1. Identification

Product identifier Propane
Other means of identification
SDS number 309-GHS
Synonyms Dimethylmethane; propane (dot); propyl hydride; dimethyl methane
See section 16 for complete information.
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
Health hazards Not classified.
OSHA defined hazards Simple asphyxiant
Label elements

Signal word Danger
Hazard statement 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.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane</td>
<td>74-98-6</td>
<td>90-100</td>
</tr>
<tr>
<td>Propylene</td>
<td>115-07-1</td>
<td>0-10</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**

**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>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS Mixture)</td>
<td>PEL</td>
<td>1800 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td></td>
</tr>
<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>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS Mixture)</td>
<td>TWA</td>
<td>1800 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
<tr>
<td>Components</td>
<td></td>
<td></td>
</tr>
<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
Faint. May have natural gas odorant added.

Odor threshold
Not available.

pH
Not available.

Melting point/freezing point
-302.6 °F (-185.89 °C)

Initial boiling point and boiling range
-43.22 °F (-41.79 °C)

Flash point
-156.0 °F (-104.5 °C) Closed Cup

Evaporation rate
Not available.

Flammability (solid, gas)
Not available.
Upper/lower flammability or explosive limits

- Flammability limit - lower (%): 2.3%
- Flammability limit - upper (%): 9.5%
- Explosive limit - lower (%): Not available.
- Explosive limit - upper (%): Not available.

Vapor pressure: Not available.
Vapor density: 1.6
Relative density: 0.59
Solubility(ies)
- Solubility (water): Insoluble.
- Partition coefficient (n-octanol/water): Not available.
Auto-ignition temperature: 841.73 °F (449.85 °C)
Decomposition temperature: Not available.
Viscosity: Not available.

Other information
- Molecular formula: C3-H8
- Molecular weight: 44.1 g/mol
- 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: Narcosis. Behavioral changes. Decrease in motor functions.

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").
- 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
  - Respiratory 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>Substance</th>
<th>log Kow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propane (CAS 74-98-6)</td>
<td>2.36</td>
</tr>
<tr>
<td>Propylene (CAS 115-07-1)</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

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1978</th>
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<tbody>
<tr>
<td>UN proper shipping name</td>
<td>PROPANE</td>
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<tr>
<td>Transport hazard class(es)</td>
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<tr>
<td>Class</td>
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<tr>
<td>Subsidiary risk</td>
<td>-</td>
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<tr>
<td>Packing group</td>
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<tr>
<td>Special precautions for user</td>
<td>Read safety instructions, SDS and emergency procedures before handling.</td>
</tr>
<tr>
<td>Special provisions</td>
<td>19, T50</td>
</tr>
<tr>
<td>Packaging exceptions</td>
<td>306</td>
</tr>
<tr>
<td>Packaging non bulk</td>
<td>304</td>
</tr>
<tr>
<td>Packaging bulk</td>
<td>314, 315</td>
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</table>

DOT BULK

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<th>UN number</th>
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<tr>
<td>UN proper shipping name</td>
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<td>Transport hazard class(es)</td>
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<tr>
<td>Class</td>
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<tr>
<td>Special precautions for user</td>
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</tr>
<tr>
<td>Packaging bulk</td>
<td>314, 315</td>
</tr>
</tbody>
</table>
IATA

UN number UN1978
UN proper shipping name PROPANE
Transport hazard class(es)
  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 UN1978
UN proper shipping name PROPANE
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 Not applicable. This product is a compressed or liquefied gas and when transported in bulk is covered under IGC code.
Annex II of MARPOL 73/78 and the IBC 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 - Yes
  Delayed Hazard - No
  Fire Hazard - Yes
  Pressure Hazard - No
  Reactivity Hazard - No

SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
Yes

SARA 313 (TRI reporting)
Chemical name CAS number % by wt.
Propylene 115-07-1 0-10

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)
Safe Drinking Water Act (SDWA)
Food and Drug Administration (FDA)
US state regulations

Hazardous substance
Not regulated.
Total food additive
Direct food additive
GRAS food additive
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)


International Inventories

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

*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   13-May-2013
Revision date 23-May-2014
Version #   03
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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