Material Safety Data Sheet
(MSDS)

Product	Kixx G SL/CF 10W-40

Team	Date of first preparation	Date of last revision	Revision Number
Finished Lubricants Development & Technology Team	2012-11-30	2016-02-23	2

1. Chemical Product and Company Information

1) Product : Kixx G SL/CF 10W-40

2) Recommended use of the chemical and restrictions on use
- ○ Recommended use : Lubricants, Gasoline Engine Oil
- ○ Restrictions on use :

3) Manufacture/Supplier information
- ○ Supply company : GS Caltex Corporation
- ○ Address : Nonhyeon-ro 508(Yeoksam-dong), Gangnam-gu, Seoul, South Korea
- ○ Information service or emergency call : 02-2005-6841~8
- ○ Department in charge : Finished Lubricants Development & Technology Team

2.Hazards Identification

1) Classification of the substance or mixture
- Not hazardous

2) GHS labels, including precautionary statements
- ○ Symbol : No symbol
- ○ Signal word : No signal word
- ○ Hazard statement
  Not classified under GHS criteria
- ○ Precautionary statement
  - Prevention
    No precautionary phrases
  - Response
    No precautionary phrases
  - Storage
    No precautionary phrases
  - Disposal
    No precautionary phrases

3) Other hazards which do not result in classification

NFPA Component	Health	Fire	Reactivity
1. Distillates, Hydrotreated Heavy Paraffinic	0	1	0
2. Zinc Alkyl Dithiophosphate	1	1	0
3. Organomolybdenum Amide	1	1	0
4. Additive mixture (S1)	1	1	0

3. Composition and Information on Ingredients

Component	Synonyms	CAS No.	Content(%)
1. Distillates, Hydrotreated Heavy Paraffinic	Hydrotreated (severe) heavy paraffinic distillate	64742-54-7	78 ~ 90
2. Zinc Alkyl Dithiophosphate	Phosphorodithioic acid	68649-42-3	1 ~ 10
3. Organomolybdenum Amide	Organomolybdenum complex of organic amide	Not Determined	< 1
4. Additive mixture (S1)	Not Applicable	Not Determined	0.5 ~ 7

4. First Aid Measures

1) Eye contact :
- Wash eyes thoroughly with plenty of water for at least 20 minutes.

2) Skin contact :
- Remove contaminated clothing and wash skin with plenty of soap and water.
  Flush with plenty of water for 15 minutes.
  Seek medical attention if ill effect or irritation develops.

3) Inhalation :
- If overcome by exposure, remove person to fresh air immediately.
- Give oxygen or artificial respiration as needed.
- Obtain emergency medical attention. Prompt action is essential.

4) Ingestion :
- Do not induce vomiting. Obtain emergency medical attention. Prompt action is essential.

5) Most important symptoms/effects, acute and delayed :
- May cause slight eye and skin irritation. Not expected to be a sensitizer.

6) First-aid treatment and information on medical doctors :
- Treat symptomatically.
  Treatment of overexposure should be directed at the control of symptoms
  and the clinical condition of the patient.

5. Fire Fighting Measures

1) Recommanded(or prohibited) extinguishing media
   ○ Recommanded extinguishing media :
   - Dry chemicals, CO2, water spray, fire fighting foam
   ○ Prohibited extinguishing media :
   - High pressure water shoot
   ○ Large fire :
   - fire fighting foam or water spray

2) Specific hazard from chemical material
   ○ Toxicant from combustion : Carbon oxides
   ○ Fire and Explosion Hazards: Slight fire risk

3) Extinguishment :
   If it is not dangerous, remove containers from fire areas.
   Make hills for further treatment.
   avoid Inhalation of material oneself or combustion generation material
   Stand against the wind and avoid lower zone.

6. Accidental Release Measures

1) Necessary actions to protect human health :
   If it is not dangerous, stop release safely, do so.
   Keep away from water supply facilities and sewage.
   Avoid inhalation of materials or combustion products
   Avoid heat, flame, spark, and other ignition sources.

