Material Safety Data Sheet

Product	DOOSAN DX 10W		
List No.	Issuing date	Last revised date	Department
LB2780	2012-11-30	2018-01-01	Finished Lubricants R&D Team

1. Identification of the substance/mixture and of the company/undertaking

1) Product identifier

- DOOSAN DX 10W

2) Relevant identified uses of the substance or mixture and uses advised against

- Relevant identified uses : (Lubricants and additives)
- Uses advised against : Do not use for any other purpose.

3) Supplier information

○ **Manufacturer information**

- Company name [Manufacture] : GS Caltex Corporation
- Address : GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Emergency telephone number : (02) 1899-5145

2. HAZARD IDENTIFICATION

1) Hazard classification

Hazardous to the aquatic environment, long-term (chronic) Chronic 3

2) Allocation label elements

○ **Hazard pictograms**

- Not applicable

○ **Signal word**

- Not applicable

○ **Hazard statements**

- H412 Harmful to aquatic life with long lasting effects.

○ **Precautionary statements**

1) Prevention

- P273 Avoid release to the environment.

2) Response

- Not applicable

3) Storage

- Not applicable

4) Disposal

- P501 Dispose of contents/container to ....

3) Other hazards

○ **Product NFPA Level : Health , Flammability , Reactivity**

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

※ Chemical NFPA Level.

- Distillates (petroleum), hydrotreated heavy paraffinic : Health=1, Flammable=1, Reaction=0
- Business Secret1 : Health=0, Flammable=0, Reaction=0
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Health=0, Flammable=0, Reaction=0
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Health=1, Flammable=1, Reaction=0
- Ethylene glycol : Health=2, Flammable=1, Reaction=0
- Phenol, (tetrapropenyl) derivs. : Health=0, Flammable=0, Reaction=0

3. Composition/Information on ingredients

Chemical name	Trade names and Synonyms	CAS No.	EC No.	Contain Ratio(%)
Distillates (petroleum), hydrotreated heavy paraffinic		64742-54-7	265-157-1	85 ~ 95
Business Secret1				3 ~ 8
Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt		722503-70-0		1 ~ 3
Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts		68649-42-3	272-028-3	0.5 ~ 2.0
Ethylene glycol		107-21-1	203-473-3	0.1 ~ 0.5
Phenol, (tetrapropenyl) derivs.		74499-35-7		0.1 ~ 0.5

4. FIRST AID MEASURES

1) Following eye contact

- Seek immediate medial assistance.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

2) Following skin contact

- Seek immediate medial assistance.
- 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.

3) Following inhalation

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

4) Following ingestion

- Seek immediate medial assistance.

5) Advice to physician

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

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

○ **Suitable extinguishing media**

- Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.
- Use dry sand or earth to smother fire.
- Dry chemical.
- Water spray.
- Regular foam.
- CO2.

○ **Unsuitable extinguishing media**

- High-pressure water.

2) Special hazards arising from the substance or mixture

- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.

3) Special protective equipment for firefighters

- Evacuate area and fight fire from a safe distance.
- Substance 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: Cool containers with flooding quantities of water until well after fire is out.
- Fire involving Tanks: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Fire involving Tanks: ALWAYS stay away from tanks engulfed in fire.

6. ACCIDENTAL RELEASE MEASURES

1) Health considerations and protective equipment

- 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 materials and conditions to be avoided.

2) Environmental precautions

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

3) For cleaning up

- Absorb spill 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.
- Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

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

7. HANDLING AND STORAGE

1) Precautions for safe handling

- Follow all MSDS/label precautions even after container is emptied because they may retain product residues.
- Please note that materials and conditions to be avoided.
- Handling refer to engineering control/personal protection section.
- CAUTION: High temperature.

2) Conditions for safe storage (including any incompatibilities)

- Not available

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

1) Chemical exposure limits, Biological exposure standard

○ **Occupational exposure limits (Domestic)**

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA Not applicable, STEL Not applicable
- Business Secret1 : TWA Not applicable, STEL Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : TWA Not applicable, STEL Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : TWA Not applicable, STEL Not applicable
- Ethylene glycol : TWA Not applicable, STEL C 100 mg/㎥
- Phenol, (tetrapropenyl) derivs. : TWA Not applicable, STEL Not applicable

○ **Occupational exposure limits (ACGIH)**

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA 5 mg/m3, STEL Not applicable
- Business Secret2 : TWA Not applicable, STEL Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : TWA Not applicable, STEL Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : TWA Not applicable, STEL Not applicable
- Ethylene glycol : TWA 25 ppm TWA (vapor fraction), STEL 50 ppm STEL (vapor fraction); 10 mg/m3 STEL (inhalable particulate matter, aerosol only)
- Phenol, (tetrapropenyl) derivs. : TWA Not applicable, STEL Not applicable

○ **Biological limit values**

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret3 : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Ethylene glycol : Not applicable
- Phenol, (tetrapropenyl) derivs. : Not applicable

2) Appropriate engineering controls

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

3) Personal protection equipment

○ **Respiratory protection**

- If high frequency of use or exposure, wear air respirator.
- Wear breathing protection, which needs a confirmation from the Korea Occupational Safety and Health Agency.

