



Material Safety Data Sheet (MSDS)

Product	Propylene		
CAS No.	RTECS No.	UN No.	EC No.
115-07-1	UC6740000	1077	204-062-1
List No.	Date of preparation	Date of preparation	Department of Team
PD1072	2008-07-25	2019-11-01	Safety / Health Planning Team

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Substance name : 1-Propene [PD1072]
 EC No. : 204-062-1
 CAS No. : 115-07-1

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

- Not available

1.2.2. Uses advised against

- Not available

1.3. Details of the supplier of the safety data sheet

Manufacturer/Supplier : GS Caltex Corporation
 Address : 508 Nonhyun-ro, Gangnam-gu, Seoul, Korea

1.4. Emergency telephone number

EU-wide emergency number : 112

See section 16.6 for the list of telephone number of National Helpdesks in the European Economic Area.

SECTION 2: HAZARD IDENTIFICATION

2.1. Classification of the substance/mixture

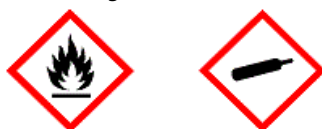
2.1.1. Classification according to Regulation (EC) No 1272/2008 [CLP]

- Flammable gases : Category1, H220
 - Gases under pressure : Compressed gas, H280

2.2. Label elements

2.2.1. Labelling according to Regulation (EC) No 1272/2008 [CLP]

* Hazard Pictogram(s)



* Signal word : Danger

* Hazard statement(s)

- H220 Extremely flammable gas
 - H280 Compressed gas ; Contains gas under pressure; may explode if heated

* Precautionary statement(s)

1) Prevention

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

2) Response

- P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

- P381 Eliminate all ignition sources if safe to do so.

3) Storage

- P403 Store in a well-ventilated place.
- P410+P403 Protect from sunlight. Store in a well-ventilated place.

4) Disposal

- Not applicable

2.3. Other hazards

- Not available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Name	EC No.	CAS No.	REACH registration No	% [weight]	Classification [1272/2008/EC]
1-Propene	204-062-1	115-07-1	-	100	Press. Gas, H280 Flam. Gas 1, H220

3.2. Mixtures

- Not applicable

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General

- No general information.

Inhalation

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

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.

Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.

Ingestion

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

4.2. Most important symptoms and effects, both acute and delayed

- Not available

4.3. Indication of any immediate medical attention and special treatment needed

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray

Unsuitable extinguishing media

- Avoid use of water jet for extinguishing

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products

- high-pressure gas; May explode when heated.

5.3. Advice for firefighters

- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Avoid inhalation of materials or combustion by-products.
- Do not approach the tank surrounded by fire until it is extinguished.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Use fire fighting procedures suitable for surrounding area.
- Leaking gas fire: do not extinguish, unless leak can be stopped safely.
- Remove sources of ignition.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment: Wear proper protective equipment.
- Emergency procedures: Not applicable
- If required, notify relevant authorities according to all applicable regulations.

6.1.2. For emergency responders

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Move container to safe area from the leak area.

6.2. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.
- Avoid dispersal of spilt material and runoff and contact with waterways, drains and sewers. If large spills, advise emergency services.

6.3. Methods and material for containment and cleaning up

6.3.1. For containment

- Clear spills immediately
- Clean up all spills immediately.
- Control personal contact by using protective equipment.
- Prevent, by any means available, spillage from entering drains or water course.

6.3.2. For cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notify the central and local government if the emission reach the standard threshold.
- Disposal of waste shall be in compliance with the Wastes Control Act
- Appropriate container for disposal of spilled material collected.

6.3.3. Other information

- Slippery when spilt.

6.4. Reference to other sections

- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for information on disposal.

SECTION 7: HANDLING AND STORAGE

7.1. 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.
- Get the manual before use.
- Do not handle until all safety precautions have been read and understood.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Handling only authorized person.

7.2. Conditions for safe storage, including any incompatibilities

- Do not use damaged containers.
- Do not apply any physical shock to container.
- Avoid direct sunlight.
- Keep in the original container.
- Keep sealed when not in use.
- Store in well ventilated area.

7.3. Specific end use(s)

- See Section 1 for information on 1.2 Relevant identified uses.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Occupational exposure limits

European Union (EU) Commission Directive 2006/15/EC (IOELVs)

- Not available

European Union (EU) Commission Directive 2006/15/EC (IOELVs) - Skin

- Not available

8.1.2. Recommended Monitoring Procedures

- Personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8.1.3. DNEL/PNEC - Values

- Not available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- Business owner is recommended to maintain below recommended exposure limits for the working place with general exhaust of gas/vapour/mist/fume.