2) Necessary actions to protect the environment
   - May contaminate water supplies/pollute public waters. Evacuate/limit access.
     Equip responders with proper protection.
     Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities.
     Restrict water use for cleanup.

3) Purification and removal methods
   ○ Small leak : Only authorized person can access to the hazardous and restricted areas.
   Collect spills with proper containers to treat them.
   Absorb spills with sand and other non-combustible materials.
   ○ Large leak : No data

7. Handling and Stroage

1) Safety handling :
   Avoid contact with skin. Use proper bonding and/or grounding procedures.
   Prevent small spills and leakage to avoid slip hazard.
   Material can accumulate static charges which may cause an electrical spark (ignition source).

2) Stroage :
   Stroage in closed containers.
   Stroage in cool and dry areas.
   Ventilation keeps it in a region
   Keep away from prohibited materials for mixing.

8. Exposure Control and Personal Protection

A. Exposure limits and biological exposure limits of chemical

1) Distillates, Hydrotreated Heavy Paraffinic
- ○ ACGIH : TWA : 5mg/m3
  STEL : 10mg/m3
- ○ NIOSH : TWA : 5mg/m3
  STEL : 10mg/m3
- ○ Biological exposure limits : No data

2) Zinc Alkyl Dithiophosphate
- ○ ACGIH : No data
- ○ Biological exposure limits : No data

3) Organomolybdenum Amide
- ○ ACGIH : No data
- ○ Biological exposure limits : No data

4) Additive mixture (S1)
- ○ ACGIH : No data
- ○ Biological exposure limits : No data

B. Engineering management :

Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.
Install local ventilation system.
Comply with limits.

C. Personal protection equipment :
- ○ Respiratory protection :
  If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator
- ○ Eyes protection :
  Safety glasses or goggles are recommended for the eyes protection from dusts or mists.
  A business proprietor should install eyes washing facilities near working areas to protect worker's eyes for emergency.
- ○ Hands protection :
  Use proper chemical resistant gloves.
- ○ Human body protection :
  Use proper chemical resistant clothes.

9. Physical and Chemical Properties

1) Appearance : Clear, light yellow liquid

2) Odor : a specific smell of Hydrocarbon

3) Odor threshold : No data

4) pH : No data

5) Melting point/freezing point : No data

6) Initial boiling point or boiling range : No data

7) Flash point : 245℃ (C.O.C)

8) Evaporation rate (BuAc=1) : No data

9) Flammability(solid, gas) : No data

10) Upper/lower flammability or explosive limits : No data

11) Vapor pressure : <0.1 Kpa @ 20℃

12) Solubility : No data

13) Vapor density : No data

14) Relative density : 0.865 kg/L @15℃

15) Partition coeficient: n-octano/water : No data

16) Auto-ignition temperature :> 260℃

17) Decomposition temperature : No data

18) Viscosity : 15.1 cSt @100℃

19) Molecular weight : No data

10. Stability and Reactivity

1) Chemical stability :
   - Stable at room temperature and pressure.

2) Toxicant generation possibility during reaction :
   - Not polymerization

3) Prohibited conditions :
   - Avoid heat, sparks, open flames and other ignition sources

4) Prohibited materials :
   - An Oxidizing agent

5) Toxicant during decomposition :
   - Carbon oxides

11. Toxicological Information

A. Information on the likely routes of exposure

○ Inhalation : May cause slight irritation
○ Ingestion : May cause vomit, coughing, shortness of breath, dizziness.
○ Skin contact : May cause slight skin irritation.
○ Eye contact : May cause slight eye irritation.

