Material Safety Data Sheet
(MSDS)

Product	ULSD (Ultra Low Sulfur Diesel)

CAS No.	Date of preparation	Date of preparation	Department of Team
68334-30-5	2008-07-25	2019-02-20	Safety / Health Planning Team

1. IDENTIFICATION

A. Product name

- 0.001% Sulfur Diesel , ULSD(Ultra Low Sulfer Diesel)

B. Recommended use and restriction on use

- General use : Fuel
- Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

- Company name : GS Caltex Corporation
- Address : 508 Nonhyun-ro, Gangnam-gu, Seoul, Korea
- Telephone number : 82-1544-5151
- Emergency telephone number : 82-1544-5151

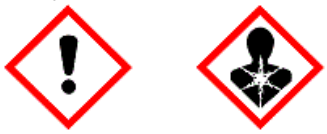
2. HAZARD IDENTIFICATION

A. GHS Classification

- Flammable liquids : Category4
- Acute Toxicity (Inhalation: dust / mist) : Category4
- Skin corrosion/irritation : Category2
- Carcinogenicity : Category2
- Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)
- Acute aquatic toxicity : Category3
- Chronic aquatic toxicity : Category3

B. GHS label elements

○ **Hazard symbols**



○ **Signal words**

- Warning

○ **Hazard statements**

- H227 Combustible liquid
- H315 Causes skin irritation
- H332 Harmful if inhaled
- H335 May cause respiratory irritation.
- H351 Suspected of causing cancer
- H402 Harmful to aquatic organisms.
- H412 Harmful to aquatic life with long lasting effects

○ **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

- P261 Avoid breathing gas/mist/vapours/spray.
- 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

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- 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 : (NFPA Classification)

○ **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 2, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Fuels, diesel	-	68334-30-5	>99.999
Sulfur, precipitated, sublimed or colloidal	-	7704-34-9	>0.001

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.

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.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- Wash thoroughly after handling.

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.
- If exposed or concerned, get medical attention/advice.

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

- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is 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.
- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Keep containers cool with water spray.
- Vapor or gas is burned at distant ignition sources can be spread quickly.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Remove all sources of ignition.
- Do not direct water at spill or source of leak.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- Keep unauthorized people away,isolate hazard area and deny entry.

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.
- 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.
- Prevent the influx to waterways, sewers, basements or confined spaces.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Refer to Engineering controls and personal protective equipment.
- 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.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- By specifying a storage area for carcinogenic substances.
- Collected them in sealed containers.
- Store away from water and sewer.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

○ **ACGIH TLV**

- [Fuels, diesel] : TWA, 100 mg/m3, Total hydrocarbons, inhalable fraction and vapor Skin

○ **OSHA PEL**

- Not available

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**

- 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 vaporcartridge(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.
- 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
- Use respiratory protection equipment that is certified by KOSHA, Korea.

○ **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 chemical resistant glove.

○ **Skin protection**

- Wear appropriate chemical resistant protective clothing.

○ **Others**

- Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Liquid
- Color	Pale amber transparent liquid
B. Odor	Fuel smell
C. Odor threshold	0.7ppm

D. pH	Not available
E. Melting point/Freezing point	-64℃
F. Initial Boiling Point/Boiling Ranges	130 ℃ ~ 360 ℃
G. Flash point	> 66 ℃
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	LEL:0.6%, UEL : 6.5%
K. Vapour pressure	≤1 ㎜Hg @ 25℃
L. Solubility	≤20㎎/ℓ @ 20℃
M. Vapour density	3~7 (air=1)
N. Specific gravity(Relative density)	0.83~0.86
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	≥ 177℃
Q. Decomposition temperature	Not available
R. Viscosity	1.5~ 6.0 cSt @ 40 ℃
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)**

- Not available

○ **(Eye·Skin)**

- Causes skin irritation

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

○ **Acute toxicity**

*** Oral**

- Product (ATEmix) : Not available
- [Sulfur, precipitated, sublimed or colloidal] : LD50 > 5000 ㎎/kg Rat

*** Dermal**

- Product (ATEmix) : > 2000mg/kg
- [Fuels, diesel] : LD50 >2000 ㎎/kg Rabbit (no death, read-across based on grouping of substances (category approach)) (ECHA)
- [Sulfur, precipitated, sublimed or colloidal] : LD50 > 2000 ㎎/kg Rabbit

*** Inhalation**

- Product (ATEmix) : 1.0mg/L < ATEmix <= 5.0mg/L
- [Fuels, diesel] : dust/mist LC50 = 4.1 ㎎/ℓ 4 hr Rat aerosol and vapour mixture (OECD Guideline 403)

○ **Skin corrosion/irritation**
- Causes skin irritation

○ **Serious eye damage/irritation**
- Not available

○ **Respiratory sensitization**
- Not available

○ **Skin sensitization**
- Not available

○ **Carcinogenicity**

*** IARC**
- Not available

*** OSHA**
- Not available

*** ACGIH**
- [Fuels, diesel] : A3

*** NTP**
- Not available

*** EU CLP**
- [Fuels, diesel] : Carc. 2

○ **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**
- [Fuels, diesel] : (Less soluble substance, less than 1 mg/L of water solubility. Acute toxicity Not classified) (EPISUITE)
- [Sulfur, precipitated, sublimed or colloidal] : LC50 866 ㎎/ℓ 96 hr Brachydanio rerio (UBA, IUCLID)

○ **Crustaceans**
- [Sulfur, precipitated, sublimed or colloidal] : EC50 ≥ 5000 ㎎/ℓ 48 hr Daphnia magna (ECOTOX)

○ **Algae**
- Not available

B. Persistence and degradability

○ **Persistence**
- [Fuels, diesel] : log Kow 3 (IUCLID) / log Kow 7.22 (Estimate)
- [Sulfur, precipitated, sublimed or colloidal] : log Kow = 0.23

○ **Degradability**
- Not available

C. Bioaccumulative potential

○ **Bioaccumulative potential**
- [Fuels, diesel] : (Not classified. Regulation EC No. 1272/2008, Less soluble substance, less than 1 mg/L of water solubility. Acute toxicity Not classified. solubility: 0.009192 EPISUITE)

○ **Biodegration**
- Not available

D. Mobility in soil

- Not available

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designated waste is mixed, it is difficult to treat separately, 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.
- Incinerate the oil by separating the oil and water
- The remainder of the water after separation will be processed in a water pollution prevention facilities.
- Do incineration or stabilization of the residue after disposal as the method of evaporation and concentration.
- Do incineration of the residue after disposal as the method of agglomeration and precipitation.
- Take care of incinerate or stabilization after treatment, purified by means of Separation•distillation•extractio•filtration•pyrolysis

B. Special precautions for disposal

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

14. TRANSPORT INFORMATION

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

- 1202

B. Proper shipping name

- DIESEL FUEL

C. Hazard Class

- 3

D. IMDG CODE/IATA DGR Packing group

- Ⅲ

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 : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-E (Flammable liquids, floating on water)

15. REGULATORY INFORMATION

A. National and/or international regulatory information

○ **POPs Management Law**

- Not applicable

○ **Information of EU Classification**

*** Classification**

- [Fuels, diesel] : H351
- [Sulfur, precipitated, sublimed or colloidal] : H315

○ **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

- 2008-07-25

C. Revision number and Last date revised

- 12 times, 2019-02-20

D. Other

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