continues. Remove any contact lenses and open eyelids wide apart. |

4.2. Most important symptoms and effects, both acute and delayed

| | |
|---------------------|--|
| Inhalation | Vapour from this product may be hazardous by inhalation. |
| Skin contact | May cause sensitisation by skin contact. |

4.3. Indication of any immediate medical attention and special treatment needed

| | |
|-----------------------------|--|
| Notes for the doctor | No specific chemical antidote is known to be required after exposure to this product. Treat symptomatically. |
|-----------------------------|--|

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|---------------------------------------|--|
| Suitable extinguishing media | Carbon dioxide or dry powder. Larger fires: Water. Foam. |
| Unsuitable extinguishing media | Do not use water jet as an extinguisher, as this will spread the fire. |

KUMHO 1799

5.2. Special hazards arising from the substance or mixture

Specific hazards May explode when heated or when exposed to flames or sparks. Dust may form explosive mixture with air.

Hazardous combustion products Toxic gases/vapours/fumes of: Carbon monoxide (CO). Carbon dioxide (CO₂).

5.3. Advice for firefighters

Protective actions during firefighting Do not scatter spilled material with more water than needed to fight the fire. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Avoid breathing fire gases or vapours. Keep up-wind to avoid fumes.

Special protective equipment for firefighters Wear protective clothing as described in Section 8 of this safety data sheet.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. Avoid generation and spreading of dust. Avoid heat, flames and other sources of ignition. Provide adequate ventilation. Use vapour suppression foam to reduce vapour.

6.2. Environmental precautions

Environmental precautions Avoid discharge into drains. Avoid discharge into drains or watercourses or onto the ground. If large spills, call emergency services to get advice.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Dike far ahead of larger spills for later disposal. Re-packaging dismantled rubber and if possible re-use. Avoid the spillage or runoff entering drains, sewers or watercourses. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

6.4. Reference to other sections

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Wear protective clothing as described in Section 8 of this safety data sheet. Provide adequate ventilation. Avoid generating excess dust. Storage tanks and other containers must be earthed. Avoid contact with skin and eyes. Use non sparking handtools and explosion-proof electric equipment. Avoid heat, flames and other sources of ignition. Do not breathe vapour. Do not eat, drink or smoke when using the product. Do not pressing, cutting, welding, soldering, bonding, drilling, grinding.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store under well-ventilated conditions at a temperature below 25°C. Keep away from heat, sparks and open flame. Avoid heat. Avoid contact with the following materials: Strong oxidising agents. Store in a cool and well-ventilated place.

7.3. Specific end use(s)

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Biological limit values Not applicable., Not applicable., Not applicable.

8.2. Exposure controls

KUMHO 1799

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Chemical splash goggles or face shield.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Where handling at high temperature, wear heat resistant gloves.

Other skin and body protection

Wear apron or protective clothing in case of contact.

Hygiene measures

Provide eyewash station. Provide eyewash station and safety shower. Wash hands after handling.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit. An approved dust respirator is recommended as appropriate depending on dust levels and other workplace factors.

Environmental exposure controls

Not available.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

| | |
|--|---------------------|
| Appearance | Solid |
| Colour | Dark brown. |
| Odour | Mild. |
| pH | Not available. |
| Melting point | Not applicable. |
| Initial boiling point and range | Not applicable. |
| Flash point | 246°C |
| Evaporation rate | Not applicable. |
| Upper/lower flammability or explosive limits | Not available. |
| Other flammability | Not available. |
| Vapour pressure | Not applicable. |
| Vapour density | Not applicable. |
| Relative density | 0.92~0.96 |
| Solubility(ies) | Insoluble in water. |
| Partition coefficient | Not applicable. |

KUMHO 1799

| | |
|---------------------------|-----------------|
| Auto-ignition temperature | > 388°C |
| Decomposition Temperature | Not available. |
| Viscosity | Not applicable. |

9.2. Other information

| | |
|------------------|-----------|
| Molecular weight | ≈ 120,000 |
|------------------|-----------|

SECTION 10: Stability and reactivity

10.1. Reactivity

| | |
|------------|-----------------|
| Reactivity | Not applicable. |
|------------|-----------------|

10.2. Chemical stability

| | |
|-----------|---|
| Stability | Stable at normal ambient temperatures and when used as recommended. |
|-----------|---|

10.3. Possibility of hazardous reactions

| | |
|------------------------------------|-----------------|
| Possibility of hazardous reactions | Not applicable. |
|------------------------------------|-----------------|

10.4. Conditions to avoid

| | |
|---------------------|--|
| Conditions to avoid | Avoid heat, flames and other sources of ignition. Avoid contact with incompatible materials. |
|---------------------|--|

