Product Safety Assessment

**DOW™ Propane**


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Names
- CAS No. 74-98-6
- CAS No. 68476-85-7
- CAS No. 68606-26-8
- Propane
- Propane CK
- Propane DPC
- Propane DSR
- Propane EPC
- DOW™ propane
- Liquefied petroleum gas (LPG)
- Hydrocarbons, C3; petroleum gas
- Dimethylmethane
- Propane-PM
- Propane nonodorized
- Propane plus de-ethanizer
- Propane concentrate

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**Product Overview**

- Propane is a colorless, odorless, flammable gas. Propane occurs naturally deep in the earth mixed with natural gas and oil. Propane is separated from natural gas at natural-gas processing facilities and from crude oil at refineries. It is usually transported and stored as a liquid under pressure. For further details, see Product Description.

- Propane is used as a residential and commercial energy source, a raw material (feedstock) for chemical production, in the construction and agricultural industries and for motor transportation. DOW™ propane is used as a raw material in the production of ethylene and other chemicals, a fuel source, and as an industrial gas. For further details, see Product Uses.

- Occupational exposure to propane is possible during extraction, transfer, or use. In chemical manufacturing, propane is consumed in closed systems with engineering controls to prevent fugitive emissions. Consumer exposure is possible for those who use propane as a fuel. For further details, see Exposure Potential.

- Eye or skin contact with propane in the vapor state is essentially nonirritating. Contact with liquid propane may cause a frostbite-type injury due to rapid cooling. Propane in vapor form is an asphyxiant. In confined or poorly ventilated areas vapor can accumulate and cause unconsciousness and death due to displacement of oxygen (suffocation). For further details, see Health Information.

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Propane is nontoxic and insoluble (does not dissolve) in water. It must remain under pressure to remain a liquid. When pressure is released, propane will quickly disperse into the atmosphere and photodegrade (breakdown by sunlight) within days or weeks. Because propane is a gas and would partition into the atmosphere, even when released to water, biodegradation is not a significant environmental fate pathway. Propane has a low bioconcentration potential (tendency to accumulate in the food chain. Propane is not considered a greenhouse gas. For further details, see Environmental Information.

Propane liquid and vapors are extremely flammable. Vapors are heavier than air and can displace the oxygen available for breathing. Vapors can travel long distances and accumulate in low-lying areas. Ignition and/or flashback may occur. Liquid propane is stored under pressure. It is stable under normal storage and use conditions. Exposure to elevated temperatures can cause propane to decompose. Avoid contact with oxidizing materials such as chlorine, halogens, oxygen, and ozone. For further details, see Physical Hazard Information.

Manufacture of Product

- **Production** – In 2008, world liquefied petroleum gas (LP gas or LPG) production and consumption was estimated to be 234 metric kilotonnes (516 million pounds). This estimate combines propane and butanes, which are extracted together.
- **Process** – Propane is separated from natural gas at natural-gas processing facilities and from crude oil at refineries. Globally, natural-gas processing is the largest supply source of LPG, accounting for over 51% of total worldwide production in 2008. LPG is transported and stored under pressure. The structure of propane is shown below.

\[
\text{H}_3\text{C} = \text{CHCH}_3
\]

Product Description

Propane is a colorless, odorless gas at atmospheric pressure. It is usually transported and stored as a liquid under pressure, since liquid propane is 270 times more compact than propane gas. Odorants are often added to give propane a sulfur-like odor to help detect leaks.

Product Uses

DOW™ propane is used as a raw material in the production of ethylene and other chemicals, as a fuel source, and as an industrial gas. Propane (or LPG) is used worldwide as a clean-burning fuel source for the following applications:

- **Residential** – for furnaces, space heaters, water heaters, fireplaces, refrigerators, clothes dryers, lighting, outdoor grills, pool heaters, generators, RV appliances
- **Commercial/industrial/institutional** – for forklifts, commercial furnaces and water heaters
- **Construction** – for heating asphalt at the job site, portable heaters

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**Exposure Potential**

Propane is a widely used energy source for the residential, commercial, industrial, and agricultural sectors. Propane is also used by the chemical industry for the production of chemicals. Based on these uses, the public could be exposed through:

- **Workplace exposure** – Occupational exposure to propane is possible during extraction, transfer, or use. It is manufactured and consumed in closed systems with engineering controls to prevent fugitive emissions. Those working with propane in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to propane** – Propane is a widely used home energy source, especially in rural areas. Consumer exposure is possible for those who use propane in the home. See Health Information.

