

Material Safety Data Sheet

| Product | Kixx G1 Dexos1 0W-20(E) | | |
|----------|-------------------------|-------------------|------------------------------|
| List No. | Issuing date | Last revised date | Department |
| LB3216 | 2018-12-14 | 2018-12-19 | Finished Lubricants R&D Team |

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

1) Product identifier

- Kixx G1 Dexos1 0W-20(E)

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

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

3) Supplier information

☐ Manufacturer information

- Company name : GS Caltex Corporation
[Manufacture]
- Address : GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Emergency telephone number : +82-1899-5145

2. HAZARD IDENTIFICATION

1) Hazard classification

- Not applicable

2) Allocation label elements

☐ Hazard pictograms

- Not applicable

☐ Signal word

- Not applicable

☐ Hazard statements

- Not applicable

☐ Precautionary statements

1) Prevention

- Not applicable

2) Response

- Not applicable

3) Storage

- Not applicable

4) Disposal

- Not applicable

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
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Health=1, Flammable=1, Reaction=0
- Ethylene propylene copolymer : Health=1, Flammable=1, 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 | | | | 5 ~ 15 |
| Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts | | 68649-42-3 | 272-028-3 | 0 ~ 2 |
| Ethylene propylene copolymer | | 9010-79-1 | 618-455-4 | 0 ~ 2 |

4. FIRST AID MEASURES

1) Following eye contact

- In case of contact with material, immediately flush eyes with running water for at least 15 minutes.
- Get medical aid immediately.

2) Following skin contact

- In case of contact with material, immediately flush skin with running water for at least 15 minutes.
- Remove and isolate contaminated clothing and shoes.
- Launder contaminated clothing and shoes before re-use.
- Get medical aid immediately.

3) Following inhalation

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

4) Following ingestion

- If unconscious but breathing, never give anything by mouth.
- Get medical aid immediately.

5) Advice to physician

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Do not apply drugs of the adrenaline ephedrine group.

5. FIRE FIGHTING MEASURES

1) Suitable (and unsuitable) extinguishing media

○ Suitable extinguishing media

- Small fire: Dry sand, dry chemical, alcohol-resistant foam, water spray, regular foam, CO2 (Suitable extinguishing media).
- Large fire: Water spray/fog, regular foam (Suitable extinguishing media).

○ Unsuitable extinguishing media

- High-pressure water (Unsuitable extinguishing media).

2) Special hazards arising from the substance or mixture

- May ignited from heat, friction or contamination.
- Containers may explode when heated.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.
- May ignited from heat, friction or contamination.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.

3) Special protective equipment for firefighters

- Substance may be transported hot.
- Runoff may cause pollution.
- Contact may cause burns to skin and eyes.
- 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

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Stop leak if you can do it without risk.
- Please note that materials and conditions to be avoided.
- Ventilate the contaminated area.
- Do not touch or walk through spilled material.
- Prevent dust cloud.
- Do not enter areas which have more than 23.5% oxygen in the atmosphere, without respirator or air supplied mask.

2) Environmental precautions

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

3) For cleaning up

- Small Spill: Flush area with flooding quantities of water.
- Small Spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- 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.

7. HANDLING AND STORAGE

1) Precautions for safe handling

- Please note that materials and conditions to be avoided.
- Wash ... thoroughly after handling.
- Handling refer to engineering control/personal protection section.
- CAUTION: High temperature.
- CAUTION: This material does not contain oxygen and may cause asphyxia if released in a confined area.
- High concentration of this gas will create an oxygen-deficient atmosphere, creating the risk of asphyxiation. Check oxygen content before entering area.
- Use adequate machine for prevention when package handling.
- Avoid any skin and eye contact when insert undiluted solution. Wash ... thoroughly after handling.
- Caution: Dangerous fire hazard when exposed to heat, or flame, sparks.
- Wear an appropriate Personal protection. (See Exposure Controls/Personal Protection section.)

2) Conditions for safe storage (including any incompatibilities)

- Store in a closed container.
- Store in a dry place. Store in a closed container.
- Please note that materials and conditions to be avoided.
- Store containers: AVOID the place where can be damage and contamination.
- Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources}
- Choose a place that can be protected from strong oxidizers and acid.
- Drum Handling: Must work at safe place., Loading more than 3 stack is prohibited.