10.5. Incompatible materials

| | |
|--------------------|----------------|
| Materials to avoid | Not available. |
|--------------------|----------------|

10.6. Hazardous decomposition products

| | |
|----------------------------------|---|
| Hazardous decomposition products | Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Oxides of carbon. Thermal decomposition or combustion products may include the following substances: Acrid smoke or fumes. Hydrocarbons. |
|----------------------------------|---|

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

| | |
|--------------------------------|----------------|
| Notes (oral LD ₅₀) | Not available. |
|--------------------------------|----------------|

Acute toxicity - dermal

| | |
|----------------------------------|----------------|
| Notes (dermal LD ₅₀) | Not available. |
|----------------------------------|----------------|

Acute toxicity - inhalation

| | |
|--------------------------------------|----------------|
| Notes (inhalation LC ₅₀) | Not available. |
|--------------------------------------|----------------|

Skin corrosion/irritation

| | |
|---------------------------|----------------|
| Skin corrosion/irritation | Not available. |
|---------------------------|----------------|

Serious eye damage/irritation

| | |
|-------------------------------|----------------|
| Serious eye damage/irritation | Not available. |
|-------------------------------|----------------|

Respiratory sensitisation

| | |
|---------------------------|----------------|
| Respiratory sensitisation | Not available. |
|---------------------------|----------------|

Skin sensitisation

| | |
|--------------------|----------------|
| Skin sensitisation | Not available. |
|--------------------|----------------|

Germ cell mutagenicity

| | |
|-------------------------|----------------|
| Genotoxicity - in vitro | Not available. |
|-------------------------|----------------|

KUMHO 1799

Genotoxicity - in vivo Not available.

Carcinogenicity

Carcinogenicity Contains a substance which may cause cancer by skin contact.

Reproductive toxicity

Reproductive toxicity - fertility Not available.

Reproductive toxicity - development Not available.

Specific target organ toxicity - single exposure

STOT - single exposure Not available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not available.

Aspiration hazard

Aspiration hazard Not available.

Skin contact May cause skin irritation/eczema.

Eye contact May cause temporary eye irritation.

Route of entry Inhalation Ingestion Skin and/or eye contact

Toxicological information on ingredients.**Extracts (petroleum), residual oil solvent****Acute toxicity - oral**

Acute toxicity oral (LD₅₀ mg/kg) 5,000.0

Species Rat

ATE oral (mg/kg) 5,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 3,000.0

Species Rabbit

Skin corrosion/irritation

Skin corrosion/irritation Irritating to skin.

Serious eye damage/irritation

Serious eye damage/irritation Slightly irritating.

Skin sensitisation

Skin sensitisation Buehler test: - Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro Bacterial reverse mutation test: Positive.

Genotoxicity - in vivo Chromosome aberration: Positive.

KUMHO 1799

Carcinogenicity

Carcinogenicity Known carcinogen based on animal evidence.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met.

Target organs Reproductive organs

N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamineAcute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 1,005.0

Species Rat

Notes (oral LD₅₀) This test is conducted with male rat.

ATE oral (mg/kg) 1,005.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 7,940.0

Species Rabbit

Acute toxicity - inhalation

Notes (inhalation LC₅₀) Endpoint waived according to REACH Annex VII, IX or XI.

Skin corrosion/irritation

Animal data Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Slightly irritating.

Skin sensitisation

Skin sensitisation Guinea pig maximization test (GPMT) - Guinea pig: Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro Gene mutation:: Negative. Species : Salmonella typhimurium TA 98, TA 100, TA 1535, TA 1537.

Genotoxicity - in vivo Chromosome aberration: Negative. Species : rat.

Carcinogenicity

Carcinogenicity NOAEL 1000 ppm, Oral, Rat

Reproductive toxicity

Reproductive toxicity - fertility Screening: - NOAEL 100 mg/kg/day, Oral, Rat P

Reproductive toxicity - development Maternal toxicity: - NOAEL: 50 mg/kg/day, Inhalation, Rat

SECTION 12: Ecological Information12.1. Toxicity

KUMHO 1799

| | |
|---|----------------|
| Acute toxicity - fish | Not available. |
| Acute toxicity - aquatic invertebrates | Not available. |
| Acute toxicity - aquatic plants | Not available. |
| Acute toxicity - microorganisms | Not available. |
| Acute toxicity - terrestrial | Not available. |
| Chronic toxicity - fish early life stage | Not available. |
| Short term toxicity - embryo and sac fry stages | Not available. |
| Chronic toxicity - aquatic invertebrates | Not available. |