○ Eye protection

- Wear suitable protective goggles and face shields.
- Wear face shield to protect eyes from scattering dust or hazardous liquid.
- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

○ Hand protection

- Wear insulated gloves.
- Wear suitable protective gloves.
- Wear Non-moisture permeable chemical resistance protective gloves(latex, nitrile rubber, PVC) for prevent skin contact.

○ Body protection

- Wear suitable protective clothing.
- When contact is likely wear chemical resistant, oil and grease resistant, non-moisture permeable shoes and clothes.

9. PHYSICAL AND CHEMICAL PROPERTIES

Item	Input Value
Apperance	Clear, light brown liquid
Smell	a specific smell of Hydrocarbon
Smell Threshold	No Data
pH	Notapplicable
Melting/Freezing Poing	No Data
Boilling Point	>280℃
Flash Point	232 ℃
Evaporating Rate	No Data
Flammability	Notapplicable
Explosibility Range	No Data
Steam Pressure	<0.1 Kpa @ 20℃
Solubility	No Data
Vapor Density	5 mmHg (at 25℃)
Specific Gravity	0.86
Distribution Coefficient	No Data
SelfIgnition Temperature	No Data
Pyrolysis Temperature	No Data
Viscosity	6.82 mm2/s (at 100℃)
Molecular Weight	No Data

10. STABILITY AND REACTIVITY

1) Stability and hazardous reactivity

- Containers may explode when heated.

- Some may burn but none ignite readily.

- Fire may produce irritating and/or toxic gases.

2) Conditions to avoid

- Heat.

3) Incompatible materials

- Not available

4) Hazardous decomposition products

- Irritating and/or toxic gas.

11. TOXICOLOGICAL INFORMATION

1) Exposure route information

○ **Inhalation**

- After inhalation: No data

○ **Skin Contact**

- Following skin contact: No data

○ **Eye Contact**

- After eye contact: No data

○ **Ingestion**

- After ingestion: No data

2) Health hazard information

○ **Acute toxicity**

*** Oral - PRODUCT : Not applicable (ATEMix > 2,000 mg/kg)**

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 > 5000 mg/kg Rat
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : LD50 7712 mg/kg Rat
- Phenol, (tetrapropenyl) derivs. : LD50>2000 mg/kg(oral)

*** Dermal - PRODUCT : Not applicable (ATEMix > 2,000 mg/kg)**

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 > 2000 mg/kg Rabbit
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : LD50 > 3500 mg/kg Mouse
- Phenol, (tetrapropenyl) derivs. : LD50>15000 mg/kg(dermal)

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

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : No data
- Phenol, (tetrapropenyl) derivs. : No data

*** Inhalation(Vapour) - PRODUCT : Not applicable (ATEMix > 20 mg/L)**

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : LC50 >2.5 ㎎/ℓ 6 hr Species : Rat
- Phenol, (tetrapropenyl) derivs. : No data

*** Inhalation(Dust, mist) - PRODUCT : Not applicable (ATEMix > 5 mg/L)**

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 5.53 mg/L 4h Rat
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : LC50 > 3.75 mg/kg Rat
- Phenol, (tetrapropenyl) derivs. : No data

○ Skin corrosion/Irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit - slightly irritating
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Irritating
- Ethylene glycol : Rabbit - not irritating (8 days)
- Phenol, (tetrapropenyl) derivs. : Animal data indicate that this substance causes irritation to the skin

○ Serious eye damage/irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit, not irritating, OECD TG 405 GLP (Read-across CAS No. 64742-53-6)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Rabbit - irritating (OECD 405, GLP)
- Ethylene glycol : Rabbit - not irritating (ocular irritation index = 1)
- Phenol, (tetrapropenyl) derivs. : Animal data indicate that this substance causes irritation to the eye

○ Respiratory sensitization

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not sensitising (Guinea pig)
- Ethylene glycol : No data
- Phenol, (tetrapropenyl) derivs. : No data