B. Delayed and immediate effects and chronic effectsfrom short or long term exposure

1) Distillates, Hydrotreated Heavy Paraffinic
○ Acute oral toxicity
- Oral : LD50 > 5000mg/bw Rat
- Dermal : LD50 > 5000mg/bw Rabbit
- Inhalation : LC50 = 50mg/L (4hr) Rat
○ Skin corrosion/irritation : No irritating (Rabbit)
○ Serious eye damage/eye irritation : No irritating (Rabbit)
○ Respiratory sensitization : Not determined (guinea pig)
○ Skin sensitization : Not determined (guinea pig)
○ Carcinogenicity : MOL, OSHA, IARC : No data
○ Germ cell mutagenicity : Negative (Ames test)
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

2) Zinc Alkyl dithiophosphate
○ Acute oral toxicity
- Oral : LD50> 5000mg/kg (rat)
- Dermal : LD50> 5000mg/kg (rabbit)
- Inhalation : LC50 = 50mg/L (4hr) Rat
○ Skin corrosion/irritation : No irritating (Rabbit)
○ Serious eye damage/eye irritation : No irritating (Rabbit)
○ Respiratory sensitization : Not determined (guinea pig)
○ Skin sensitization : Not determined (guinea pig)
○ Carcinogenicity : MOL, OSHA, IARC : No data
○ Germ cell mutagenicity : Negative (Ames test)
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

3) Organomolybdenum Amide
○ Acute oral toxicity
- Oral : LD50 > 5000mg/bw Rat
- Dermal : LD50 > 5000mg/bw Rabbit
- Inhalation : LC50 = 50mg/L (4hr) Rat
○ Skin corrosion/irritation : No irritating (Rabbit)
○ Serious eye damage/eye irritation : No irritating (Rabbit)
○ Respiratory sensitization : Not determined (guinea pig)
○ Skin sensitization : Not determined (guinea pig)
○ Carcinogenicity : MOL, OSHA, IARC : No data
○ Germ cell mutagenicity : Negative (Ames test)

○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

4) Additive mixture (S1)
○ Acute oral toxicity
- Oral : No data
- Dermal : No data
- Inhalation : No data
○ Skin corrosion/irritation : No irritating (Rabbit)
○ Serious eye damage/eye irritation : No irritating (Rabbit)
○ Respiratory sensitization : Not determined (guinea pig)
○ Skin sensitization : Not determined (guinea pig)
○ Carcinogenicity : MOL, OSHA, IARC : No data
○ Germ cell mutagenicity : Negative (Ames test)
○ Reproductive toxicity : No data
○ Specific target organ systemic toxicity(single exposure) : No data
○ Specific target organ systemic toxicity(repeated exposure) : No data
○ Aspiration hazard : No data

C. Numerical measures of toxicity(such as ATE) : No data

12. Ecological Information

A. Hazardous to the aquatic environment :
1) Distillates, Hydrotreated Heavy Paraffinic
○ Fish : No data
○ Crustacea : No data
○ Algea : No data
2) Zinc Alkyl dithiophosphate
○ Fish : No data
○ Crustacea : No data
○ Algea : No data
3) Organomolybdenum Amide
○ Fish : No data
○ Crustacea : No data
○ Algea : No data
4) Additive mixture (S1)
○ Fish : No data
○ Crustacea : No data
○ Algea : No data

B. Persistence and degradability :
1) Distillates, Hydrotreated Heavy Paraffinic
- No data
2) Zinc Alkyl dithiophosphate
- No data
3) Organomolybdenum Amide
- No data
4) Additive mixture (S1)
- No data

C. Bioaccumulative potential

1) Distillates, Hydrotreated Heavy Paraffinic
   - Bioaccumulation : 6% (28 day, aerotropism, domestic waste water, not disassemble)
2) Zinc Alkyl dithiophosphate
   - No data
3) Organomolybdenum Amide
   - No data
4) Additive mixture (S1)
   - No data

D. Mobility in soil :
1) Distillates, Hydrotreated Heavy Paraffinic
   - No data
2) Zinc Alkyl dithiophosphate
   - No data
3) Organomolybdenum Amide
   - No data
4) Additive mixture (S1)
   - No data

E. Other adverse effects :
   - No data

13. Disposal Considerations

1) Disposal methods :
   Use only licensed transporters and permitted facilities for waste disposal.

