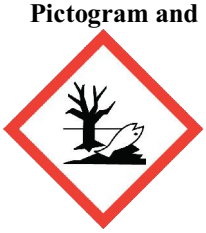
MATERIAL SAFETY DATA SHEET

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

A. GHS product identifier FIRSTCLASS CAR SHAMPOO
B. Recommended use of the chemical and restrictions on use
Recommended use shampoo for car
Restrictions on use Use only as intended
C. Manufacturers
Company name BULLSONE
Address 7F, Dabong Tower, 418, Teheran-roGangnam-gu, Seoul, 135-839, Korea
Emergency phone number 82-2-2106-7777
Respondent Han Dong Jin

2. Hazards identification

A. GHS classification of the substance/mixture
Hazardous to the aquatic environment (acute hazard) : Category 1
Hazardous to the aquatic environment (chronic) : Category 1
B. GHS label elements, including precautionary statements
Pictogram and symbol :



Signal word : Warning
Hazard statements :
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements
Precaution
P273 Avoid release to the environment.
Treatment
P391 Collect spillage.
Storage : Not applicable
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 2
Flammability 1
Reactivity Not available

3. Composition/information on ingredients

Chemical Name	Common Name(Synonyms)	CAS number	EC number	Content (%)
Poyethylene glycol lauryl ether		9002-92-0	500-002-6	< 10 %
Lauryl dimethylamine oxide				< 1 %
Coconut oil amidopropylbetaine				< 30 %
Fragrance				<5 %
2,6-Di-tert-butyl-4-methylphenol		128-37-0	204-881-4	<5 %
4-isopropenyl-1-		5989-27-5	227-813-5	<5 %

methylcyclohexene				
Polyoxyethylene (150) PentaerythritylTetrastearate		867045-92-9		<5 %
Preservatives				< 0.5 %
Water				>50 %

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.

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

D. Ingestion
- Call emergency medical service.

E. Indication of immediate medical attention and notes for physician
- 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
- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning
- 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.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- 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
- Collect spillage.
- 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
- Wash ... thoroughly after handling.
- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Please note that there are materials and conditions to avoid.
- Please work with reference to engineering controls and personal protective equipment.
- Be careful to high temperature.

B. Conditions for safe storage
- Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.

8. Exposure controls/personal protection

A. Occupational Exposure limits

Korea regulation

2,6-Di-tert-butyl-4-methylphenol TWA = 2 mg/m³

ACGIH regulation

2,6-Di-tert-butyl-4-methylphenol TWA 2 mg/m³

Biological exposure index : Not available

OSHA regulation : Not available

NIOSH regulation

2,6-Di-tert-butyl-4-methylphenol TWA= 10 mg/m³

EU regulation : Not available

Other

2,6-Di-tert-butyl-4-methylphenol Australia: TWA = 10 mg/m³ Canada-Alberta: TWA = 10 mg/m³ Denmark: TWA = 10 mg/m³ finland: TWA = 10 mg/m³, STEL = 20 mg/m³ Newzealand: TWA = 10 mg/m³

D-Limonene Finland: TWA=25 ppm (140 mg/m³) STEL=50 ppm (280 mg/m³) Germany: TWA=5 ppm (28 mg.m³) Norway: TWA=25 ppm (140 mg/m³) STEL=37.5 ppm (175 mg/m³)

B. Appropriate engineering controls
- 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 Orange
B. Odor Orange
C. Odor threshold Not available
D. pH 7 ~ 8
E. Melting point/freezing point 0 ℃
F. Initial boiling point and boiling range 100 ℃
G. Flash point Not available
H. Evaporation rate No data
I. Flammability (solid, gas) Not available
J. Upper/lower flammability or explosive limits Not available
K. Vapor pressure No data
L. Solubility (ies) Soluble in water g/100L
M. Vapor density Not available
N. Specific gravity 1.014
O. Partition coefficient: n-octanol/water Not available
P. Auto ignition temperature Not available
Q. Decomposition temperature Not available
R. Viscosity 60 cP
S. Molecular weight Not available

10. Stability and reactivity

A. Chemical stability and Possibility of hazardous reactions:
- 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.
- Fire will produce irritating, corrosive and/or toxic gases.

