

Material Safety Data Sheet (MSDS)

Product	Kixx AF Coolant HD		
Team	Date of first preparation	Date of last revision	Revision Number
Finished Lubricants R&D Team	2017-10-26	2017-10-26	0

1. Chemical Product and Company Information

- 1) Product : Kixx AF Coolant HD
- 2) Recommended use of the chemical and restrictions on use
 - Recommended use : Engine Cooling System
 - Restrictions on use : No data
- 3) Manufacturer information
 - Manufacturer : Dong-A special chemical Co.Ltd
 - Address : 441-32, Banje-Ri, Wongok-Myun, Ansong City, Kyungki-Do, 441-811, Korea
 - Information service or emergency call : +82-31-652-1301
 - Department in charge : R&D Center
- 4) Supplier information
 - Supply company : GS Caltex Corporation
 - Address : Nonhyeon-ro 508(Yeoksam-dong), Gangnam-gu, Seoul, Korea
 - Information service or emergency call : 82-2-1899-5145
 - Department in charge : Finished Lubricants R&D Team

2. Hazards Identification

- 1) Classification of the substance or mixture
 - Acute toxicity (oral) : Category 5
 - Skin corrosion/irritation : Category 3
 - Serious eye damage/irritation : Category 2A
 - Target organ systemic toxicity (single exposure) category 1
 - Target organ systemic toxicity (repeated exposure) category 1
- 2) GHS labels, including precautionary statements
 - Symbol



- Signal word : Danger

○ Hazard statement

- H303 May harmful if swallowed.
- H316 Cause mild skin irritation.
- H319 Causes serious eye irritation
- H370 Causes damage to organs(Refer Section MSDS 11)
- H373 May cause damage to organs through prolonged or repeated exposure (Refer Section MSDS 11)

○ Precautionary statement

– Prevention

- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

– Response

- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, If present and easy to do. Continue rinsing.
- P308+P311 If exposed or concerned: Call a POISON CENTER or doctor/physician.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P314 Get medical advice/attention if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.

– Storage

- P405 Store locked up.

– Disposal

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

3) Other hazards which do not result in classification

Component	NFPA	Health	Fire	Reactivity
– Ethylene glycol		0	1	0
– Sodium Benzoate		0	1	0
– Ionized water		0	0	0
– Dipotassium hydrogenorthophosphate		1	0	0
– Sodium nitrate		1	N/A	0
– Disodium molybdate		1	N/A	0
– Methylbenzotriazole		1	1	0

3. Composition and Information on Ingredients

Component	Synonyms	CAS No.	Content(%)
1) Ethylene glycol	1,2-DIHYDROXYETHANE	107-21-1	89.0~91.0
2) Sodium Benzoate	BENZOIC ACID, SODIUM SALT	532-32-1	2.5 ~ 4.5
3) Ionized water	DIHYDROGEN OXIDE	7732-18-5	4.0 ~ 5.0
4) Dipotassium hydrogenorthophosphate	Potassium hydrogen phosphate	7758-11-4	0.3 ~ 1.2
5) Sodium nitrate	Nitric acid	7631-99-4	0.2 ~ 0.4
6) Disodium molybdate	Molybdenum sodium oxide	7631-95-0	0.1 ~ 0.3
7) Methylbenzotriazole	1H-Benzotriazole	29385-43-1	0.05 ~ 0.15

4. First Aid Measures

1) 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.

2) Skin contact :

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.

3) Inhalation :

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.

4) Ingestion :

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

- Get medical attention immediately.
- 5) Most important symptoms/effects, acute and delayed :
 - Not available
- 6) First-aid treatment and information on medical doctors :
 - Notify medical personnel of contaminated situations and have them take appropriate protective measures.

