

SAFETY DATA SHEET



1. IDENTIFICATION

A. Product name

- KLUEBER S 88 PLUS

B. Recommended use and restriction on use

- General use : Lubricant
- Restriction on use : Restricted to professional users.

C. Manufacturer / Supplier / Distributor information

Manufacturer : Klueber Lubrication Korea Ltd.
 Address : 118, 83, Uisadang-daero, Yeondeungpo-gu, Seoul, Republic of Korea
 Telephone : +82-54-782-5151
 Fax : +82-70-4275-1169
 Email : ehlee@klueber.co.kr

2. HAZARD IDENTIFICATION

A. GHS Classification

- Acute toxicity (oral) : Category5
- Acute Toxicity (Inhalation: dust / mist) : Category4
- Skin corrosion/irritation : Category3
- Serious eye damage/irritation : Category2A
- Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)
- Acute aquatic toxicity : Category3

B. GHS label elements

o Hazard symbols



o Signal words

- Warning

o Hazard statements

- H303 May harmful if swallowed.
- H316 Cause mild skin irritation.
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H335 May cause respiratory irritation.
- H402 Harmful to aquatic organisms.

o Precautionary statements

1) Prevention

- P261 Avoid breathing dust/fume.
- P264 Wash hands thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification

- Not available

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | Trade names and Synonyms | CAS No. | Content(%) |
|---|--------------------------|------------|-------------|
| 1-Decene, homopolymer, hydrogenated | - | 68037-01-4 | 40.0 ~ 50.0 |
| Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt | - | 4259-15-8 | 1.0 ~ 10.0 |
| Secret | Secret | - | Secret |

4. FIRST AID MEASURES**A. Eye contact**

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Remove contact lenses if worn.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Wash contaminated clothing thoroughly before re-using.
- Get medical attention immediately.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. FIREFIGHTING MEASURES**A. Suitable (Unsuitable) extinguishing media**

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Avoid inhalation of materials or combustion by-products.
- Do not approach the tank surrounded by fire until it is extinguished.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Handle the damaged containers or spilled material after wearing appropriate protective equipment
- Avoid skin contact and inhalation.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control?Act
- Appropriate container for disposal of spilled material collected.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- Put the spilled material in an appropriate containers and clean the contaminated area

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Avoid direct physical contact.
- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Comply with all applicable laws and regulations for handling
- Dealing only with a well-ventilated place.

B. Conditions for safe storage, including any incompatibilities

- Store according to current laws and regulations
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- ACGIH TLV
 - [Secret2] : TWA 5 mg/m3, Inhalable particulate matter(Mineral oil, Pure, highly and severely refined)
- OSHA PEL
 - [Secret3]: 5 mg/m3 (Soluble compounds), 15 mg/m3 (Insoluble compounds - Total dust)
 - [Secret4]: 5 mg/m3 (Soluble compounds), 15 mg/m3 (Insoluble compounds - Total dust)

B. Engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

C. Individual protection measures, such as personal protective equipment

- Respiratory protection
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Dust, mist, fume-purifying respiratory protection
 - Air-purifying respirator with high-efficiency particulate filtering
 - Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)
 - Self-contained breathing apparatus with a corpuscle filter of high efficiency

- For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Any self-contained breathing apparatus with a full facepiece.

○ **Eye protection**

- Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
- Provide an emergency eye wash station and quick drench shower in the immediate work area.

○ **Hand protection**

- Wear appropriate glove.

○ **Skin protection**

- Wear appropriate clothing.

○ **Others**

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|-----------------------|
| A. Appearance | |
| - Appearance | Paste |
| - Color | Green |
| B. Odor | Characteristic |
| C. Odor threshold | Not available |
| D. pH | Not available |
| E. Melting point/Freezing point | Not available |
| F. Initial Boiling Point/Boiling Ranges | Not available |
| G. Flash point | > 210 °C |
| H. Evaporation rate | Not available |
| I. Flammability(solid, gas) | Not available |
| J. Upper/Lower Flammability or explosive limits | Not available |
| K. Vapour pressure | Not available |
| L. Solubility | Insoluble |
| M. Vapour density | Not available |
| N. Specific gravity(Relative density) | approx. 0.92 at 20 °C |
| O. Partition coefficient of n-octanol/water | Not available |
| P. Autoignition temperature | Not available |
| Q. Decomposition temperature | Not available |
| R. Viscosity | Not available |
| S. Molecular weight | Not available |

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

○ (Respiratory tracts)

- May cause respiratory irritation.

