1. Identification

Product identifier: Propylene, Chemical Grade

Other means of identification

- SDS number: 310-GHS
- Synonyms: Chemical Grade Propylene, Propene, Methylethene, Methyl Ethylene, 1-Propene

Recommended use: Organic synthesis. Household and industrial fuel.

Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier: Valero Marketing & Supply Company and Affiliates
One Valero Way
San Antonio, TX 78269-6000

General Assistance: 210-345-4593
E-Mail: CorpHSE@valero.com
Contact Person: Industrial Hygienist

Emergency Telephone: 24 Hour Emergency 866-565-5220
1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards: Flammable gases
- Category 1
- Gases under pressure: Liquefied gas

Health hazards: Not classified.

OSHA defined hazards: Simple asphyxiant

Label elements

Signal word: Danger
Hazard statement: Extremely flammable gas. Contains gas under pressure; may explode if heated.
Precautionary statement:

- Prevention: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Response: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
- Storage: Protect from sunlight. Store in a well-ventilated place.
- Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC): None known.

3. Composition/information on ingredients

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene</td>
<td>115-07-1</td>
<td>92 - 100</td>
</tr>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Ethane</td>
<td>74-84-0</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Ethylene</td>
<td>74-85-1</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>
4. First-aid measures

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Call a physician or poison control center immediately.

Skin contact
Wash frost-bitten areas with plenty of water. Do not remove clothing. Get medical attention immediately.

Eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Ingestion
Ingestion is not a typical route of exposure for gases or liquefied gases.

Most important symptoms/effects, acute and delayed
Narcosis. Behavioral changes. Decrease in motor functions. Contact with liquefied gas may cause frostbite.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Dry chemical, CO2, water spray, fog, or foam.

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire-fighting equipment/instructions
Self-contained breathing apparatus, operated in positive pressure mode and full protective clothing must be worn in case of fire.

Move container from fire area if it can be done without risk.

Do not extinguish fires unless gas flow can be stopped safely; explosive re-ignition may occur. Promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus. Stop flow of material. Use water to keep fire exposed containers cool and to protect personnel effecting shutoff. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, sewers or drinking water supply.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Evacuate the area promptly. No action shall be taken involving any personal risk or without suitable training. Keep unnecessary personnel away.

Ensure adequate ventilation. In case of inadequate ventilation, use respiratory protection. Wear appropriate personal protective equipment (See Section 8).

Methods and materials for containment and cleaning up
Ventilate well, stop flow of gas or liquid if possible. Immediately contact emergency personnel.

Environmental precautions
Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent from entering into soil, ditches, sanitary sewers, waterways and/or groundwater.

7. Handling and storage

Precautions for safe handling
Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear appropriate personal protective equipment (See Section 8). Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Do not breathe gas. Do not get in eyes, on skin, on clothing. Use only with adequate ventilation.

Conditions for safe storage, including any incompatibilities
Store in accordance with local, regional, national, and international regulations. Secure cylinders in an upright position at all times, close all valves when not in use. Store in a cool, dry, well-ventilated place. Keep container tightly closed and sealed until ready for use. Protect cylinders from damage.
8. Exposure controls/personal protection

**Occupational exposure limits**

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>PEL</td>
<td>1800 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**US. ACGIH Threshold Limit Values**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene (CAS 115-07-1)</td>
<td>TWA</td>
<td>500 ppm</td>
</tr>
</tbody>
</table>

**US. NIOSH: Pocket Guide to Chemical Hazards**

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>TWA</td>
<td>1800 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

**Biological limit values**

No biological exposure limits noted for the ingredient(s).

**Appropriate engineering controls**

Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. The engineering controls also need to keep gas, vapor, or dust concentrations below any lower explosive limits.

**Individual protection measures, such as personal protective equipment**

- **Eye/face protection**
  - Wear approved safety glasses or goggles.

- **Skin protection**
  - **Hand protection**
    - Wear appropriate chemical resistant gloves.
  - **Other**
    - Wear protective clothing appropriate for the risk of exposure.

- **Respiratory protection**
  - If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

- **Thermal hazards**
  - Wear appropriate thermal protective clothing, when necessary.

- **General hygiene considerations**
  - Do not eat, drink or smoke when using the product. Wash thoroughly after handling. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practices.

9. Physical and chemical properties

**Appearance**

- Colorless liquefied gas.

**Physical state**

- Gas.

**Form**

- Compressed liquefied gas.

**Color**

- Colorless

**Odor**

- Weak odor. Gassy.

**Odor threshold**

- Not available.

**pH**

- Not available.

**Melting point/freezing point**

- -301 °F (-185 °C)

**Initial boiling point and boiling range**

- -53.86 °F (-47.7 °C)

**Flash point**

- -162.7 °F (-108.2 °C) Closed Cup

**Evaporation rate**

- Not available.

**Flammability (solid, gas)**

- Not available.

