

MATERIAL SAFETY DATA SHEET

1. Identification of the substance or mixture and of the supplier

A. GHS product identifier

BULLSPower - ENGINE COATING TREATMENT FOR GASOLINE, DIESEL, LPG
ENGINE

B. Recommended use of the chemical and restrictions on use

Recommended use Engine oil additive

C. Manufacturers

Company name BULLSONE

Address 7F, Dabong Tower, 418, Teheran-ro Gangnam-gu, Seoul, 135-839, Korea

Emergency phone number 82-2-2106-7777

Respondent Han Dong Jin

Fax 032-874-9952

2. Hazards identification

A. GHS classification of the substance/mixture

Acute toxicity (oral) : Category 4

Reproductive toxicity : Category 1B

Hazardous to the aquatic environment (chronic) : Category 3

B. GHS label elements, including precautionary statements

Pictogram and symbol :



Signal word : Danger

Hazard statements :

H302 Harmful if swallowed.

H360 May damage fertility or the unborn child.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

Precaution

P201 Obtain special instructions before use.

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

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P281 Use personal protective equipment as required.

Treatment

P301+P312 If swallowed: Call a poison center or doctor/physician if you feel unwell.

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

P330 Rinse mouth.

Storage

P405 Store locked up.

Disposal

P501 Dispose the contents/container in accordance with local/regional/national/international regulations.

C. Other hazard information not included in hazard classification (NFPA)

Health 1

Flammability 1

Reactivity Not available

3. Composition/information on ingredients

Chemical Name	Common Name(Synonyms)	CAS number	EC number	Content (%)
Petroleum Hydrocarbon	Aceite de base sin especificar	64742-54-7	265-157-1	50~60 %
dispersant	Mineral Oil			< 10 %
Over-based calcium phenate				< 10 %
Calcium long-chain alkaryl sulfonate				< 10 %
Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene				< 5 %
Hexanedioic acid, 1,6-ditridecyl ester, Ditridecyl				20~30 %
Mixture of Molybdenum dialkyl dithio carbamate				< 10 %

4. First aid measures

A. Eye contact

- Call emergency medical service.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

B. Skin contact

- Call emergency medical service.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.

C. Inhalation

- If exposed or concerned: Get medical advice/ attention.
- Move victim to fresh air.
- Keep victim warm and quiet.

D. Ingestion

- If exposed or concerned: Get medical advice/ attention.
- Rinse mouth.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

E. Indication of immediate medical attention and notes for physician

- Exposures require specialized first aid with contact and medical follow-up .
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. Fire fighting measures

A. Suitable (and unsuitable) extinguishing media

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.

B. Specific hazards arising from the chemical

- May decompose at high temperatures into forming toxic gases.
- Containers may explode when heated.

- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

C. Special protective equipment and precautions for fire-fighters

- Rescuers should put on appropriate protective gear.
- Evacuate area and fight fire from a safe distance.
- Substance may be transported in a molten form.
- Some may be transported hot.
- 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; Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- 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.
- Fire involving Tanks; For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

- Clean up spills immediately, observing precautions in Protective Equipment section.
- Isolate hazard area.
- Keep unnecessary and unprotected personnel from entering.
- Eliminate all ignition sources.
- Stop leak if you can do it without risk.
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Cover with plastic sheet to prevent spreading.
- Prevent dust cloud.
- Please note that there are materials and conditions to avoid.

B. Environmental precautions and protective procedures

- Avoid release to the environment.
- Prevent entry into waterways, sewers, basements or confined areas.

C. The methods of purification and removal

- Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
- Absorb the liquid and scrub the area with detergent and 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.
- Powder Spill; Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.
- Small Spill; Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

7. Handling and storage

A. Precautions for safe handling

- Do not handle until all safety precautions have been read and understood.
- Wash skin thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Use carefully in handling/storage.
- Loosen closure cautiously before opening.
- Avoid breathing vapors from heated material.
- Do not enter storage area unless adequately ventilated.

- Please note that there are materials and conditions to avoid.
- Be careful to high temperature.

