SAFETY DATA SHEET (SDS)
PROPYLENE

1. Identification

SDS record number	:	PCS95002
Date of SDS	:	01 September 2018
Identity of the substance	:	Propylene
Product Description	:	Olefinic hydrocarbon
Other names/synonyms	:	Propene, Methylethene, Methylethylene, 1 – Propylene, 1 – Propene (9CI)
Name of the supplier	:	Petrochemical Corporation of Singapore (Private) Limited
Recommended uses	:	Chemical feedstock.
Contact detail of the supplier	:	100 Ayer Merbau Road, Singapore 628277
	:	+65 68672102
24-Hour Emergency contact	:	Asia Pacific +65 3158 1074 (Singapore) China +86 10 5100 3039 (Beijing) Europe, Israel & Americas +44 (0) 1235 239 670 (UK) Middle East & Africa +44 (0) 1235 239 671 (UK)

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2. Hazards Identification

GHS Classification

Hazard Class	Hazard Category
• Flammable Gas	1
• Gases under pressure	Liquefied gas
• STOT (Single Exposure)	3 (narcotic effects)

Pictograms

Signal Word: Danger

Hazard Statements

- Extremely flammable gas
- Contains gas under pressure; may explode if heated
- Vapours may cause drowsiness or dizziness

Precautionary Statements

Prevention

- Keep away from heat/sparks/open flame/hot surface – No smoking.
- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Use only outdoors or in well-ventilated area.

Response

- Call a POISON CENTER/doctor/physician if you feel unwell.
- If INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
- Leaking gas fire : Do not extinguish, unless leak can be stopped safely
- Eliminate all ignition sources if safe to do so.

Storage

- Store in a well-ventilated place.
- Store in a well-ventilated place. Keep container tightly closed.
- Protect from sunlight and store in well-ventilated place.
- Store locked up.

Disposal

- Dispose of the contents in accordance to the local mandatory rules and regulations

Other Hazards which do not result in classification:

- High gas concentrations will displace available oxygen from the air, unconsciousness and death may occur suddenly from lack of oxygen

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3. Composition/Information On Ingredients

Chemical identification	:	Propylene
Common name(s) / synonym(s)	:	Methylethene, Methylethylene, 1 – Propylene, 1 – Propene (9CI)
CAS number / EC number	:	115-07-1

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4. First-Aid Measures

Inhalation: In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

Eye Contact: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

Skin Contact: In case of cold burns caused by rapidly expanding gas or vapourizing liquid, get prompt medical attention.

On Frostbite: rinse with plenty of water, do NOT remove clothes. Refer for medical attention

Ingestion: First aid is not applicable.

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5. Fire-Fighting Measures

Extinguishing Media

Fire Fighting: Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.

Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.

Small Fires

- Dry chemical or CO2.

Large Fires

- Water spray or fog.
- Move containers from fire area if you can do it without risk.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- **Always** stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if impossible, withdraw from area and let fire burn.

Specific Hazards Arising From The Chemical:

- General Hazards: Extremely flammable; material will readily ignite at normal temperatures.
- Flammable Gas; may readily form flammable mixtures at or above the flash point.
- Auto-refrigeration; drains may become plugged and valves may become inoperable because of the formation of ice due to expanding vapours or vapourizing liquids.

Special Protective Equipment And Precautions For Fire Fighters

- A self-contained breathing apparatus (SCBA) is recommended for indoor fires and any significant outdoor fires.
- For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA is optional.

Extremely Flammable.

- Will be easily ignited by heat, sparks or flames.
- Will form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.

- Vapors may travel to source of ignition and flash back.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.
- High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death.
- Check oxygen content before entering area.
- Turn leaking cylinder with the leak up to prevent escape of gas in liquid state

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6. Accidental Release Measures

Call Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.

- Consult an expert on the disposal of recovered material.
- Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations.
- Notify the appropriate authorities immediately.
- Take all additional action necessary to prevent and remedy the adverse effects of the spill.

Spill Or Leak

- Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Prevent spreading of vapors through sewers, ventilation systems and confined areas.
- Isolate area until gas has dispersed.

Caution: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

Evacuation
Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, **Isolate** for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Gas is heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

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7. Handling And Storage

- Keep container closed. Handle and open containers with care.
- Store in a cool, well ventilated place away from incompatible materials.
- Do not handle or store near an open flame, heat, or other sources of ignition.
- Protect material from direct sunlight.
- Material will accumulate static charges, which may cause an electrical spark (ignition source). Use proper grounding procedures.
- Do not pressurize, cut, heat, or weld containers. Empty product containers may contain product residue.
- Do not reuse empty containers without commercial cleaning or reconditioning.
- This material may also be handled at ambient temperature at pressures of up to 689 kPa (100 psig).
- Storage transport temperature: For refrigerated storage, -60 Deg.C (-75 Deg.F)
- Closed system, ventilation, explosion-proof electrical equipment and lighting.
- Prevent build-up of electrostatic charges (e.g. by grounding) if in liquid state.
- No open flames, No sparks, and No smoking

The gas is heavier than air and may travel along the ground; distant ignition possible and may accumulate in low ceiling spaces causing deficiency of oxygen. As a result of flow, agitation, etc., electrostatic charges can be generated.