**Upper/lower flammability or explosive limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammability limit - lower (%)</td>
<td>2 %</td>
</tr>
<tr>
<td>Flammability limit - upper (%)</td>
<td>11.1 %</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
Vapor density 1.4
Relative density 0.61
Solubility(ies)
  Solubility (water) Insoluble in the cold water.
Partition coefficient (n-octanol/water) Not available.
Auto-ignition temperature 850.73 - 859.73 °F (454.85 - 459.85 °C)
Decomposition temperature Not available.
Viscosity Not available.
Other information
  Percent volatile Essentially 100%
  VOC (Weight %) 100%

10. Stability and reactivity
Reactivity The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions Polymerization will not occur.
Conditions to avoid In a fire or if heated, a pressure increase will occur and the container may burst or explode.
Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information
Information on likely routes of exposure
  Ingestion Not likely, due to the form of the product.
  Inhalation Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.
  Skin contact Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.
  Eye contact Contact with liquefied gas may cause frostbite.
Symptoms related to the physical, chemical and toxicological characteristics
Information on toxicological effects
Acute toxicity Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite ("cold burn").

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 1442 mg/l, 15 Minutes</td>
</tr>
<tr>
<td>Propylene (CAS 115-07-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Mouse</td>
<td>680 mg/l, 2 Hours</td>
</tr>
<tr>
<td></td>
<td>Rat</td>
<td>658 mg/l, 4 Hours</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Serious eye damage/eye irritation Direct contact with liquefied gas may cause eye damage from frostbite.
Respiratory or skin sensitization Based on available data, the classification criteria are not met.
Skin sensitization  Not a skin sensitizer.

Germ cell mutagenicity  Based on available data, the classification criteria are not met.

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Propylene (CAS 115-07-1)  3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity  Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure  Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure  Based on available data, the classification criteria are not met.

Aspiration hazard  Not applicable.

Chronic effects  May cause central nervous system effects.

12. Ecological information

Ecotoxicity  Not expected to be harmful to aquatic organisms.

Persistence and degradability  Not available.

Bioaccumulative potential  Not available.

Partition coefficient n-octanol / water (log Kow)

<table>
<thead>
<tr>
<th>Compound</th>
<th>log Kow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane</td>
<td>2.36</td>
</tr>
<tr>
<td>Propylene</td>
<td>1.77</td>
</tr>
</tbody>
</table>

Mobility in soil  Not available.

Other adverse effects  Not available.

13. Disposal considerations

Disposal instructions  Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste.

Local disposal regulations  Dispose of in accordance with local regulations.

Hazardous waste code  D001: Waste Flammable material with a flash point <140 °F

Waste from residues / unused products  Dispose of in accordance with local regulations.

Contaminated packaging  Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number  UN1075
UN proper shipping name  Petroleum gases, liquefied
Transport hazard class(es)  2.1
  Class  2.1
  Subsidiary risk  -
  Packing group  Not applicable.
Special precautions for user  Read safety instructions, SDS and emergency procedures before handling.
Special provisions  T50
Packaging exceptions  306, 304
Packaging non bulk  314, 315
Packaging bulk

IATA

UN number  UN1075
UN proper shipping name  Petroleum gases, liquefied
Transport hazard class(es)  2.1
  Class  2.1
  Subsidiary risk  -
  Label(s)  2.1
  Packing group  Not applicable.
Environmental hazards  No.
ERG Code  10L
Special precautions for user  Read safety instructions, SDS and emergency procedures before handling.
IMDG

UN number  UN1075
UN proper shipping name  PETROLEUM GASES, LIQUEFIED
Transport hazard class(es)
  Class  2.1
  Subsidiary risk  -
  Label(s)  2.1
Packing group  Not applicable.
Environmental hazards
  Marine pollutant  No.
EmS  F-D*, S-U
Special precautions for user  Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  Not applicable. This product is a compressed or liquefied gas and when transported in bulk is covered under IGC code.

15. Regulatory information

US federal regulations  This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
  Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
  Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)
Propane (CAS 74-98-6)  LISTED
Propylene (CAS 115-07-1)  LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
  Immediate Hazard - No
  Delayed Hazard - No
  Fire Hazard - No
  Pressure Hazard - No
  Reactivity Hazard - No

SARA 302 Extremely hazardous substance  Not listed.

SARA 311/312 Hazardous chemical  Yes

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propylene</td>
<td>115-07-1</td>
<td>92 - 100</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List  Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
  Propane (CAS 74-98-6)
  Propylene (CAS 115-07-1)

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
Hazardous substance

Safe Drinking Water Act (SDWA)  Not regulated.
US state regulations
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

WARNING: Byproducts of the combustion of propane contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

California requires all "persons in the course of doing business" whose products are sold in California to comply with Proposition 65 (Cal. Health and Safety Code Sections 25249.6 et seq.). Accordingly, resellers of this product in California shall comply with Proposition 65, including the provision of any necessary warnings for exposure to chemicals listed by the State of California: http://oehha.ca.gov/prop65/prop65_list/files/P65single111811.pdf

US. Massachusetts RTK - Substance List
Propane (CAS 74-98-6)
Propylene (CAS 115-07-1)

US. New Jersey Worker and Community Right-to-Know Act
Propane (CAS 74-98-6)
Propylene (CAS 115-07-1)

US. Pennsylvania Worker and Community Right-to-Know Law
Propane (CAS 74-98-6)
Propylene (CAS 115-07-1)

US. Rhode Island RTK
Propane (CAS 74-98-6)
Propylene (CAS 115-07-1)

US. California Proposition 65
US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 27-June-2013
Revision date 28-May-2014
Version # 02
Further information HMIS® is a registered trade and service mark of the NPCA.
NFPA Ratings

References

ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

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