8.2.2. Individual protection measures, such as personal protective equipment

Hand protection

- Wear appropriate chemical resistant glove.

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.

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.

Skin protection

- Wear appropriate chemical resistant protective clothing.

8.2.3 Environmental exposure controls

- Do not let product enter drains. For ecological information refer to section 12.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Appearance(State)	Gas
Appearance(Color)	Not available
Odor	Not available
Odor threshold	Not available
pH	Not available
Melting point/Freezing point	-185°C
Initial boiling point and boiling range	-43.7 °C
Flash point	-108 °C
Evaporation rate	Not available
Flammability(solid, gas)	Not available
Upper/Lower Flammability or explosive limits	10.3 / 2.4 %
Vapour pressure	10,132 hPa (a)
Vapour density	1.5
Relative density	0.0018 g/cm ³ (Gas) 0.5139 g/cm ³ (Liquid)
Solubility	200 mg/l (at 25 c)
Partition coefficient of n-octanol/water	1.77 (Log Kow)
Autoignition temperature	455 °C @ 101.3 kPa
Decomposition temperature	Not available
Viscosity	0.00834 cP (16.7°C)
Explosive properties	Not available
Oxidising properties	Not available

9.2. Other information

- Not available

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity**

- Product is stable or unstable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.2. Chemical Stability

- high-pressure gas; May explode when heated.
- May form explosive mixture.

10.3. Possibility of hazardous reactions

- Contact with other combustible material may cause fire.
- Cylinders exposed to fire may vent and release flammable gas.

10.4. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

10.5. Incompatible materials

- Not available

10.6. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Acute toxicity**

- **Oral**
 - Not available
- **Dermal**
 - Not available
- **Inhalation**
 - Not available

11.2. Skin corrosion/irritation

- In the gaseous state propylene is not irritating to the skin based on limited human studies. (SIDS)

11.3. Serious eye damage/irritation

- In the gaseous state propylene is not irritating to the eyes based on limited human studies. (SIDS)

11.4. Respiratory sensitization

- Not available

11.5. Skin sensitization

- guinea pig; not sensitising (OECD TG 406, GLP) (ECHA)

11.6. Germ cell mutagenicity

- In vitro bacterial reverse mutation assay; negative (OECD TG 471, GLP) (ECHA)

11.7. Carcinogenicity

- **IARC**
 - [1-Propene] : Group 3
- **OSHA**
 - Not available
- **ACGIH**
 - [1-Propene] : A4
- **NTP**
 - Not available
- **EU CLP**
 - Not available

11.8. Reproductive toxicity

- rat(male/female); inhalation: gas; 0, 5000, 10000 ppm; Reproductive organs from rats exposed to propene at concentrations of up to 10000 ppm for 2 years were evaluated histopathologically and there were no changes considered to be related to propene exposure. (ECHA)

11.9. Specific target organ toxicity(single exposure):

- rat(male); inhalation: gas; no adverse effects reported following propene treatment. LC50 = 50000 ppm /4h (ECHA)

11.10. Specific target organ toxicity(repeated exposure):

- rat(male/female); inhalation: gas; 14 weeks; 0, 625, 1250, 2500, 5000 and 10,000 ppm; NOAEC=10000 ppm (not toxic) (OECD TG 413) (ECHA)

11.11. Aspiration hazard

- Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1. Fish

- 96h-LC50 = 67.237 mg/L (estimated) (ECOSAR Class: Neutral Organics) (ECOSAR)

12.1.2. Invertebrate

- 48h-LC50(Daphnid) = 37.060 mg/L (estimated) (ECOSAR Class: Neutral Organics) (ECOSAR)

12.1.3. Algae

- 96h-EC50(Green Algae) = 24.416 mg/L (estimated) (ECOSAR Class: Neutral Organics) (ECOSAR)

12.2. Persistence and degradability**12.2.1. Persistence**

- log Kow = 1.77 (20 °C) (ECHA)

12.2.2. Degradability

- Not available

12.3. Bioaccumulative potential**12.3.1. Bioaccumulation**

- Not available

12.3.2. Biodegradability

- Not available

12.4. Mobility in soil

- Not available

12.5. Results of PBT and vPvB assessment

- Not available

12.6. Other adverse effects

- Not available

SECTION 13: DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

- Stabilization and minimization treatment by incineration or similar method can be applied, if more than two kinds of designated wastes are in mixture state and it is impractical to separate them
- Oil water separation technology shall be applied as pre-waste treatment if it is applicable
- It shall be treated by incineration
- Anyone with business license number who generates industrial wastes shall treat the waste by him/herself or by entrusting to the legal entities who treat the wastes, recycle the wastes of others or install and operate the waste treatment facilities according to the Wastes Control Act
- Dispose of waste in accordance with all applicable laws and regulations.