B. Conditions to avoid:
- Heat, sparks or flames

C. Incompatible materials:
- Combustibles, reducing agents

D. Hazardous decomposition products:

- Material may produce irritating and highly toxic gases from decomposition by heat and combustion during burning
- Corrosive and/or toxic fume
- Irritating and/or toxic gases

11. Toxicological information

A. Information of Health Hazardous:

Acute toxicity

Oral [Not classified] (ATEmix = 12,108.18 mg/kg bw)

- **Poyethylene glycol lauryl ether** : Rat LD_{50} = 1,000 mg/kg (female)
- **Lauryl dimethylamine oxide** : Mouse LD_{50} = 8,411 mg/kg
- **Coconut oil amidopropylbetaine** : Rat $LD_{50} \geq$ 11,749 mg/kg
- **2,6-Di-tert-butyl-4-methylphenol** : Rat $LD_{50} >$ 2,930 mg/kg (OECD TG 401, GLP)
- **D-Limonene** : Rat $LD_{50} >$ 2,000 mg/kg (Female)(OECD TG 423, GLP)
- **Polyoxyethylene (150) PentaerythritylTetrastearate** : Rat $LD_{50} >$ 500 mg/kg
- **Preservatives** : Rat LD_{50} = 3,350 mg/kg (CTFA CIR Report)

Dermal [Not classified] (ATEmix = 8,550.48 mg/kg bw)

- **Poyethylene glycol lauryl ether** : Rat LD_{50} = 2,000 mg/kg (OECD TG 402)
- **Coconut oil amidopropylbetaine** : $LD_{50} \geq$ 6,450 mg/kg (Rat/Rabbit)
- **2,6-Di-tert-butyl-4-methylphenol** : Rat $LD_{50} >$ 2,000 mg/kg (OECD TG 402, GLP)
- **D-Limonene** : Rabbit $LD_{50} >$ 2 mg/kg
- **Preservatives** : Rabbit LD_{50} = 4.5 ~ 78.5 mg/kg (CTFA CIR Report)

Inhalation [Not classified] (ATEmix = 128.84 mg/L)

- **Coconut oil amidopropylbetaine** : Rat $LC_{50} \geq$ 147 mg/L/4hr
- **Preservatives** : Rat LC_{50} = 0.33 mg/kg/4hr

Skin corrosion/ irritation [null]

-**Poyethylene glycol lauryl ether** : By administration of Dodecan-1-ol,ethoxylated at dose concentration of 75 mg for 24 hrs showed mild irritation to skin of rabbits by Standard draize test.
- **Lauryl dimethylamineoxide** : - Lauryl dimethylamine oxide : rabbit - 2 ㎎/24 hr, severe irritation - Water : Not applicable
- **Coconut oil amidopropylbetaine** : - Cocamidopropylbetaine : Rabbit-very weak irritation. - Sodium chloride : Rabbit- weak irritation. - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : In test on skin irritation with rabbits, skin irritations were not observed.(OECD TG 404, GLP)
- **D-Limonene** : In skin irritation test with rabbits, skin irritations were not observed.(erythema =2, edema=1.33)(OECD TG 404, GLP)
-**Polyoxyethylene (150) PentaerythritylTetrastearate** : - In skin irritation test with rabbits, observed moderate skin irritation. - Applicants for the patch test results did not contain sensitizing properties.
-**Preservatives** : Corrosive.

Serious eye damage/ irritation [null]

-**Poyethylene glycol lauryl ether** : By the Standard draize test administration of Dodecan-1-ol,ethoxylated in the dose of 100 mg was reported to be irritating to eye of rabbit.
- **Lauryl dimethylamineoxide** : - Lauryl dimethylamine oxide : rabbit - 1%, severe irritation - Water : Not applicable
- **Coconut oil amidopropylbetaine** : - Cocamidopropylbetaine: Rabbit-Severe irritation.(OECD Guide-Line 405, GLP) - Sodium chloride: Rabbit - moderate irritation. - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : In test on eyes irritation with rabbits, eyes irritations were not observed.(OECD TG 405, GLP)
- **D-Limonene** : In eye irritation test with rabbits, eye irritations were not observed.(cornea=0, iris=0, conjunctivae=0.3, chemosis=1)
-**Polyoxyethylene (150) PentaerythritylTetrastearate** : eyes irritation test with rabbits, eyes irritation was not observed.
-**Preservatives** : highly irritating.

Respiratory sensitization [Not classified]

- **Coconut oil amidopropylbetaine** : - Water : Not applicable
-**Polyoxyethylene (150) PentaerythritylTetrastearate** : Applicants for the patch test results did not contain sensitizing properties.