B. Conditions for safe storage

- Store locked up.
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
- Keep away from food and drinking water.

8. Exposure controls/personal protection

A. Occupational Exposure limits

Korea regulation

Petroleum Hydrocarbon TWA = 5 mg/m³ STEL = 10 mg/m³

Over-based calcium phenate CAS No. 107-21-1; STEL: 40 ppm (100 mg/m³)

ACGIH regulation

Petroleum Hydrocarbon TWA 5 mg/m³ STEL 5 mg/m³

dispersant Mineral oil; TWA: 5 mg/m³, STEL: 10 mg/m³

Calcium long-chain alkaryl sulfonate Mineral oil; TWA: 5 mg/m³/CAS No.7778-18-9; TWA: 10 mg/m³

Biological exposure index : Not available

OSHA regulation

Petroleum Hydrocarbon TWA = 5 mg/m³

dispersant Mineral oil; TWA: 5 mg/m³

Calcium long-chain alkaryl sulfonate Mineral oil; TWA: 5 mg/m³ /CAS No.7778-18-9; TWA : 15 mg/m³ (total dust), TWA : 5 mg/m³ (respirable dust)

NIOSH regulation

Petroleum Hydrocarbon TWA = 5 mg/m³, STEL = 5 mg/m³

Calcium long-chain alkaryl sulfonate CAS No.7778-18-9; TWA : 10 mg/m³ (total dust), TWA : 5 mg/m³ (respirable dust)

EU regulation : Not available

Other

dispersant Mineral oil; Canada - TWA: 5 mg/m³, STEL: 10 mg/m³ EH40(UK)(Europe, 2002)-TWA: 5 mg/m³ (8 hour) NOHSC(Australia, 2003)-TWA: 5 mg/m³(8 hour)

Calcium long-chain alkaryl sulfonate Mineral oil; Canada - TWA: 5 mg/m³, STEL: 10 mg/m³ EH40(UK)(Europe, 2002)-TWA: 5 mg/m³ (8 hour) NOHSC(Australia, 2003)-TWA: 5 mg/m³(8 hour)

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene, 68411-46-1; { ** Phrase language not available: [3] BAS01 - HPK49974 ** } (1 mg/m³)

Mixture of Molybdenum dialkyl dithio carbamate Occupational Safety and Health Regulations: - Mixture of Molybdenum dialkyl dithio carbamate(Total dust);TWA: 10mg/m³ - Mineral oil;TWA:5mg/m³,STEL: 10mg/m³

B. Appropriate engineering controls

- Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
- Facilities for storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

C. Personal protective equipment

Respiratory protection

- Wear NIOSH or European Standard EN 149 approved full or half face piece (with goggles) respiratory protective equipment when necessary.
- In case exposed to gaseous/liquid material, the respiratory protective equipments as follow are recommended. escape full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or escape half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or direct full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or powered air-purifying gas mask.

- In lack of oxygen(< 19.5%), wear the supplied-air respirator or self-contained breathing apparatus.oxygen

Eye protection

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

Hand protection

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

Body protection

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

9. Physical and chemical properties

A. Appearance

Description Liquid

Color Darkness liquid

B. Odor Mild typical odor

C. Odor threshold Not available

D. pH Not applicable

E. Melting point/freezing point Not applicable

F. Initial boiling point and boiling range Not applicable

G. Flash point > 200 °C

H. Evaporation rate Not available

I. Flammability (solid, gas) Not applicable

J. Upper/lower flammability or explosive limits Not available

K. Vapor pressure

L. Solubility (ies) Not available

M. Vapor density Not available

N. Specific gravity 0.904

O. Partition coefficient: n-octanol/water Not available

P. Auto ignition temperature Not available

Q. Decomposition temperature Not available

R. Viscosity 50.0 cSt

S. Molecular weight Not available

10. Stability and reactivity

A. Chemical stability and Possibility of hazardous reactions:

- May decompose at high temperatures into forming toxic gases.
- Containers may explode when heated.
- Some of these materials may burn, but none ignite readily.
- Non-combustible, substance itself does not burn but may decompose upon heating, then produce corrosive and/or toxic fumes.