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
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : TWA Not applicable, STEL Not applicable
- Ethylene propylene copolymer : TWA Not applicable, STEL Not applicable

○ Occupational exposure limits (ACGIH)

- Distillates (petroleum), hydrotreated heavy paraffinic : TWA Not applicable, STEL Not applicable
- Business Secret2 : TWA Not applicable, STEL Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : TWA Not applicable, STEL Not applicable

- Ethylene propylene copolymer : TWA Not applicable, STEL Not applicable

○ Biological limit values

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret3 : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Ethylene propylene copolymer : 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 face shield to protect eyes from scattering dust or hazardous liquid.
- Wear Non-moisture permeable goggle for dust protection.
- Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

○ Hand protection

- Wear insulated 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 yellow liquid |
| Smell | a specific smell of Hydrocarbon |
| Smell Threshold | No Data |
| pH | No Data |
| Melting/Freezing Poing | No Data |
| Boilling Point | No Data |
| Flash Point | 226 °C |
| Evaporating Rate | No Data |
| Flammability | No Data |
| Explosibility Range | No Data |
| Steam Pressure | No Data |
| Solubility | No Data |
| Vapor Density | No Data |

| | |
|---------------------------|-----------------------------------|
| Specific Gravity | 0.85 |
| Distribution Coefficient | No Data |
| Self-Ignition Temperature | No Data |
| Pyrolysis Temperature | No Data |
| Viscosity | 8.5 mm ² /s (at 100°C) |
| Molecular Weight | No Data |

10. STABILITY AND REACTIVITY

1) Stability and hazardous reactivity

- Stable under normal temperatures and pressures.
- Containers may explode when heated.
- Some may burn but none ignite readily.
- Fire may produce irritating and/or toxic gases.
- May cause toxic effects if inhaled.
- Some liquids produce vapors that may cause dizziness or suffocation.

2) Conditions to avoid

- Ignition source(heat, spark, flame, etc.).

3) Incompatible materials

- Combustibles.
- Irritating and/or toxic gas.

4) Hazardous decomposition products

- Not available

11. TOXICOLOGICAL INFORMATION

1) Exposure route information

○ Inhalation

- Gases can be exposed through the respiratory tract, eyes and skin.
- Liquids can be exposed through the eyes, skin and oral.
- Vapors/mist can be exposed through the respiratory tract, eyes and skin.

○ Skin Contact

- Gases can be exposed through the respiratory tract, eyes and skin.
- Liquids can be exposed through the eyes, skin and oral.
- Vapors/mist can be exposed through the respiratory tract, eyes and skin.

○ Eye Contact

- Gases can be exposed through the respiratory tract, eyes and skin.
- Liquids can be exposed through the eyes, skin and oral.
- Vapors/mist can be exposed through the respiratory tract, eyes and skin.

○ Ingestion

- Can be absorbed in by contact skin and the digestive organs or inhalation of aerosol.

2) Health hazard information

○ Acute toxicity

* Oral - PRODUCT : Not Applicable (ATEMix > 2000 mg/kg)

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >15000 mg/kg Species : Rat
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

* Dermal - PRODUCT : Not Applicable (ATEMix > 2000 mg/kg)

- Distillates (petroleum), hydrotreated heavy paraffinic : LD50 >5000 mg/kg Species : Rabbit
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

* Inhalation(Gas) - PRODUCT : No data (ATEMix = 0)

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

* Inhalation(Vapour) - PRODUCT : No data (ATEMix = 0)

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

* Inhalation(Dust, mist) - PRODUCT : Not Applicable (ATE MIX > 5 mg/L)

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 5.53 mg/L 4h Rat
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

○ Skin corrosion/Irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit - slightly irritating
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Irritating
- Ethylene propylene copolymer : No data

○ Serious eye damage/irritation

- Distillates (petroleum), hydrotreated heavy paraffinic : Rabbit, not irritating, OECD TG 405 GLP (Read-across CAS No. 64742-53-6)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Rabbit - irritating (OECD 405, GLP)
- Ethylene propylene copolymer : No data