2) Disposal cautions :
   Dispose according to the related regulations

14. Transport Information

1) UN number : Not applicable

2) UN Proper Shipping Name : Not applicable

3) Transport hazard classes : Not applicable

4) Packing group, if applicable : Not applicable

5) Environmental hazards : Not applicable

6) Special precautions for user : Not applicable

15. Regulatory Information

A. Industrial safety and health act (Korea)
Occupation environment measurement material, Special health examination material,
Threshold limit values material,

B. Chemical control act (Korea)
- Distillates, Hydrotreated Heavy Paraffinic : No data
- Zinc Alkyl dithiophosphate : No data
- Organomolybdenum Amide : toxic material

- Additive mixture (S1) : No data

C. Wastes control act (Korea)
- Distillates, Hydrotreated Heavy Paraffinic : No data
- Zinc Alkyl dithiophosphate : No data
- Organomolybdenum Amide : toxic material
- Additive mixture (S1) : No data

D. Hazardous material safety act (Korea)
- Distillates, Hydrotreated Heavy Paraffinic : No data
- Zinc Alkyl dithiophosphate : No data
- Organomolybdenum Amide : toxic material
- Additive mixture (S1) : No data

E. Other internal and foreign acts

1) Distillates, Hydrotreated Heavy Paraffinic

○ EU classification
- Classification : Carc. Cat. 2
- Risk Phrases : R45
- Safety Phrases : S45, S53

○ U.S. acts
- OSHA (29CFR1910.119) : Not determined
- CERCLA 103 (40CFR302.4) : Not determined
- EPCRA 302 (40CFR355.30) : Not determined
- EPCRA 304 (40CFR355.40) : Not determined
- EPCRA 313 (40CFR372.65) : Not determined

2) Zinc Alkyl dithiophosphate

○ EU classification
- Classification : Not determined
- Risk Phrases : Not determined
- Safety Phrases : Not determined

○ U.S. acts
- OSHA (29CFR1910.119) : Not determined
- CERCLA 103 (40CFR302.4) : Not determined
- EPCRA 302 (40CFR355.30) : Not determined
- EPCRA 304 (40CFR355.40) : Not determined
- EPCRA 313 (40CFR372.65) : Not determined

3) Organomolybdenum Amide

○ EU classification
- Classification : Not determined
- Risk Phrases : Not determined
- Safety Phrases : Not determined

○ U.S. acts
- OSHA (29CFR1910.119) : Not determined
- CERCLA 103 (40CFR302.4) : Not determined
- EPCRA 302 (40CFR355.30) : Not determined
- EPCRA 304 (40CFR355.40) : Not determined
- EPCRA 313 (40CFR372.65) : Not determined

4) Additive mixture (S1)

○ EU classification
- Classification : Not determined

- Risk Phrases : Not determined
- Safety Phrases : Not determined

○ U.S. acts

- OSHA (29CFR1910.119) : Not determined
- CERCLA 103 (40CFR302.4) : Not determined
- EPCRA 302 (40CFR355.30) : Not determined
- EPCRA 304 (40CFR355.40) : Not determined
- EPCRA 313 (40CFR372.65) : Not determined

16. Other Information

1) References
- Korea Occupatonal Safety & Health Agency
- GS Caltex R&D Center
- MSDS of raw material from supplier
- KOSHANET
- Occupation safety and health acts of Korea
- Globally Harmonized System of classification and labeling of chemicals (GHS), First revised edition, United Nations
- EINECS(European Inventory of Existing Commercial Chemical Substances)
- ACGIH(American Conference of Governmental Safety and Health)
- IUCLID Dataset

2) Date of preparation of the first version of the MSDS : 30/Nov/2012

3) Revised frequency and Date of preparation of the latest version of the MSDS : 2016-02-23 (2)

4) Others :

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