B. Conditions to avoid:

- Heat, sparks or flames

C. Incompatible materials:

- Combustibles, reducing agents

D. Hazardous decomposition products:

- Corrosive and/or toxic fume
- Irritating and/or toxic gases
- Irritating, corrosive and/or toxic gases

11. Toxicological information

A. Information of Health Hazardous:

Acute toxicity

Oral [Category 4] (ATEmix = 1,215.48 mg/kg bw)

- **Petroleum Hydrocarbon** : Mouse LD₅₀ > 5,000 mg/kg
- **dispersant** : Rat LD₅₀ = 39,400 mg/kg
- **Over-based calcium phenate** : Rat LD₅₀ > 5,000 mg/kg
- **Calcium long-chain alkaryl sulfonate** : Rat LD₅₀ = 25,000 mg/kg
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : Rat LD₅₀ > 2,000 mg/kg (OECD TG 401)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : Rat LD₅₀ > 15,000 mg/kg (OECD TG 401)

Dermal [Not classified]

- **Petroleum Hydrocarbon** : Rabbit LD₅₀ > 5,000 mg/kg (Chronic – irritating, skin diseases)
- **dispersant** : Rabbit LD₅₀ > 10,000 mg/kg
- **Over-based calcium phenate** : Rabbit LD₅₀ > 4,000 mg/kg
- **Calcium long-chain alkaryl sulfonate** : Rabbit LD₅₀ > 10,000 mg/kg
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : Rat LD₅₀ > 2,000 mg/kg
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : Rabbit LD₅₀ > 5,000 mg/kg

Inhalation [Not classified]

- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : Rat LC₅₀ > 3.2 mg/L/4hr (OECD TG 403)

Skin corrosion/ irritation [null]

- **Petroleum Hydrocarbon** : Slightly irritating in prolonged, repeated contact
- **dispersant** : If the mixture comes in contact with skin repeatedly or for a prolonged time, natural fat in the skin may be removed which induces non-allergic contact dermatitis and may be absorbed through the skin.
- **Over-based calcium phenate** : The 24-72 hour EU skin irritation scores for erythema and edema, respectively, in rabbits are: 0.3, 0.1.
- **Calcium long-chain alkaryl sulfonate** : If the mixture comes in contact with skin repeatedly or for a prolonged time, natural fat in the skin may be removed which induces non-allergic contact dermatitis and may be absorbed through the skin.
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : In test on skin irritation with rabbits, skin irritations were not observed. (OECD TG 404)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : In skin irritation test with rabbits, very slight erythema which was fully reversible within 48 hr(OECD TG 404, GLP).

Serious eye damage/ irritation [null]

- **Petroleum Hydrocarbon** : Stimulus
- **dispersant** : Not irritating to eyes.
- **Over-based calcium phenate** : The mean 24-72 hour EU eye irritation scores in rabbits for corneal opacity, iritis, conjunctival redness, and conjunctival chemosis, respectively, are: 0, 0, 1.6, 0.4.
- **Calcium long-chain alkaryl sulfonate** : Irritating to eyes Not applicable to the classification EU R41 or R36.
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : In test on eyes irritation with rabbits, eyes irritations were not observed. (OECD TG 405)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : In eye irritation test with rabbits, no corneal, iridial or conjunctival effects were procuded.
- **Mixture of Molybdenum dialkyl dithio carbamate** : Molybdenum compounds: Minimal irritation to rabbit's eye.

Respiratory sensitization [Not available]**Skin sensitization** [Not classified]

- **Over-based calcium phenate** : This material did not cause skin sensitization reactions in a Human Repeated Insult Patch Test.
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : In test on skin sensitization with guinea pigs, skin sensitization were not observed.(OECD TG 406)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : In skin sensitization test with guinea pigs,

significant dermal responses were observed at the highest concentration of 50%, but not at the lower concentrations(OECD TG 406).

