



Material Safety Data Sheet (MSDS)

Product	Molten Sulfur		
CAS No.	Issuing date	Last revised date	Department
7704-34-9	2018-06-26	2019-02-20	Safety / Health Planning Team

1. IDENTIFICATION

A. Product name

- Molten Sulfur [PD1062]

B. Recommended use and restriction on use

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

3) Manufacturer/Supplier/Distributor Information

- Supply Company : GS Caltex Corporation
- Address : GS Tower, 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
- Information service or emergency call : (02) 1544-5151
- Department in charge : The customer service center

2. HAZARD IDENTIFICATION

A. GHS Classification

- Skin corrosion/irritation : Category1B
- Serious eye damage/irritation : Category1

B. GHS label elements

○ Hazard symbols



○ Signal words

- Danger

○ Hazard statements

- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage

○ Precautionary statements

1) Prevention

- P260 Do not breathe gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- 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.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P321 Specific treatment
- P363 Wash contaminated clothing before reuse.

3) Storage

- 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 : 1 , Flammability : 1, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Sulfur, precipitated, sublimed or colloidal	-	7704-34-9	100

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.
- 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.
- 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.

D. Ingestion contact

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

- In case of conflagration, use automatic fire sprinkler. Major fire may require withdrawal, allowing the object itself to burn.
- Do not access if the tank on fire.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- 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.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Do not direct water at spill or source of leak.
- 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.
- 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

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.
- Avoid contact with incompatible materials.
- Comply with all applicable laws and regulations for handling
- Refer to Engineering controls and personal protective equipment.
- Do not inhale the steam prolonged or repeated.

B. Conditions for safe storage, including any incompatibilities

- Avoid direct sunlight.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- No open fire.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- ACGIH TLV
 - Not available
- 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 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.
- **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	용융된 액체
- Color	Not available
B. Odor	Not available (Rotten egg)
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	113~119°C
F. Initial Boiling Point/Boiling Ranges	445 °C
G. Flash point	160 °C
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	3.95E-006 mmHg @25°C
L. Solubility	Insoluble
M. Vapour density	Not available
N. Specific gravity(Relative density)	2.07 g/cm ³ @20°C
O. Partition coefficient of n-octanol/water	0.23 (estimated)
P. Autoignition temperature	232 °C
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	32.07

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)**
 - Not available
- (Oral)**
 - Not available
- (Eye-Skin)**
 - Causes serious eye damage
 - Causes severe skin burns and eye damage

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

- Acute toxicity**
 - * **Oral**
 - [Sulfur, precipitated, sublimed or colloidal] : LD50 > 5000 mg/kg Rat
 - * **Dermal**
 - [Sulfur, precipitated, sublimed or colloidal] : LD50 > 2000 mg/kg Rabbit
 - * **Inhalation**
 - Not available
- Skin corrosion/irritation**
 - Causes severe skin burns and eye damage
- Serious eye damage/irritation**
 - Causes serious eye damage
- Respiratory sensitization**
 - Not available
- Skin sensitization**
 - Not available
- Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- Germ cell mutagenicity**
 - Not available
- Reproductive toxicity**
 - Not available
- STOT-single exposure**
 - Not available
- STOT-repeated exposure**
 - Not available
- Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- Fish**
 - [Sulfur, precipitated, sublimed or colloidal] : LC50 866 mg/l 96 hr Brachydanio rerio (UBA, IUCLID)
- Crustaceans**

- [Sulfur, precipitated, sublimed or colloidal] : EC50 \geq 5000 mg/l 48 hr Daphnia magna (ECOTOX)

Algae

- Not available

B. Persistence and degradability

Persistence

- [Sulfur, precipitated, sublimed or colloidal] : log Kow = 0.23

Degradability

- Not available

C. Bioaccumulative potential

Bioaccumulative potential

- Not available

Biodegradation

- 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 or get wastes reclaimed in a landfill based on a management.

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)

- 1350

B. Proper shipping name

- SULFUR

C. Hazard Class

- 4.1

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-A (General fire schedule)

- EmS SPILLAGE SCHEDULE : S-G (Flammable solids and self-reactive substances)

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

- POPs Management Law**
 - Not applicable
- Information of EU Classification**
 - * **Classification**
 - [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

- 2018-06-26

C. Revision number and Last date revised

- 1 times, 2019-02-20

D. Other

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