○ Respiratory sensitization

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not sensitising (Guinea pig)
- Ethylene propylene copolymer : No data

○ Skin sensitization

- Distillates (petroleum), hydrotreated heavy paraffinic : Not sensitising (Guinea Pig)
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

○ Carcinogenicity

- Distillates (petroleum), hydrotreated heavy paraffinic : EU CLP:1B The classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measure by IP 346

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

- Ethylene propylene copolymer : No data

○ Germ cell mutagenicity

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

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

- Ethylene propylene copolymer : No data

○ Reproductive toxicity

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

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

- Ethylene propylene copolymer : No data

○ Specific target organ toxicity (single exposure)

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

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Respiratory tract irritation

- Ethylene propylene copolymer : No data

○ Specific target organ toxicity (repeated exposure)

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

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

- Ethylene propylene copolymer : No data

○ Aspiration hazard

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

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

- Ethylene propylene copolymer : No data

12. ECOLOGICAL INFORMATION

1) Aquatic toxicity

○ Fish

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 100 mg/L Fish(Pimephales promelas)

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : IUCLID LC50 5 mg/l ~ 1 mg/l 96 hr Pimephales promelas

- Ethylene propylene copolymer : No data

○ Crustacean

- Distillates (petroleum), hydrotreated heavy paraffinic : LC50 > 10000 mg/L Aquatic invertebrates(Gammarus pulex)

- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : IUCLID EC50 5 mg/l ~ 1 mg/l 48 hr Daphnia pulex

- Ethylene propylene copolymer : No data

○ Aquatic algae

- Distillates (petroleum), hydrotreated heavy paraffinic : NOEC >= 100 mg/L Aquatic algae(Pseudokirchnerella subcapitata)

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

- Ethylene propylene copolymer : No data

2) Persistence and degradation

○ Persistence

- Distillates (petroleum), hydrotreated heavy paraffinic : log Kow 6
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

○ Degradation

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

○ biodegradation

- Distillates (petroleum), hydrotreated heavy paraffinic : BOD 77 %
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

3) Bioaccumulative potential

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

4) Mobility in soil

- Distillates (petroleum), hydrotreated heavy paraffinic : No data
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

5) Hazard to the ozone layer

- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Ethylene propylene copolymer : Not applicable

6) Other adverse effects

- Distillates (petroleum), hydrotreated heavy paraffinic : Fish: NOEC(Pimephales promelas) >5000 mg/L/7d
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : No data
- Ethylene propylene copolymer : No data

13. DISPOSAL CONSIDERATIONS

1) Disposal methods

- Isolate water and oil: Burn in isolated oil, disposed of water in water pollution control plant.
- Disposed by evaporation or concentration. Incinerated or stabilized the residues.
- Disposed by aggregation and precipitation. Incinerate the residues.
- Purified by isolation, distillation, extraction, filtration and thermal decomposition.
- Disposed by incineration or stabilization.

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

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

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 : Hazardous Substances Requiring Management, Substance exposure limits

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Hazardous Substances Requiring Management
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret : No data

2) Toxic Chemical Control Act in Korea - PRODUCT : Pollutant release and transfer register substances

- Ethylene propylene copolymer : 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
- Business Secret : No data

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

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret : No data

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

- 폐유(액체상태)

5) Other regulations in KOREA and Abroad regulations

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

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret : No data

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

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Not applicable
- Business Secret : No data

○ **EU Classification (CLASSIFICATION)**

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : Carc. 1B
- Business Secret : No data

○ **EU Classification (Risk Phrases)**

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : H350
- Business Secret : No data

○ **EU Classification (Safety Phrases)**

- Ethylene propylene copolymer : Not applicable
- Phosphorodithioic acid O,O-dialkyl(C=1-14) esters zinc salts : Not applicable
- Distillates (petroleum), hydrotreated heavy paraffinic : S:53-45
- 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

- 2018-12-14

3) Revision date

- Number of revised
 - 2
- Date of last revision
 - 2018-12-19
- Last Revision History
 - 제정본임

4) Other

- This information is based on current available databases to protect the health, environment and safety of workers.