○ Skin sensitization

- Distillates (petroleum), hydrotreated heavy paraffinic : Not sensitising Guinea pig
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not sensitising (Guinea Pig)
- Ethylene glycol : Not sensitising (Guinea pig; OECD TG 406, GLP)
- Phenol, (tetrapropenyl) derivs. : Not sesitising

○ Carcinogenicity

- Distillates (petroleum), hydrotreated heavy paraffinic : EU CLP:1B The classification as a carcinogen need not apply if it can be shown that the sybstance contains less than 3% DMSO extract as measure by IP 346
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : ACGIH: Group A4

- Phenol, (tetrapropenyl) derivs. : No data

○ Germ cell mutagenicity

- Distillates (petroleum), hydrotreated heavy paraffinic : Negative CHO cell

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : In vitro(bacterial reverse mutation assay(OECD TG 471, GLP), gene mutation in mammalian cells, chromosome aberration study in mammalian cells) - Negative(Metabolic activation: with and without), In vi

- Phenol, (tetrapropenyl) derivs. : in vitro (bacterial and mammalian cell gene mutation) and in vivo (bone marrow cytogenetics) : negative / Overall; TPP is not a genotoxicant.

○ Reproductive toxicity

- Distillates (petroleum), hydrotreated heavy paraffinic : Reproductive performance was not adversely affected at any dose level evaluated. Rat

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : NOEL 1000 mg/kg Mouse

- Phenol, (tetrapropenyl) derivs. : In rats, tetrapropenyl phenol causes a reduction in the fertility of both sexes and a reduction in mean live litter size, in the presence of general toxicity, at a dose of ≥75 mg/kg/day. Effects on ma

○ Specific target organ toxicity (single exposure)

- Distillates (petroleum), hydrotreated heavy paraffinic : Clinical signs: yellow-stained anal area, hair loss in urogenital region, and swollen hind paws. Rat

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : No data

- Phenol, (tetrapropenyl) derivs. : No data

○ Specific target organ toxicity (repeated exposure)

- Distillates (petroleum), hydrotreated heavy paraffinic : No systemic effects were observed. Rat

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : All animals survived to the end of the study and final mean body weight of exposed mice did not differ significantly from those of the controls. Only male mice in the 25000 and 50000 ppm groups exhibi

- Phenol, (tetrapropenyl) derivs. : The NOAEL for repeated-dose toxicity in rodents is 5 mg/kg/day, as adrenal cortical hypertrophy was observed at doses of 20 mg/kg/day and above. It is noteworthy that similar changes were not observed

○ Aspiration hazard

- Distillates (petroleum), hydrotreated heavy paraffinic : No data

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data

- Ethylene glycol : No data

- Phenol, (tetrapropenyl) derivs. : No data

12. ECOLOGICAL INFORMATION

1) Aquatic toxicity

○ Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 100 mg/L Fish(Pimephales promelas)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : IUCLID LC50 5 ㎎/ℓ ~ 1 ㎎/ℓ 96 hr Pimephales promelas
- Ethylene glycol : LC50 72860 mg/L Fish(Pimephales promelas)
- Phenol, (tetrapropenyl) derivs. : LC50 0.146 ㎎/ℓ 96 hr

○ Crustacean

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 10000 mg/L Aquatic invertebrates(Gammarus pulex)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : IUCLID EC50 5 ㎎/ℓ ~ 1 ㎎/ℓ 48 hr Daphnia pulex
- Ethylene glycol : EC50 > 100 mg/L Aquatic invertebrates(Daphnia magna)
- Phenol, (tetrapropenyl) derivs. : LC50 0.177 ㎎/ℓ 48 hr

○ Acuatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : NOEC >= 100 mg/L Aquatic algae(Pseudokirchnerella subcapitata)
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : EC50 6500 mg/L Aquatic algae(Pseudokirchnerella subcapitata)
- Phenol, (tetrapropenyl) derivs. : EC50 0.6 ㎎/ℓ 96 hr

2) Persistence and degradation

○ Persistence

- Distillates (petroleum), hydrotreated heavy paraffinic : log Kow 6
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : log Kow -1.93
- Phenol, (tetrapropenyl) derivs. : 5.12 log Kow

○ Degradation

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : DOC 90 %
- Phenol, (tetrapropenyl) derivs. : No data

○ biodegradation

- Distillates (petroleum), hydrotreated heavy paraffinic : BOD 77 %
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : No data
- Phenol, (tetrapropenyl) derivs. : No data

3) Bioaccumulative potential

- Distillates (petroleum), hydrotreated heavy paraffinic : No data

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : BCF 10 Fish(Leuciscus idus melanotus)
- Phenol, (tetrapropenyl) derivs. : 1111

4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Koc=3268000000
- Ethylene glycol : Koc 1
- Phenol, (tetrapropenyl) derivs. : No data