Skin sensitization [Not classified]

-**Poyethylene glycol lauryl ether** :Administartion of the test substance Dodecan-1-ol, ethoxylated for 24 hrs. in adult male guinea pigs when injected intracutaneously did not produced direct or delayed sensitization reactions.
- **Coconut oil amidopropylbetaine** : - Cocamidopropylbetaine : guinea pig - No sensitization - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : Allergic reactions were not observed when exposed to human.
- **D-Limonene** : In skin sensitisation test with mice, skin sensitization were observed.(Female)(OECD TG 429, GLP)
-**Polyoxyethylene (150) PentaerythritylTetrastearate** : Applicants for the patch test results did not contain sensitizing properties.
-**Preservatives** : In skin sensitisation test with guinea pigs, skin sensitization were observed.

Carcinogenicity [Not classified]

IARC

- 2,6-Di-tert-butyl-4-methylphenol : Group 3
- D-Limonene : Group 3

ACGIH

- 2,6-Di-tert-butyl-4-methylphenol : A4

D-Limonene : Under the test conditions, there was clear evidence of carcinogenic activity for male F344/N rats, as shown by increased incidences of tubular cell hyperplasia, adenomas, and adenocarcinomas of the kidney. There was no evidence of carcinogenic activity for female F344/N rats.(OECD TG 451, GLP)

Mutagenicity [Not classified]

-**Poyethylene glycol lauryl ether** : Negative reactions were observed in vitro test(mammalian chromosome aberration test and bacterial reverse mutation assay).
- **Coconut oil amidopropylbetaine** : - Cocamidopropylbetaine: In vitro - Salmonella typhimurium/TA98, TA100, TA1535, TA1538 (Reverse mutations test ; Ames test)(GLP): It was negative regardless of the presence of metabolic activation system. - Sodium chloride: In vitro - Salmonella typhimurium/TA97, TA98, TA100, TA1535, TA1537, TA1538(reverse mutation test ; Ames test)(GLP): It was negative regardless of the presence of metabolic activation system, Nonhuman/Chromosome aberration test: Negative, CHO Cells/Chromosome aberration test:Positive - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : Negative reactions were observed in both in vitro(Bacterial gene mutation test, Chromosomal aberrations test) and in vivo(Chromosomal aberrations test, micronucleus assay).
- **D-Limonene** : Negative reactions were observed with and without metabolic activation in vitro(mammalian chromosome aberration test(OECD TG 473), sister chromatid exchange assay in mammalian cells(OECD TG 479), mammalian cell gene mutation assay(OECD TG 476)).
-**Polyoxyethylene (150) PentaerythritylTetrastearate** : Not mutagenic in AMES test phase but not a relevant mutation

Reproductive toxicity [Not classified]

-**Poyethylene glycol lauryl ether** : Human(female) was treated by endoscopic intravasal injection sclerotherapy using polidocanol. No adverse effects were detected in the newborn.
- **Coconut oil amidopropylbetaine** : - Sodium chloride : Female/Placenta injection (27 mg/kg for 15W of pregnancy): miscarriage, fetotoxicity, musculoskeletal abnormality. - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : In reproductive toxicity study with rats, no adverse effects on reproduction were found.(GLP)

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

-**Poyethylene glycol lauryl ether** : No deaths or signs of toxicity were observed.(OECD TG 402)
- **Coconut oil amidopropylbetaine** : - Sodium chloride : rat/oral (1 mg/kg/24hr): Sodium-potassium emissions effect. - Water : Not applicable
- **2,6-Di-tert-butyl-4-methylphenol** : In acute oral toxicity with rats, symptoms were not observed. (OECD TG 401, GLP)
- **D-Limonene** : In acute oral toxicity test with rats, acute toxic effects were not observed.(Female)(OECD TG 423, GLP)

- **Preservatives** : -Skin contact may cause severe irritation. -Eye contact may cause severe irritation. - Can cuase allergic reactions and burns.

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

-**Poyethylene glycol lauryl ether** : The average systolic blood pressure of rats medicated at the top dose level was not significantly different from that of the controls 2 hours after the last medication. No gross or microscopic pathologic lesions attributable to medication were noted at autopsy.