Carcinogenicity [Not classified]

KOREA-ISHL, IARC, NTP, OSHA, ACGIH, EU Regulation 1272/2008: not listed

Petroleum Hydrocarbon : Highly refined mineral oil is classified to Category 3 by International Agency for Research on Cancer (IARC) (Findings in humans : data lacking, Findings in animals : data lacking)

Over-based calcium phenate : The hazard evaluation is based on data for components or a similar material.

Mixture of Molybdenum dialkyl dithio carbamate : No data are available to define the carcinogenic potential of this material.

Mutagenicity [Not classified]

- **Over-based calcium phenate** : The hazard evaluation is based on data for components or a similar material.

- "**Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl** : Negative reactions were observed in in vitro Bacterial Reverse Mutation Assay(OECD TG 471, GLP), and in vivo Mammalian Erythrocyte Micronucleus Test(OECD TG 474).

- **Mixture of Molybdenum dialkyl dithio carbamate** : Reference: Molybdenum compounds: Negative reaction were observed in bacterial mutation test.; Negative reaction were observed in chromosome aberration test.(CHL cells and In vitro lymphoid cells test)

Reproductive toxicity [Category 1B]

- **Over-based calcium phenate** : The hazard evaluation is based on data for components or a similar material.

- "**Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl** : In reproductive(OECD TG 415, GLP, read-across ; Di-(2-ethylhexyl) Adipate)/developmental(OECD TG 414, GLP, read-across ; Di(2-Ethylhexyl) toxicity test with rats, no significant adverse effects were observed.

Specific target organ toxicity (single exposure) [Not classified]

- **dispersant** : Inhalation : Breathing oil mists or vapors at high temperatures may cause respiratory diseases.

- **Over-based calcium phenate** : - The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components. - The hazard evaluation is based on data for components or a similar material.

- **Calcium long-chain alkaryl sulfonate** : Inhalation : Breathing oil mists or vapors at high temperatures may cause respiratory diseases.

- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : In acute oral toxicity test with rats, no signs of toxicity were observed.(OECD TG 401)

- "**Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl** : In acute oral toxicity study with rats, clinical sign of diarrhoea was observed (OECD TG 401).

Specific target organ toxicity (repeat exposure) [Not classified]

- **Over-based calcium phenate** : The hazard evaluation is based on data for components or a similar material.

- "**Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl** : In repeated dermal toxicity test with rats, no adverse effects were observed(OECD TG 411, GLP).

Aspiration Hazard [Not available]

12. Ecological information

A. Ecological toxicity

- Acute toxicity : [Not classified] (ATEmix = 359.89148mg/ℓ)

- Chronic toxicity : [Category 3]

Fish

- **Petroleum Hydrocarbon** : NOEC - 7d, > 5000 mg/ℓ

- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : 96hr-LC₅₀ (*Brachydanio rerio*) > 71 mg/L (OECD TG 203)

- "**Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl** : 96hr-LC₅₀ > 5000 mg/L (OECD TG 203)

crustacean

- **Petroleum Hydrocarbon** : NOEC - 7d, 552 mg/ℓ
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : 48hr-EC₅₀ (*Daphnia magna*) = 51 mg/L (OECD TG 202, part 1)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : 24hr-EC₅₀ = 4800 mg/L (OECD TG 202)
- Algae**
- **Over-based calcium phenate** : 72hr-LC₅₀ (*Selenastrum capricornutum*) > 1000 mg/L (ELR50 (growth rate))
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : 72hr-EC₅₀ > 100 mg/L (The total organism)(OECD TG 201)

B. Persistence and degradability

Persistence

- **dispersant** : This product contains components that can be persistent in the environment
- **Over-based calcium phenate** : May cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from products of a similar structure and composition.
- **Calcium long-chain alkaryl sulfonate** : This product contains components that can be persistent in the environment
- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : High persistency (log Kow is more than 4 estimated.) (Log Kow = 7)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : High persistency (log Kow is more than 4 estimated.) (Log Kow = 13.17) ((Q)SAR , read-across ; C13/C13 FA component of Ditricecyl adipate)

Degradability

- **Petroleum Hydrocarbon** : Does not degrade immediately but has inherent biodegradability as in OECD Guidelines.
- **Over-based calcium phenate** : May cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from products of a similar structure and composition.
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : Hydrolysis : Half-life 1850 days(pH 7, 25 °C)(OECD TG 111, read-across ; Dibutyl adipate)
- **Mixture of Molybdenum dialkyl dithio carbamate** : Molybdenum compounds: Not readily biodegradable.