5) Hazard to the ozone laye

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Ethylene glycol : Not applicable
- Phenol, (tetrapropenyl) derivs. : Not applicable

6) Other adverse effects

- Distillates (petroleum), hydrotreated heavy paraffinic : Fish: NOEC(Pimephales promelas) >5000 mg/L/7d
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene glycol : NOEC7d =15380 mg/L(Daphnia magna, EPA 600/4-89/001), Daphnia magna : NOEC7d 24000 mg/L(OECD TG, GLP)
- Phenol, (tetrapropenyl) derivs. : No data

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Every commercial waste producer shall either treat wastes generated from his/her place of business by him/herself or commission the treatment of such wastes to a person who has license for a waste treatment business under Article 26(3), a person who recycles of such wastes under Article 44(2), a person who has installed and operates a waste disposal facility under Article 4 or 5, a person who has completed the registration of a business of discharging wastes into the sea under Article 18 of the Marine Environment Management Act.

2) Precautions (including disposal of contaminated container of package)

- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)
- Do not allow spill material to enter sewers, storn water drains, soil, etc.
- Empty containers recycled under environmental laws.
- Empty containers may rupture when pressured.
- Empty containers may explode and residues can be ignited when pressured, cut, weld, heated.

14. TRANSPORT INFORMATION

1) UN No.

- Not applicable

2) Proper shipping name

- Not applicable

3) Class or division

- Not applicable

4) Packing group

- Not applicable

5) Marine pollutant

- Not applicable

6) Special safety response for transportation or transportation measure

- Types of Emergency Measures in Case of Fire : Not applicable
- Types of Emergency Measures in Leakage : Not applicable
- This product is not regulated for carriage according to ADR/RID, ADN, IMDG, ICAO/IATA.

15. REGULATORY INFORMATION

1) Occupational Safety and Health Act in Korea - PRODUCT :

- Phenol, (tetrapropenyl) derivs. : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Hazardous SubstancesRequiring Management
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Ethylene glycol : Substance exposure limits,Hazardous SubstancesRequiring Management,Environment measure substance,Special medical examination material
- Business Secret : No data

2) Toxic Chemical Control Act in Korea - PRODUCT :

- Phenol, (tetrapropenyl) derivs. : Existing Commercial Chemical Substances
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Existing Commercial Chemical Substances
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Pollutant release and transfer register substances,Existing Commercial Chemical Substances
- Distillates (petroleum), hydrotreated heavy paraffinic : Existing Commercial Chemical Substances
- Ethylene glycol : Existing Commercial Chemical Substances
- Business Secret : No data

3) Safety Control of Dangerous Substances Act in Korea - PRODUCT :

- Phenol, (tetrapropenyl) derivs. : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Ethylene glycol : Not applicable
- Business Secret : No data

4) Wastes Control Act in Korea - PRODUCT : 지정 폐기물

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5) Other regulations in KOREA and Abroad regulations

○ U.S.A. management information(OSHA regulation)

- Phenol, (tetrapropenyl) derivs. : Not applicable

- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Ethylene glycol : Not applicable
- Business Secret : No data

○ U.S.A. management information(CERCLA regulation)

- Phenol, (tetrapropenyl) derivs. : Not applicable
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Ethylene glycol : 5000 lb final RQ; 2270 kg final RQ
- Business Secret : No data

○ EU Classification (CLASSIFICATION)

- Phenol, (tetrapropenyl) derivs. : Skin Corr. 1C,Repr. 1B,Eye Dam. 1,Aquatic Acute 1,Aquatic Chronic 1
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Carc. 1B
- Ethylene glycol : Acute Tox. 4
- Business Secret : No data

○ EU Classification (Risk Phrases)

- Phenol, (tetrapropenyl) derivs. : H314,H360F,H318,H400,H410
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : H350
- Ethylene glycol : H302
- Business Secret : No data

○ EU Classification (Safety Phrases)

- Phenol, (tetrapropenyl) derivs. : S:(1/2)-26-36/37/39-45-61
- Methylbenzenesulfonic acid, mono(C=20~28)-branched alkyl derivs., calcium salt : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : S:53-45
- Ethylene glycol : S:(2)
- Business Secret : No data

16. OTHER INFORMATION

1) Reference

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

2) Print date

- 2012-11-30

3) Revision date

○ Number of revised

- 3

○ Date of last revision

- 2018-01-01

○ Last Revision History

- 개정정보없음

4) Other

- 이 정보는 근로자 건강, 환경, 안전을 보호하고자, 현재 가용할 수 있는 DB를 근거로 하여 작성하였음.