Ecological information on ingredients.Extracts (petroleum), residual oil solvent

| | |
|--|---|
| Acute toxicity - fish | NOEC, 96 hours: 1000 mg/l, Onchorhynchus mykiss (Rainbow trout) |
| Acute toxicity - aquatic invertebrates | EC ₅₀ , 48 hours: >1000 mg/l, Daphnia magna |
| Acute toxicity - aquatic plants | NOEC, 72 hours: >1000 mg/l, Scenedesmus subspicatus EC ₅₀ , 72 hours: >1000 mg/l, Scenedesmus subspicatus |

N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamineAcute aquatic toxicity

| | |
|--|--|
| LE(C) ₅₀ | 0.01 < L(E)C ₅₀ ≤ 0.1 |
| M factor (Acute) | 10 |
| Acute toxicity - fish | LC ₅₀ , 96 hours: 0.028 mg/l, Oryzias latipes (Red killifish) |
| Acute toxicity - aquatic invertebrates | EC ₅₀ , 48 hours: 0.69 mg/l, Daphnia magna |
| Acute toxicity - aquatic plants | NOEC, 72 hours: 0.23 mg/l, Species : Desmodesmus subspicatus. |
| Acute toxicity - microorganisms | EC ₅₀ , 3 hours: 420 mg/l, Activated sludge |

Chronic aquatic toxicity

| | |
|--|---|
| NOEC | 0.001 < NOEC ≤ 0.01 |
| Degradability | Non-rapidly degradable |
| M factor (Chronic) | 10 |
| Chronic toxicity - fish early life stage | LOEC, : 0.011 mg/l, Oryzias latipes (Red killifish) NOEC, : 0.0037 mg/l, Oryzias latipes (Red killifish) Exposure duration : 30 days. |

KUMHO 1799

| | |
|---|--|
| Chronic toxicity - aquatic invertebrates | NOEC, 21 days: 0.028 mg/l, Daphnia magna LOEC, 21 days: 0.087 mg/l, Daphnia magna |
| Toxicity to soil | Endpoint waived according to REACH Annex VII, IX or XI. |
| Toxicity to terrestrial plants | Endpoint waived according to REACH Annex VII, IX or XI. |

12.2. Persistence and degradability

Persistence and degradability No data available.

Ecological information on ingredients.**N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamine**

| | |
|-------------------------------|--|
| Phototransformation | Water - DT ₅₀ : 1.7 hours |
| Stability (hydrolysis) | pH7 - Half-life : 5 hours 50°C @ °C |
| Biodegradation | Water - Degradation (%) 2: 28 days Water - Degradation (%) 97: 22 hours |

12.3. Bioaccumulative potential

Partition coefficient Not applicable.

Ecological information on ingredients.**N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamine**

Bioaccumulative potential BCF: 1.2 ~ 23, Cyprinus carpio (Common carp)

12.4. Mobility in soil

Mobility Not available.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment Not available.

12.6. Other adverse effects

Other adverse effects Not available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

| | |
|----------------------------|---|
| General information | Only experts should be permitted to carry out disposal of this material. |
| Disposal methods | Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. |

SECTION 14: Transport information**14.1. UN number**

| | |
|-------------------------|------|
| UN No. (ADR/RID) | 3077 |
| UN No. (IMDG) | 3077 |
| UN No. (ICAO) | 3077 |

14.2. UN proper shipping name

KUMHO 1799

Proper shipping name (ADR/RID) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-(1,3-DIMETHYLBUTYL)-N'-PHEN-YL-P-PHENYLENEDIAMINE)

Proper shipping name (IMDG) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-(1,3-DIMETHYLBUTYL)-N'-PHEN-YL-P-PHENYLENEDIAMINE)

Proper shipping name (ICAO) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (N-(1,3-DIMETHYLBUTYL)-N'-PHEN-YL-P-PHENYLENEDIAMINE)

14.3. Transport hazard class(es)

ADR/RID class 9

IMDG class 9

ICAO class/division 9

14.4. Packing group

ADR/RID packing group III

IMDG packing group III

ICAO packing group III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

**14.6. Special precautions for user**

EmS F-A, S-F

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Not available.

Annex II of MARPOL 73/78
and the IBC Code

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Authorisations (Title VII Regulation 1907/2006) No specific authorisations are known for this product.

Restrictions (Title VIII Regulation 1907/2006) No specific restrictions on use are known for this product.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Issued by KIST Europe

Revision date 06/04/2018

Revision 2

SDS number 20630

KUMHO 1799

Hazard statements in full

H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H351 Suspected of causing cancer.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H411 Toxic to aquatic life with long lasting effects.

EUH208 Contains N-(1,3-Dimethylbutyl)-N'-phenyl-1,4-phenylenediamine. May produce an allergic reaction.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.