5. Fire Fighting Measures

- 1) Recommended(or prohibited) extinguishing media
 - Recommended extinguishing media :
 - Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
 - Prohibited extinguishing media :
 - Water jet
- 2) Specific hazard from chemical material
 - Not available
- 3) Special protective actions for firefighters
 - Keep unauthorized personnel out.
 - Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
 - Notify your local firestation and inform the location of the fire and characteristics hazard.
 - Wear appropriate protective equipment.
 - Keep containers cool with water spray.
 - KVapor or gas is burned at distant ignition sources can be spread quickly.

6. Accidental Release Measures

- 1) Necessary actions to protect human health :
 - Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
 - Ventilate closed spaces before entering.
 - Move container to safe area from the leak area.
 - Handling the damaged containers or spilled material after wearing protective equipment.
 - Do not direct water at spill or source of leak.
 - Avoid skin contact and inhalation.
 - Keep unauthorized people away, isolate hazard area and deny entry.
- 2) Necessary actions to protect the environment
 - Prevent runoff and contact with waterways, drains or sewers.
 - If large amounts have been spilled, inform the relevant authorities.
- 3) Purification and removal methods
 - Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
 - Notification to central government, local government. When emissions at least of the standard amount.
 - Dispose of waste in accordance with local regulation.
 - Appropriate container for disposal of spilled material collected.
 - Small leak: sand or other non-combustible material, please let use absorption.

- Wipe off the solvent.
- Dike for later disposal.

7. Handling and Storage

1) Safety handling :

- Wash thoroughly after handling.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Operators should wear antistatic footwear and clothing.
- Do not inhale the steam prolonged or repeated.

2) Storage :

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Save applicable laws and regulations.

8. Exposure Control and Personal Protection

A. Exposure limits and biological exposure limits of chemical

ACGIH TLV

- Ethylene glycol : Ceiling, 100 mg/m³ (39 ppm), Aerosol

OSHA PEL

- Not available

B. Engineering management :

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Personal protection equipment :

Respiratory protection :

- Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
- Respiratory protection is ranked in order from minimum to maximum.
- Consider warning properties before use.
- Any chemical cartridge respirator with organic vapor cartridge(s).
- Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).
- Any air-purifying respirator with a full facepiece and an organic vapor canister.
- 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.

Eyes 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.

Hands protection :

- Wear appropriate glove.

- Human body protection :
 - Wear appropriate clothing.

9. Physical and Chemical Properties

- 1) Appearance : blue liquid
- 2) Odor : No data
- 3) Odor threshold : No data
- 4) pH : 8~9 (30% solution)
- 5) Melting point/freezing point : -23°C
- 6) Initial boiling point or boiling range : > 165°C
- 7) Flash point : >110°C
- 8) Evaporation rate (BuAc=1) : No data
- 9) Flammability(solid, gas) : No data
- 10) Upper/lower flammability or explosive limits : 16.2
- 11) Vapor pressure : 2.2 mbar @ 20°C
- 12) Solubility : soluble
- 13) Vapor density : 2.02
- 14) Relative density : 1.12
- 15) Partition coefficient: n-octano/water : No data
- 16) Auto-ignition temperature : No data
- 17) Decomposition temperature : No data
- 18) Viscosity : 18
- 19) Molecular weight : No data

10. Stability and Reactivity

- 1) Chemical stability :
 - This material is stable under recommended storage and handling conditions.
- 2) Toxicant generation possibility during reaction :
 - Hazardous Polymerization will not occur.

- 3) Prohibited conditions :
- Avoid contact with incompatible materials and condition.
 - Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- 4) Prohibited materials :
- Not available
- 5) Toxicant during decomposition :
- May emit flammable vapour if involved in fire.