- **Coconut oil amidopropylbetaine** : - Cocamidopropylbetaine : Rat/oral (0, 250, 500, 1000mg/kg for 90d): NOAEL ≥ 250 mg/kg - Sodium chloride: In hypertensive rats injected with salt, kidney and arterial disorders, glomerulus and kidney losses were observed. Normal blood pressure rats not treated with salt were unaffected. Potassium intake prevents high blood pressure. Rat/oral (16800 mg/kg/28D): TOXIC EFFECTS: Endocrine system - changes in adrenal weight. - Water : Not applicable

- **2,6-Di-tert-butyl-4-methylphenol** : In repeated oral toxicity study with rats for 90 days, enlargement of the livers, thyroid hyperactivity were observed. (GLP)

- **D-Limonene** : In repeated oral toxicity study with mice, repeated toxicity related effects were not observed.(OECD TG 408, GLP)

Aspiration Hazard [Not classified]

12. Ecological information

A. Ecological toxicity

- Acute toxicity : [Category 1] (ATEmix = 0.12092mg/ℓ)
- Chronic toxicity : [Category 1]

Fish

-**Poyethylene glycol lauryl ether :** 96hr-LC_{50} (other) = 1.5 mg/L (Salmosalar)
- **Lauryl dimethylamine oxide :** 96hr-LC_{50} = 100 mg/L
- **Coconut oil amidopropylbetaine :** 96hr-LC_{50} = 3.33 mg/L
- **2,6-Di-tert-butyl-4-methylphenol :** 96hr-LC_{50} = 5 mg/L
- **D-Limonene :** 96hr-LC_{50} = 0.720 mg/L (OECD TG 203, GLP)
- **Preservatives :** 96hr-LC_{50} = 0.000786 mg/L ;0.19 ppm (Rainbow trout), 96hr-LC50(Bluegill sunfish)=0.28 ppm

crustacean

-**Poyethylene glycol lauryl ether :** 48hr-LC_{50} (*Daphnia magna*) = 4.780 ~ 7.580 mg/L
- **Lauryl dimethylamine oxide :** 48hr-EC_{50} = 7.3 mg/L
- **Coconut oil amidopropylbetaine :** 48hr-EC_{50} = 21.6 mg/L
- **2,6-Di-tert-butyl-4-methylphenol :** 48hr-EC_{50} = 0.48 mg/L (OECD TG 202, GLP)
- **D-Limonene :** 24hr-EC_{50} = 0.85 mg/L (20 ~ 21 ℃)(OECD TG 202, GLP), NOEC-16d, (Daphnia magna or Daphnia pulex)=0.115 mg/L

Algae

- **Lauryl dimethylamine oxide :** 24hr-ErC_{50} = 0.27 mg/L
- **Coconut oil amidopropylbetaine :** 96hr-EC_{50} = 1.74 mg/L
- **2,6-Di-tert-butyl-4-methylphenol :** 96hr-EC_{50} = 0.758 mg/L
- **D-Limonene :** 72hr-EC_{50} = 150 mg/L (OECD TG 201, GLP), readacross; CAS No. 8028-48-6, NOEC-72hr, (Desmodesmussubspicatus)=2.62 mg/L

B. Persistence and degradability

Persistence

- **Poyethylene glycol lauryl ether** : Low persistency (log Kow is less than 4 estimated.) (Log Kow = 1.937) (23 ℃)
- **Lauryl dimethylamineoxide** : Water : log Kow = -1.38
- **Coconut oil amidopropylbetaine** : Sodium chloride : log Kow = -0.46 / Water : log Kow = -1.38
- **2,6-Di-tert-butyl-4-methylphenol** : High persistency (log Kow is more than 4 estimated.) (Log Kow = 5.03)
- **D-Limonene** : High persistency (log Kow is more than 4 estimated.) (Log Kow = 4.38)
- **Preservatives** : Not likely to to be persistent.

Degradability

- **Preservatives** : Readily degradable by light or autoproteolysis.