C. Bioaccumulative potential

Bioaccumulation

- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 27) (read-across ; Di (2-ethylhexyl)[14C] adipate)
- **Mixture of Molybdenum dialkyl dithio carbamate** : Molybdenum compounds: Not potentially bioaccumulative even though the Pow is high, because of the high molecular weight.

Biodegradation

- **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : Not likely to biodegrade. (OECD 301B; ISO 9439; 92/69/EEC, C.4-C)
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : As well-biodegraded, it is expected to have low accumulation potential in living organisms (= 75.6% biodegradation was observed after 28 days) (OECD TG 301 B)

D. Mobility in soil

- **Petroleum Hydrocarbon** : After floating for a while, oil components may move to the soil.
- **"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl** : High potency of mobility to soil. (Koc = 17140000) (25 °C)((Q)SAR)

E. Other hazardous effect

- **Petroleum Hydrocarbon** : Prolonged exposure in water may affect aquatic organisms. - **dispersant** : German Water quality(class): 1 - **Calcium long-chain alkaryl sulfonate** : German Water quality(class): 1 - **Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene** : (1)Ecological toxicity-microbe/activated sludge affect: 3hr-EC50 > 100 mg/L, activated sludge(OECD TG 209) (2)The product should not be released into the environment in an uncontrolled way. - **Mixture of Molybdenum dialkyl dithio carbamate** : Ecotoxicity: Respiration inhibition effects(Activated sewage sludge): EC50(3h) > 1,000 mg/l

13. Disposal considerations

A. Disposal method

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

B. Disposal precaution

- Consider the required attentions in accordance with waste treatment management regulation.

14. Transport information

A. UN Number Not applicable

B. UN Proper shipping name Not applicable

C. Transport Hazard class Not applicable

D. Packing group Not applicable

E. Marine pollutant Not applicable

F. Special precautions

in case of fire Not applicable

in case of leakage Not applicable

15. Regulatory information**A. Occupational Safety and Health Regulation**

Petroleum Hydrocarbon : Occupational exposure limits listed

Over-based calcium phenate : Work environment monitoring listed (6 months) ; CAS No. 107-21-1

Over-based calcium phenate : Health examination agent (12 months) ; CAS No. 107-21-1

Over-based calcium phenate : Occupational exposure limits listed ; CAS No. 107-21-1

Over-based calcium phenate : Administration subject listed ; CAS No. 107-21-1

Calcium long-chain alkaryl sulfonate : Occupational exposure limits listed ;CAS No. 7778-18-9

B. Toxic Chemical Control Act

Petroleum Hydrocarbon : Existing Chemical Substance KE-12546

Over-based calcium phenate : Existing Chemical Substance ; CAS No. 107-21-1: KE-13169

Calcium long-chain alkaryl sulfonate : Existing Chemical Substance ; CAS No. 115733-10-3: KE-02613/CAS No. 7778-18-9: KE-04614

Benzenamine, N-phenyl-, reaction products with 2,4,4-trimethylpentene : Existing Chemical Substance ; CAS No. 68411-46-1: KE-28307

"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl : Existing Chemical Substance (KE-18732)

Mixture of Molybdenum dialkyl dithio carbamate : Existing Chemical Substance

Mixture of Molybdenum dialkyl dithio carbamate : Non-Toxic Chemicals ; CAS No. 253873-84-6: 2003-3-2459 / CAS No. 253873-84-6: 2003-3-2459

C. Dangerous Material Safety Management Regulation

Over-based calcium phenate : Dangerous Material Safety Management Regulation

Calcium long-chain alkaryl sulfonate : Dangerous Material Safety Management Regulation