SECTION 14: TRANSPORT INFORMATION**14.1. UN No.****14.1.1. UN No. (ADR/RID/ADN)**

- 1077

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

- 1077

14.1.3. UN No. (ICAO)

- 1077

14.2. UN proper shipping name

- PROPYLENE SEE ALSO PETROLEUM GASES, LIQUEFIED

14.3. Transport hazard class(es)**14.3.1. ADR/RID/ADN Class**

- 2

14.3.2. ADR/RID/ADN Class

- Class : 2, PROPYLENE

14.3.3. ADR Label No.

- 2.1

14.3.4. IMDG Class

- 2.1

14.3.5. ICAO Class/Division

- 2.1

14.3.6. Transport Labels



14.4. Packing group

14.4.1. ADR/RID/ADN Packing group

- Not applicable

14.4.2. IMDG Packing group

- Not applicable

14.4.3. ICAO Packing group

- Not available

14.5. Environmental hazards

- Not applicable

14.6. Special precautions for user

- 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-D (Flammable gases)
- EmS SPILLAGE SCHEDULE : S-U (Gases (flammable, toxic or corrosive))
- Emergency Action Code : 2YE
- Hazard No.(ADR) : 23
- Tunnel Restriction Code : 2 (B/D)

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not applicable

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulation / legislation specific for the substance or mixture

15.1.1. Europe regulatory

15.1.1.1 REACH Restricted substance under REACH

- Not applicable

15.1.1.2 REACH Substances subject to authorization under REACH

- Not applicable

15.1.1.3 REACH SVHC

- Not applicable

15.1.1.4 Europe PBT

- Not applicable

15.1.1.5 European Union (EU) Transport of Dangerous Goods by Road - Dangerous Goods List

- Not applicable

15.2. Chemical Safety Assessment

- Not conducted

SECTION 16: OTHER INFORMATION

16.1. Indication of changes

- The Safety Data Sheet has been reviewed and the data therein were revised and laid out according to the requirements of the Commission Regulation (EC) No. 1907/2006

16.2. Abbreviations and acronyms

- 1272/2008 CLP : Classification, Labelling and Packaging regulation.
- REACH : Registration, Evaluation and authorisation of chemical substances.
- DNEL : Derive no effects level
- PNEC : Predicted no effect concentration

16.3. Key literature references and sources for data

- This Safety Data Sheet was compiled with data and information from the following sources: RTECS, ECOSAR, HSDB, SIDS SIAP, ChemWATCH, CESAR, Chemical DB

16.4. Classification procedure

- The mixture classification has been derived based on the classification of the individual components in accordance with the rules set out in Regulation (EC) No 1272/2008 (CLP) as well as the translation tables in Annex VII to the same regulation.

16.5. Training advice

- Not applicable

16.6. Further information

- The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.
- This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only.
- It should not therefore be construed as guaranteeing any specific property of the product.
- Contact National Helpdesks, List of Telephone Numbers : AUSTRIA (Vienna Wien) +43 1 515 61 0, BELGIUM (Brussels Bruxelles) +32 070 245 245, BULGARIA (Sofia) +359 2 9888 205, CROATIA +385 1 2348 342 CZECH REPUBLIC (Prague Praha) +420 224 919 293 or +420 224 915 402, DENMARK (Copenhagen) 82 12 12 12, ESTONIA (Tallinn) 112, FINLAND (Helsinki) +358 9 471 977, FRANCE (Paris) +33 1 45 42 59 59, GERMANY (Berlin) +49 30 19240, GREECE (Athens Athinaï) +30 210 77 93 777, HUNGARY (Budapest) +36 80 201 199, ICELAND (Reykjavik) +354 543 2222 or 112, IRELAND (Dublin) +353 1 8379964 or +353 1 809 2166, ITALY (Rome) +39 06 305 4343, LATVIA (Riga) 112 or +371 6704 2473, LITHUANIA (Vilnius) +370 5 236 20 52 or +370 687 53378, Luxembourg +352 70 245 245, MALTA +356 2122 4071, NETHERLANDS (Bilthoven) +31 30 274 88 88, NORWAY (Oslo) 22 591300, POLAND (Gdansk) +48 58301 65 16 or +48 58 349 2831, PORTUGAL (Lisbon Lisboa) 808 250 143, ROMANIA (Bucharest) +40 21 3183606 SLOVAKIA (Bratislava) +421 2 54 77 4166, SLOVENIA (Ljubljana) + 386 41 650 500, SPAIN +34 91 562 04 20 (spanish language) or +34 91 768 98 00 (You can request to be served in English), SWEDEN (Stockholm) 112 or +46 10 456 6700 (mon-fri