C. Bioaccumulative potential

Bioaccumulation

-**Poyethylene glycol lauryl ether** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 120) (estimated)
- **Coconut oil amidopropylbetaine** : Sodium chloride : BCF = 3.162
- **2,6-Di-tert-butyl-4-methylphenol** : Bioaccumulation is expected to be high according to the BCF ≥ 500 (BCF = 598.4)
- **D-Limonene** : Bioaccumulation is expected to be low according to the BCF < 500 (BCF = 360.5) (Estimated)

Biodegradation
- **Poyethylene glycol lauryl ether** : This substance is ready biodegradabililty.
- **Lauryl dimethylamine oxide** : Lauryl dimethylamine oxide = 63%
- **Coconut oil amidopropylbetaine** : Cocamidopropylbetaine : 100%, 20 day (Directive 84/449/EEC, C.5 test method, concentration : 20mg/L)
- **2,6-Di-tert-butyl-4-methylphenol** : As not well-biodegraded, it is expected to have high accumulation potential in living organisms (= 4.5% biodegradation was observed after 28 days) (OECD TG 301C)
- **D-Limonene** : As well-biodegraded, it is expected to have low accumulation potential in living organisms (= 80% biodegradation was observed after 28 days)
- **Polyoxyethylene (150) PentaerythritylTetrastearate** : The original biodegradable

D. Mobility in soil
- **Poyethylene glycol lauryl ether** : Low potency of mobility to soil. (Koc = 87.36)
- **2,6-Di-tert-butyl-4-methylphenol** : High potency of mobility to soil. (Koc = 23030)
- **D-Limonene** : High potency of mobility to soil. (Koc = 6324)

E. Other hazardous effect Not available

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 3082
B. UN Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
C. Transport Hazard class 9
D. Packing group III
E. Marine pollutant YES
F. Special precautions
in case of fire F-A
in case of leakage S-F

15. Regulatory information

A. Occupational Safety and Health Regulation
2,6-Di-tert-butyl-4-methylphenol : Occupational exposure limits listed
B. Toxic Chemical Control Act
Poyethylene glycol lauryl ether : Existing Chemical Substance (KE-12935)
Lauryl dimethylamineoxide : Existing Chemical Substance ; CAS No. 1643-20-5: KE-11348/CAS No. 7732-18-5: KE-35400
Coconut oil amidopropylbetaine : Existing Chemical Substance ; CAS No. 61789-40-0: KE-01243/CAS No. 7647-14-5: KE-31387/CAS No. 7732-18-5: KE-35400
Fragrance : Existing Chemical Substance ; CAS No. 78-70-6: KE-11592
2,6-Di-tert-butyl-4-methylphenol : Existing Chemical Substance (KE-03079)
D-Limonene : Existing Chemical Substance KE-24397

Preservatives : Existing Chemical Substance ; CAS No. 26172-55-4: KE-05736/ CAS No. 2682-20-4: KE-24316/ CAS No. 7732-18-5: KE-35400
Preservatives : Toxic Chemicals ;(2012-1-644);CAS No. 26172-55-4:(2012-1-664)and mixed with substances containing over 1%;/ CAS No. 2682-20-4:(2012-1-645)and mixed with substances containing over 1%;
Water : Existing Chemical Substance (KE-35400)

C. Dangerous Material Safety Management Regulation

Coconut oil amidopropylbetaine : Dangerous Material Safety Management Regulation CAS No. 7647-14-5; Non-dangerous goods
Fragrance : Dangerous Material Safety Management Regulation CAS No. 78-70-6; Petroleum class 4-3 (non-water soluble liquid) 2000ℓ
2,6-Di-tert-butyl-4-methylphenol : Dangerous Material Safety Management Regulation Non dangerous goods

D. Wastes Control Act Not regulated

E. Other regulation (internal and external)

Internal information

Persistant Organic Pollutants Acts Not regulated

External information

EU classification(classification)

Poyethylene glycol lauryl ether : Classification Not classified
2,6-Di-tert-butyl-4-methylphenol : Classification Not classified
D-Limonene : Classification R10, Xi;38, R43, N;R50-53
Water : Classification Not classified

EU classification(risk phrases)

Poyethylene glycol lauryl ether : Hazard statements Not applicable
2,6-Di-tert-butyl-4-methylphenol : Hazard statements Not applicable
D-Limonene : Hazard statements R10, R38, R43, R50/53
Water : Hazard statements Not applicable

EU classification(safety phrases)

Poyethylene glycol lauryl ether : Precautionary statements Not applicable
2,6-Di-tert-butyl-4-methylphenol : Precautionary statements Not applicable
D-Limonene : Precautionary statements S2, S24, S37, S60, S61
Water : 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

Poyethylene glycol lauryl ether

U.S.A management information Section 8(b) Inventory (TSCA): XU
Japan management information Existing and New Chemical Substances (ENCS): (7)-97
China management information Inventory of Existing Chemical Substances (IECSC): Present30614
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): HSNO Approval: HSR003168
Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