- **(Oral)**
 - May harmful if swallowed.
- **(Eye-Skin)**
 - Cause mild skin irritation.
 - Causes serious eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
 - [Secret2] : LD50 > 5000 mg/kg Rat (IUCLID)
 - [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : LD50 3100 mg/kg Rat, (LD50 2000 ~ 5000 mg/kg Rat(ECHA))
 - [Secret5] : LD50 >5000 mg/kg (ECHA)
 - [Secret7] : Rat LD50> 10000 < 20000 mg/kg bw (ECHA)
 - [Secret6] : LD50 > 5000 mg/kg Rat (IUCLID)
 - * **Dermal**
 - Product (ATEmix) : >5000mg/kg
 - [Secret2] : LD50 >5000 mg/kg Rabbit (IUCLID)
 - [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : LD50 > 5000 mg/kg Rabbit (ECHA)
 - [Secret5] : LD50 >5000 mg/kg (ECHA)
 - [Secret6] : LD50 > 2000 mg/kg Rat (IUCLID)
 - * **Inhalation**
 - Product (ATEmix) : 1.0mg/L < ATEmix <= 5.0mg/L
 - [Secret2] : Aerosol LC50 2.18 mg/ℓ 4 hr Rat (OECD Guideline 403, IUCLID)
 - [Secret6] : LC50 > 5 mg/ℓ 4 hr Other (IUCLID)
- **Skin corrosion/irritation**
 - Cause mild skin irritation.
- **Serious eye damage/irritation**
 - Causes serious eye irritation
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - [Secret2] : Carc. 1B (Note L)
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - May cause respiratory irritation.
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Secret2] : LC50 > 5000 mg/ℓ 96 hr Oncorhynchus mykiss (IUCLID)

- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : LC50 1 mg/ℓ 96 hr Pimephales promelas (IUCLID), LC50 >46 mg/ℓ 96 hr (Cyprinodon variegatus)(ECHA)
- [Secret5] : LC50 1.2 mg/ℓ 96 hr Cyprinodon variegatus
- [Secret7] : Cyprinodon variegatus 96hr LL50>10000 mg/L OECD 203 GLP (read across:70024-71-4) (ECHA)
- [Secret6] : LC50 5.7 ~ 9.7 mg/ℓ 96 hr Pimephales promelas (IUCLID)

○ Crustaceans

- [Secret2] : EC50 > 1000 mg/ℓ 48 hr Daphnia magna (IUCLID)
- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : EC50 1 mg/ℓ 48 hr Daphnia magna (OECD TG 202(GLP)) (IUCLID)
- [Secret7] : Daphnia magna 48hr EC50>1000 mg/L GLP (read across:115733-09-0) (ECHA)
- [Secret6] : EC50 6.2 ~ 12 mg/ℓ 48 hr Daphnia magna (IUCLID)

○ Algae

- [Secret2] : EC50 > 1000 mg/ℓ 96 hr Scenedesmus subspicatus (IUCLID)
- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : EC50 1 mg/ℓ 96 hr Selenastrum capricornutum (OECD TG 201(GLP)) (IUCLID)
- [Secret6] : EC50 120 ~ 500 mg/ℓ 96 hr Selenastrum capricornutum (IUCLID)

B. Persistence and degradability

○ Persistence

- [Secret2] : log Kow 3.9 ~ 6 (Estimate)
- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : log Kow 3.59 (ECHA)
- [Secret5] : log Kow = 14.13 (Estimate)
- [Secret7] : 10.8 qsar (ECHA)
- [Secret6] : log Kow 23.21 (Estimate)

○ Degradability

- Not available

C. Bioaccumulative potential

○ Bioaccumulative potential

- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : 2000 (L/kg)(ECHA)
- [Secret5] : BCF = 70.79 (Estimate)

○ Biodegradation

- [Secret2] : 6 (%) 28 day (Aerobic, Domestic wastewater, does not decompose easily)
- [Phosphorodithioic acid O,O-bis(2-ethylhexyl) ester, zinc salt] : 5 % 27 day(ECHA)
- [Secret7] : 8%, 28 days (ECHA)

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration
- Incinerate or perform stabilizing treatment.

B. Special precautions for disposal

- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- Not applicable

B. Proper shipping name

- Not applicable

C. Hazard Class

- Not applicable

D. IMDG CODE/IATA DGR Packing group

- Not applicable

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : Not available
- EmS SPILLAGE SCHEDULE : Not available
- Air transport(IATA): Not subject to IATA regulations.

15. REGULATORY INFORMATION**A. National and/or international regulatory information**

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [Secret2] : H350
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - Not applicable
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - Not applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION**A. 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

B. Issue date

- 2018-11-02

C. Revision number and Last date revised

- 1 times, 2020-03-05

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).