Mixture of Molybdenum dialkyl dithio carbamate : Dangerous Material Safety Management Regulation

D. Wastes Control Act Not regulated**E. Other regulation (internal and external)****Internal information**

Persistent Organic Pollutants Acts Not regulated

External information**EU classification(classification)**

Petroleum Hydrocarbon : Classification Carc. Cat. 2; R45

"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl : Classification Not classified

EU classification(risk phrases)

Petroleum Hydrocarbon : Hazard statements R45

"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl : Hazard statements Not applicable

EU classification(safety phrases)

Petroleum Hydrocarbon : Precautionary statements S53, S45

"Hexanedioic acid, 1,6-ditridecyl ester , Ditricecyl : Precautionary statements Not applicable

EU SVHC list Not regulated
EU Authorisation List Not regulated
EU Restriction list Not regulated
U.S.A management information (OSHA Regulation) Not regulated
U.S.A management information (CERCLA Regulation) Not regulated
U.S.A management information (EPCRA 302 Regulation) Not regulated
U.S.A management information (EPCRA 304 Regulation) Not regulated
U.S.A management information (EPCRA 313 Regulation) Not regulated
Substance of Roterdame Protocol Not regulated
Substance of Stockholme Protocol Not regulated
Substance of Montreal Protocol Not regulated

Foreign Inventory Status
dispersant

U.S.A management information Section 8(b) Inventory (TSCA): Present
 Japan management information Existing and New Chemical Substances (ENCS): Present
 China management information Inventory of Existing Chemical Substances (IECSC): Present
 Canada management information Substances List : Present
 Australia management information Inventory of Chemical Substances (AICS): Present
 Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present
 U.S. SARA Title III Section 311/312 hazard classification: SARA 311/312 annoying mist / only dust

Over-based calcium phenate

U.S.A management information Section 8(b) Inventory (TSCA): Present
 Japan management information Existing and New Chemical Substances (ENCS): Secondary notification by the importer may be required.
 China management information Inventory of Existing Chemical Substances (IECSC): Present
 Canada management information Domestic Substances List (DSL): Present
 Australia management information Inventory of Chemical Substances (AICS): Present
 Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Calcium long-chain alkaryl sulfonate

U.S.A management information Section 8(b) Inventory (TSCA): Present
 Japan management information Existing and New Chemical Substances (ENCS): Present
 China management information Inventory of Existing Chemical Substances (IECSC): Present
 Canada management information Substances List : Present
 Australia management information Inventory of Chemical Substances (AICS): Present
 Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

"Hexanedioic acid, 1,6-ditridecyl ester , Ditridecyl

U.S.A management information Section 8(b) Inventory (TSCA): Present
 Japan management information Existing and New Chemical Substances (ENCS): (2)-861
 China management information Inventory of Existing Chemical Substances (IECSC): Present 15791
 Canada management information Domestic Substances List (DSL): Present
 Australia management information Inventory of Chemical Substances (AICS): Present
 New Zealand management information Inventory of Chemicals (NZIoC): May be used as a single component chemical under an appropriate group standard
 Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Mixture of Molybdenum dialkyl dithio carbamate

U.S.A management information Section 8(b) Inventory (TSCA): Present
 Japan management information Existing and New Chemical Substances (ENCS): Present

16. Other information

A. Information source and references

hreshold limit values ofr chemical substances and physical agents and biological exposure indices, ACGIH(2012)
 Kukdong oil & Chemicals Co, Ltd MSDS (Color) , (Odor) , (Flash point) , (Solubility (ies)) , (Specific gravity) , (Viscosity) , (Oral) , (Dermal) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Carcinogenicity) , (Fish) , (crustacean) , (Degradability) , (Mobility in soil) , (Other hazardous effect)
 Korea Occupational Health & Safety Agency; <http://www.kosha.net>
 National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>