11. Toxicological Information

A. Information on the likely routes of exposure

- Inhalation
 - No data
- Ingestion
 - May harmful if swallowed.
- Skin contact
 - Cause mild skin irritation.
- Eye contact
 - Causes serious eye irritation

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

- Acute Toxicity
 - Oral :
 - Ethylene glycol : LD50 = 4000 mg/kg Rat (IUCLID)
 - Sodium Benzoate : LD50 > 2000 mg/kg Rat (OECD SIDS)
 - Ionized water : LD50 > 90000 mg/kg Rat (KOSHA)
 - Dipotassium hydrogenorthophosphate : LD50 1700 mg/kg Rat (IUCLID)
 - Sodium nitrate : LD50 = 1267 mg/kg Rat (HSDB)
 - Disodium molybdate : LD50 250 mg/kg Rat (Thomson Micromedex)
 - Methylbenzotriazole : LD50 675 mg/kg Rat
 - Dermal
 - Ethylene glycol : LD50 = 10600 mg/kg Rabbit (IUCLID)
 - Sodium Benzoate : LD50 >2000 mg/kg Rabbit (OECD SIDS)
 - Sodium nitrate : LD50 >5000 mg/kg Rat

(Read-across: CAS NO.7757-79-1, OECD Guideline 402, GLP, ECHA)
 - Inhalation :
 - Disodium molybdate : dust LC50 \geq 2.08 mg/l 4 hr Rat (TOMES, RTECS)
- Skin Corrosion / irritation
 - Cause mild skin irritation.
- Severe eye Damage/irritation
 - Causes serious eye irritation
- Respiratory sensitization : No data
- Skin sensitization : No data
- Carcinogenicity : ACGIH Group A4 (Ethylene glycol)
ACGIH Group A3 (Disodium molybdate : Molybdenum soluble compounds)
- Germ cell mutagenity : No data
- Reproductive Toxicity : No data

- Specific target organ Toxicity (single exposure)
 - Causes damage to organs
- Specific target organ Toxicity (repeated exposure)
 - May cause damage to organs through prolonged or repeated exposure
- Aspiration toxicity : No data

12. Ecological Information

A. Aquatic, terrestrial organisms toxicity :

- Fish
 - Ethylene glycol : LC50 = 8050 mg/l 96 hr Pimephales promelas (ECOTOX)
 - Sodium Benzoate : LC50 100 mg/l 96 hr Pimephales promelas
(OECD Screening Information Data Set)
 - Dipotassium hydrogenorthophosphate : LC50 2770000000 mg/l 96 hr (Estimate)
 - Sodium nitrate : LC50 = 5800 mg/l 96 hr (NITE)
 - Disodium molybdate : EC50 3618 mg/l 48 hr (mykiss) (ECOTOX)
 - Methylbenzotriazole : LC50 36.756 mg/l 96 hr (Estimate)
- Crustaceans
 - Ethylene glycol : LC50 = 41100 mg/l 48 hr Daphnia magna (ECOTOX)
 - Sodium Benzoate : LC50 100 mg/l 48 hr Daphnia magna
(OECD Screening Information Data Set)
 - Dipotassium hydrogenorthophosphate : LC50 1730000000 mg/l 48 hr (Estimate)
 - Methylbenzotriazole : LC50 158.021 mg/l 48 hr (Estimate)
- Algae
 - Ethylene glycol : EC50 = 6500 ~ 13000 mg/l 96 hr Selenastrum capricornutum (IUCLID)
 - Dipotassium hydrogenorthophosphate : LC50 692000000 mg/l 96 hr (Estimate)
 - Methylbenzotriazole : EC50 13.795 mg/l 96 hr (Estimate)

B. Persistence and degradability :

- Persistence
 - Ethylene glycol : log Kow = -1.93 (ICSC)
 - Sodium Benzoate : log Kow -2.27 (ICSC)
 - Ionized water : log Kow = -1.38
 - Disodium molybdate : log Kow -4.33 (Estimate)
 - Methylbenzotriazole : log Kow 1.71 (estimate)
- Degradability
 - Ethylene glycol : IBOD = 0.78 COD = 1.19 BOD/COD= 0.66 (IUCLID)

C. Bioaccumulative potential

- Bioaccumulative potential
 - Ethylene glycol : BCF = 200 (IUCLID)
 - Methylbenzotriazole : BCF 4.168 (Estimate)
- Biodegradation
 - Ethylene glycol : 89 (%) 20 day (IUCLID)
 - Sodium Benzoate : 90 (%) 7 day (IUCLID)

D. Mobility in soil :

- No data

E. Other adverse effects :

- No data

13. Disposal Considerations

1) Disposal methods :

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

2) Disposal cautions :

- 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

This product is not regulated for carriage according to ADR/RID, ADN, IMDG, ICAO/IATA.