2,6-Di-tert-butyl-4-methylphenol

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 Domestic Substances List (DSL): present
Australia management information Inventory of Chemical Substances (AICS): present

New Zealand management information Inventory of Chemicals (NZIoC):HSNO Approval: HSR002784
Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): present

D-Limonene

U.S.A management information Section 8(b) Inventory (TSCA): Present
Japan management information Existing and New Chemical Substances (ENCS): (3)-2245; (3)-2226
China management information Inventory of Existing Chemical Substances (IECSC): Present 19147
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): HSNO Approval: HSR002725
Philippines management information Inventory of Chemicals and Chemical Substances (PICCS): Present

Water

U.S.A management information Section 8(b) Inventory (TSCA): Present
Japan management information Industrial Safety and Health Law Substances (ISHL): 2-(4)-1220
China management information Inventory of Existing Chemical Substances (IECSC): Present 32224
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

16. Other information

A. Information source and references

AKRON; http://ull.chemistry.uakron.edu/erd
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
ECOTOX; http://cfpub.epa.gov/ecotox/ (Fish) , (crustacean)
EPISUITE v4.1; http://www.epa.gov/opt/exposure/pubs/episuitedl.htm (Mobility in soil)
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 Institute of Technology and Evaluation(NITE); http://www.safe.nite.go.jp/english/db.html (Vapor pressure)
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-sub.aspx (Description) , (Odor) , (pH) , (Melting point/freezing point) , (Initial boiling point and boiling range) , (Flash point) , (Solubility (ies)) , (Specific gravity) , (Partition coefficient: n-octanol/water) , (Viscosity) , (Dermal) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin sensitization) , (Mutagenicity) , (Reproductive toxicity) , (Specific target organ toxicity (single exposure)) , (Specific target organ toxicity (repeat exposure)) , (Persistence) , (Bioaccumulation) , (Biodegradation)
TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp
U.S. National library of Medicine(NLM) ChemIDplus; http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM (Oral)
U.S. National library of Medicine(NLM) Hazardous Substances Data Bank(HSDB); http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB (Color)
Waste Control Act enforcement regulation attached [1]
ECOTOX; http://cfpub.epa.gov/ecotox/
Emergency Response Guidebook 2008; http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf
Handbook of Industrial Poisoning.Korea :Shinkwang
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
National Institute of Technology and Evaluation(NITE); http://www.safe.nite.go.jp/english/db.html

TOMES; http://www.rightanswerknowledge.com/loginRA.asp
TaiDong C&S MSDS (Description) , (Color) , (Odor) , (pH) , (Solubility (ies)) , (Specific gravity) , (Viscosity) , (Molecular weight) , (Oral) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Fish) , (crustacean) , (Algae) , (Persistence) , (Biodegradation)
The Chemical Database -The Department of Chemistry at the University of Akron; http://ull.chemistry.uakron.edu/erd/
U.S. National library of Medicine(NLM) Hazardous Substances Data Bank(HSDB); http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB
UN Recommendations on the transport of dangerous goods 17th
Waste Control Act enforcement regulation attached [1]
Corporate Solution From Thomson Micromedex
ECOTOX; http://cfpub.epa.gov/ecotox/
International Uniform Chemical Information Database(IUCLID); http://esis.jrc.ec.europa.eu/
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
OECD SIDS; http://webnet.oecd.org/hpv/ui/Search.aspx
Quantitative Structure Activity Relation(QSAR)
TaiDong C&S MSDS (Description) , (Color) , (Odor) , (pH) , (Melting point/freezing point) , (Solubility (ies)) , (Viscosity) , (Molecular weight) , (Oral) , (Dermal) , (Inhalation) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Respiratory sensitization) , (Skin sensitization) , (Mutagenicity) , (Reproductive toxicity) , (Specific target organ toxicity (single exposure)) , (Specific target organ toxicity (repeat exposure)) , (Fish) , (crustacean) , (Algae) , (Persistence) , (Bioaccumulation) , (Biodegradation)
The Chemical Database -The Department of Chemistry at the University of Akron; http://ull.chemistry.uakron.edu/erd/
U.S. National library of Medicine(NLM) Chemical Carcinogenesis Research Information System(CCRIS); http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CCRIS
U.S. National library of Medicine(NLM) Genetic Toxicology Data Bank(GENETOX); http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?GENETOX
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
T. HASEGAWA CO. , LTD MSDS (Description) , (Color) , (Odor) , (Flash point) , (Solubility (ies)) , (Specific gravity)
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
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
International Uniform Chemical Information Database(IUCLID); http://esis.jrc.ec.europa.eu/ (Fish)
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
REACH information on registered substances; http://apps.echa.europa.eu/registered/registered-sub.aspx#search (Description) , (Color) , (Melting point/freezing point) , (Initial boiling point and boiling range) , (Flash point) , (Vapor pressure) , (Solubility (ies)) , (Specific gravity) , (Partition coefficient: n-octanol/water) , (Viscosity) , (Oral) , (Dermal) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin sensitization) , (Mutagenicity) , (Reproductive toxicity) , (Specific target organ toxicity (single exposure)) , (Specific target organ toxicity (repeat exposure)) , (crustacean) , (Algae) , (Persistence) , (Bioaccumulation) , (Biodegradation) , (Mobility in soil)
TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp (Other)