National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
Waste Control Act enforcement regulation attached [1]
Chevron Oronite MSDS (Description) , (Color) , (Odor) , (pH) , (Flash point) , (Vapor pressure) ,
(Solubility (ies)) , (Specific gravity) , (Viscosity) , (Oral) , (Dermal) , (Skin corrosion/ irritation) ,
(Serious eye damage/ irritation) , (Skin sensitization) , (Carcinogenicity) , (Mutagenicity) ,
(Reproductive toxicity) , (Specific target organ toxicity (single exposure)) , (Specific target organ
toxicity (repeat exposure)) , (Algae) , (Persistence) , (Degradability)
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
Waste Control Act enforcement regulation attached [1]
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
Waste Control Act enforcement regulation attached [1]
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
BASF MSDS (Other) , (Description) , (Color) , (Odor) , (pH) , (Initial boiling point and boiling range) ,
(Flash point) , (Vapor pressure) , (Solubility (ies)) , (Specific gravity) , (Decomposition temperature) ,
(Viscosity) , (Oral) , (Dermal) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin
sensitization) , (Specific target organ toxicity (single exposure)) , (Fish) , (crustacean) , (Algae) ,
(Biodegradation) , (Other hazardous effect)
EU CLP; <http://esis.jrc.ec.europa.eu/index.php?PGM=cla>
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
NIOSH Pocket Guide; <http://www.cdc.gov/niosh/npg/npgdcas.html>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
National Toxicology Program; http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm
Waste Control Act enforcement regulation attached [1]
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
EU CLP; <http://esis.jrc.ec.europa.eu/index.php?PGM=cla>
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
LookChem; <http://www.lookchem.com/> (Initial boiling point and boiling range)
NIOSH Pocket Guide; <http://www.cdc.gov/niosh/npg/npgdcas.html>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>
National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>
National Toxicology Program; http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm
REACH information on registered substances; [http://apps.echa.europa.eu/registered/registered-](http://apps.echa.europa.eu/registered/registered-sub.aspx)
sub.aspx (Description) , (Melting point/freezing point) , (Flash point) , (Vapor pressure) , (Solubility
(ies)) , (Specific gravity) , (Partition coefficient: n-octanol/water) , (Viscosity) , (Molecular weight) ,
(Oral) , (Dermal) , (Inhalation) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin
sensitization) , (Mutagenicity) , (Reproductive toxicity) , (Specific target organ toxicity (single
exposure)) , (Specific target organ toxicity (repeat exposure)) , (Fish) , (crustacean) , (Persistence) ,
(Degradability) , (Bioaccumulation) , (Biodegradation) , (Mobility in soil)
TOMES-LOLI®; <http://www.rightanswerknowledge.com/loginRA.asp>
Waste Control Act enforcement regulation attached [1]
Emergency Response Guidebook 2008;
http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; <http://monographs.iarc.fr>
Korea Occupational Health & Safety Agency; <http://www.kosha.net>
NIOSH Pocket Guide; <http://www.cdc.gov/niosh/npg/npgdcas.html>
National Chemicals Information System; <http://ncis.nier.go.kr/ncis/>

National Emergency Management Agency-Korea dangerous material inventory management system;
<http://www.nema.go.kr/hazmat/main/main.jsp>

Our testing data.

UN Recommendations on the transport of dangerous goods 17th

Waste Control Act enforcement regulation attached [1]

hreshold limit values ofr chemical substances and physical agents and biological exposure indices,
ACGIH(2012)

B. Issuing date 28. June. 2013

C. Revision number and date

revision number

date of the latest revision

D. Others

- Revised Material Safety Data Sheet based on the amendments made on the Ministry of Employment and Labor Public Notice on Standard for Classification Labeling of Chemical Substance and Material Safety Data Sheet.
- This MSDS is authored in pursuant to the Article 41 of the Occupational Safety and Health Act.
- The content is based on the latest information and knowledge that we currently possess.
- This MSDS was authored to aid buyer, processor or any other third person who handles the chemical of subject in the MSDS; additionally, it does not warrant suitability of the chemical for special purposes or the commercial use of statements that approves the use of it in combination with other chemicals as well as technical or legal liabilities.