- 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 regulations

Measure workplace substance :

- Ethylene glycol: Apply
- Sodium Benzoate: Not Applicable
- Ionized water: Not Applicable
- Dipotassium hydrogenorthophosphate: Not Applicable
- Sodium nitrate: Not Applicable
- Disodium molybdate: Not Applicable
- Methylbenzotriazole: Not Applicable

Destination management of hazardous substances:

- Ethylene glycol: Apply
- Sodium Benzoate: Not Applicable
- Ionized water: Not Applicable
- Dipotassium hydrogenorthophosphate: Not Applicable
- Sodium nitrate: Not Applicable
- Disodium molybdate: Not Applicable
- Methylbenzotriazole: Not Applicable

Substance exposure standards set:

- Ethylene glycol: Apply

- Sodium Benzoate: Not Applicable
- Ionized water: Not Applicable
- Dipotassium hydrogenorthophosphate: Not Applicable
- Sodium nitrate: Not Applicable
- Disodium molybdate: Not Applicable
- Methylbenzotriazole: Not Applicable

B. Chemical control act (Korea)

- Ethylene glycol: Not Applicable
- Sodium Benzoate: Not Applicable
- Ionized water: Not Applicable
- Dipotassium hydrogenorthophosphate: Not Applicable
- Sodium nitrate: Not Applicable
- Disodium molybdate: Not Applicable
- Methylbenzotriazole: Not Applicable

C. Hazardous Safety Administration Act by regulation

- Ethylene glycol: Apply
- Sodium Benzoate: Not Applicable
- Ionized water: Not Applicable
- Trade secrets: No Data
- Dipotassium hydrogenorthophosphate: Not Applicable
- Apply
- Disodium molybdate: Not Applicable
- Methylbenzotriazole: Not Applicable

D. Waste Management Act by regulation: No data

E. Other internal and foreign acts

EU classification

- Category results confirmed: Ethylene glycol: Xn ; R22
- Hazard Statement: Ethylene glycol: R22
- Phrases precautions: Ethylene glycol: S2

U.S. acts

- OSHA regulation (29CFR1910.119): Not Applicable
- CERCLA 103 regulation (40CFR302.4): Ethylene glycol: 2,267.995(kg), 5,000(lb)
- EPCRA 302 regulation (40CFR355.30): Not Applicable
- EPCRA 304 regulation (40CFR355.40): Not Applicable
- EPCRA 313 regulation (40CFR372.65): Ethylene glycol: Apply
- PIC substance: Not Applicable
- POPs substance: Not Applicable

16. Other Information

1) References

- Korea Occupational 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 : 2017.10.26

3) Revised frequency and Date of preparation of the latest version of the MSDS : 2017-10-26 (0)

4) Others :

To the best of our knowledge, the information provided in this MSDS document is correct. Access to this information is being provided via the Internet so that it can be made available to as many potential users as possible. We do not assume any liability for consequences of the use of this information since it may be applied under conditions beyond our control or knowledge. Also, it is possible that additional data could be made available after this MSDS was issued.

Certain hazards are described herein, however these may not be the only hazards that exist. All materials may present unknown hazards and should be used with caution.

Customers are encouraged to review this information, follow precautions, and comply with all applicable laws and regulations regarding the use and disposal of this product.

For specific technical data or advice concerning this product as supplied in your country please contact your local sales representative.

The final determination of the suitability of any material is the sole responsibility of the user.