The Chemical Database -The Department of Chemistry at the University of Akron; http://ull.chemistry.uakron.edu/erd/ (Upper/lower flammability or explosive limits) , (Auto ignition temperature) , (Incompatible materials)
U.S. National library of Medicine (NLM) Hazardous Substances Data Bank (HSDB) ; http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB.htm (Odor) , (Vapor density) , (Molecular weight)
UN Recommendations on the transport of dangerous goods 17th
Waste Control Act enforcement regulation attached [1]
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
EPISUITE v4.1; http://www.epa.gov/opt/exposure/pubs/episuitedl.htm (Bioaccumulation) , (Mobility in soil)
EU CLP; http://esis.jrc.ec.europa.eu/index.php?PGM=cla
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
International Uniform Chemical Information Database(IUCLID); http://esis.jrc.ec.europa.eu/ (Dermal)
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
REACH information on registered substances; http://apps.echa.europa.eu/registered/registered-sub.aspx (Color) , (Initial boiling point and boiling range) , (Flash point) , (Vapor pressure) , (Solubility (ies)) , (Specific gravity) , (Partition coefficient: n-octanol/water) , (Auto ignition temperature) , (Viscosity) , (Oral) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin sensitization) , (Carcinogenicity) , (Mutagenicity) , (Specific target organ toxicity (single exposure)) , (Specific target organ toxicity (repeat exposure)) , (Fish) , (crustacean) , (Algae) , (Persistence) , (Biodegradation)
TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp (Other)
The Chemical Database -The Department of Chemistry at the University of Akron; http://ull.chemistry.uakron.edu/erd/ (Upper/lower flammability or explosive limits) , (Molecular weight)
UN Recommendations on the transport of dangerous goods 17th
Waste Control Act enforcement regulation attached [1]
American Conference of Governmental Industrial Hygienists TLVs and BEIs.
CRODA MSDS (Description) , (Color) , (Flash point)
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
Swisher, R.D., (1987), Surfactant Science Series; Vol 18: Surfactant biodegradation, 2nd Ed., (Biodegradation)
Waste Control Act enforcement regulation attached [1]
ECOTOX; http://cfpub.epa.gov/ecotox/
EPISUITE v4.1; http://www.epa.gov/opt/exposure/pubs/episuitedl.htm
EPIWIN
Emergency Response Guidebook 2008; http://phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/erg2008_eng.pdf
Industrial biocide MSDS (Description) , (Color) , (Odor) , (pH) , (Melting point/freezing point) , (Solubility (ies)) , (Specific gravity) , (Oral) , (Dermal) , (Inhalation) , (Skin corrosion/ irritation) , (Serious eye damage/ irritation) , (Skin sensitization) , (Specific target organ toxicity (single exposure)) , (Fish) , (Persistence) , (Degradability) , (Disposal precaution)
International Uniform Chemical Information Database(IUCLID); http://esis.jrc.ec.europa.eu/
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

UN Recommendations on the transport of dangerous goods 17th
Waste Control Act enforcement regulation attached [1]
AKRON; http://ull.chemistry.uakron.edu/erd (Description) , (Color) , (Melting point/freezing point) , (Initial boiling point and boiling range) , (Vapor pressure) , (Vapor density) , (Specific gravity) , (Viscosity) , (Molecular weight)
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
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
TOMES-LOLI®; http://www.rightanswerknowledge.com/loginRA.asp
Waste Control Act enforcement regulation attached [1]

B. Issuing date 16. Oct. 2013

C. Revision number and date

revision number 1

date of the latest revision2014.07.16

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.