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8. Exposure Controls/Personal Protection

Appropriate Engineering Controls

- The use of local exhaust ventilation is recommended to control emissions near the source.
- Laboratory samples should be handled in a fume hood.

- Provide mechanical ventilation of confined spaces.
- Use explosion-proof ventilation equipment.

Personal Protective Equipment (PPE)

- Cold insulating Gloves and safety glasses should be worn.
- Where it is likely that frostbite hazards may occur from vaporizing liquid and expanding vapor, prevent contact with eyes and skin.
- Wear safety glasses with side shields, long sleeves and insulating gloves.
- Where concentrations in air may exceed the recommended levels and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

9. Physical And Chemical Properties

Property	Value, Description
Appearance (physical state, colour etc);	Gas, Colorless liquid or gas.
Odour;	Faint
Odour threshold;	Not available
pH;	Not applicable
Melting point/freezing point;	-185 deg C
Initial boiling point and boiling range;	-48 deg C
Flash point;	-108 deg C ASTM D56 (Estimated; gas)
Evaporation rate;	Not applicable
Upper/lower flammability or explosive limits;	2 to 11.1 % by volume
Vapour pressure;	63 kPa at -57 deg C
Vapour density;	1.46
Relative density;	0.52 at 15.5 deg C
Solubility(ies);	0.02% at 38 deg C in Water
Partition coefficient: n-octanol/water;	log Pow: 1.77
Auto-ignition temperature;	458 deg C
Decomposition temperature;	Not Available
Viscosity.	0.24 cST at 24 deg C
Molecular weight	42

10. Stability And Reactivity

Reactivity/Chemical stability: Reacts violently with oxidants causing fire and explosion hazard

Possibility of hazardous reactions: hazardous polymerization will not occur

Conditions to avoid: Air contamination - causes peroxide formation

Incompatible materials: Concentrated mineral acids, halogens, nitrogen dioxide, oxidizing agents, molten sulfur, halogenated compounds

Hazardous decomposition products: None

11. Toxicological Information

Routes Of Exposure:
The substance can be absorbed into the body by inhalation.

Inhalation Risk:
On loss of containment this gas can cause suffocation by lowering the oxygen content of the air in confined areas. Vapour concentrations above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anaesthetic and may have other central nervous system effects. Causes suffocation (asphyxiant) if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.

Effects Of Short-Term Exposure:
Rapid evaporation of the liquid may cause frostbite. The substance may cause effects on the central nervous system. Exposure could cause lowering of consciousness.

Eye Contact: Exposure to rapidly expanding gas or vapourizing liquids may cause frostbite (cold burns) or tissue damage.

Skin Contact: Exposure to rapidly expanding gas or vapourizing liquid may cause frostbite (cold burn). In case of frostbite, place affected area in warm water until circulation returns.

Ingestion: Not considered to be a hazard.

Occupational Exposure Limit

ACGIH Recommends: For Propylene, the ACGIH has no Threshold Limit Value but considers it a simple asphyxiant.

Manufacturer Recommends: 1000 ppm recommended based on composition.

12. Ecological Information

Toxicity
Persistence and degradability
Bioaccumulative potential
Mobility in soil
Other adverse effects

13. Disposal Considerations

Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. Transport Information

WHMIS Information:
Class B, Division 1: Flammable Gases
TDG Information (Rail/Road):
PIN Number: UN 1077
Shipping Name: Propylene (Propene)
Packing Group: X

Primary TDG: Class 2.1
F+ symbol
R: 12
S: 2-9-16-33

UN Hazard Class: 2.1

15. Regulatory Information

Transport Emergency Card: TEC (R)-137.
NFPA Code: H1; F4; R1.
ICSC # 0559
CAS # 115-07-1
UN # 1077
EC # 601-011-00-9

16. Other Information

Prepared By: Material Safety Committee
SDS Prepared on: 1/10/2010
Reviewed 1 on: 1/10/2013
Revised 2 on: 1/9/2018

Revision (2) Notes	
1	Sect. 2: Inserted pictogram corresponding to STOT (SE) Hazard Cat. 3

CAUTION: The information given above ("**the Information**") relates only to the substance or mixture listed herein. The Information may not be valid when used in combination with any other substance or mixture or in any process. If the substance or mixture is to be used for a purpose other than that stated herein or under conditions other than specified herein, the Information cannot be relied upon as being complete or accurate, and the user is advised to consult the supplier before using the substance or mixture for such other purpose or under such other conditions. The Information is given based on information available at the indicated date of preparation and no representation or warranty is given that it will be correct as of any time after the indicated date of preparation.

GHS Label

Propylene

DANGER

Hazard Statements

- Extremely flammable gas
- Contains gas under pressure; may explode if heated
- Vapours may cause drowsiness or dizziness

Precautionary Statements

- Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Use only outdoors or in well-ventilated area.

For further information on this product, refer to Manufacturer's Safety Data Sheet

Contact detail of the supplier : 100 Ayer Merbau Road, Singapore 628277
Emergency contact : +65 68672102