- **Environmental releases** – Propane gas released to the environment would disperse into the atmosphere and photodegrade (breakdown by sunlight) within days. Propane gas released to water or soil would quickly partition into the air. Because of its volatility, biodegradation is not a significant environmental fate pathway for propane in surface environments. It is not classified as dangerous to aquatic organisms. Liquid propane released to water results in boiling, frothing, and rapid generation of vapor. Liquid propane released to soil could result in the formation of ice, which would evaporate (volatilize) as it warms. See Environmental, Health, and Physical Hazard Information.

- **Large release** – Evacuate personnel upwind of the spill. Ground and bond all containers and handling equipment. Eliminate ignition sources. Stop the flow of gas if possible. Propane in liquid and vapors are fire and explosion hazards. Vapors may travel long distances and accumulate in low-lying areas. Ignition or flashback may occur. Ventilate the area. Knock down vapors with a fine water spray. Spills of liquefied propane may form ice, which can plug drains and make valves inoperable. Water contact with liquefied propane can result in boiling, frothing, and rapid generation of vapor. Use foam to smother or suppress liquefied gas. Only trained personnel must be involved in clean-up operations. Positive pressure, self-contained breathing apparatus (SCBA) with an approved full-face mask is recommended for emergency work. The public should be warned of any downwind explosion hazard. See Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Do not attempt to extinguish the fire. Keep people away and isolate the fire area. If flames are accidentally extinguished, explosive re-ignition may occur. Stop the flow of gas if possible and allow the fire to burn out. Deny any unnecessary entry into the area and consider the use of unmanned hose holders. Do not use water to extinguish liquefied propane. Eliminate ignition sources. Once product flow has stopped, small fires may be extinguished with a water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam. **Warning!** Contact of water with liquefied propane can result in boiling, frothing, and rapid generation of vapor. Firefighters should wear positive-pressure, self-contained...
breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Health Information

**Eye or skin contact** – Vapor may cause eye irritation experienced as mild discomfort and redness. Eye or skin contact with liquefied propane may cause a frostbite-type injury due to rapid cooling. Effects may be delayed.

**Inhalation** – In confined or poorly ventilated areas, vapor can easily accumulate and cause unconsciousness or death due to displacement of oxygen (suffocation). Excessive exposure may cause headache, dizziness, anesthesia, drowsiness, and other central nervous system effects. Excessive inhalation may increase sensitivity to epinephrine and increase myocardial irritability (irregular heartbeats).

**Ingestion** – Swallowing propane gas is unlikely. Liquid may cause frostbite of the lips and mouth.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Environmental Information


Propane has a very low boiling point, a very high vapor pressure, and is insoluble in water. It is a gas under almost all environmental conditions. If released to surface water or soil it would rapidly evaporate and disperse into the atmosphere. Propane will then degrade by photodegradation (exposure to sunlight). Because of its volatility, biodegradation is not a significant environmental fate pathway for propane in surface environments.

Propane has a low bioconcentration potential (tendency to accumulate in the food chain), and estimated toxicity data indicate that it is moderately toxic to fish and other aquatic organisms.

Propane is not considered a greenhouse gas.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

Physical Hazard Information

Propane liquid and vapors are extremely flammable. Avoid static discharge and keep away from heat, sparks, and flame. Vapor displaces the oxygen available for breathing. Use with adequate ventilation. Vapors can travel long distances and accumulate in low-lying areas. Ignition and/or flashback may occur.

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Liquid propane is stored under pressure. It is stable under normal storage and use conditions. Exposure to elevated temperatures can cause propane to decompose. Avoid contact with oxidizing materials such as chlorine, halogens, oxygen, and ozone.

Electrically bond and ground all containers and equipment before transferring or using propane.

For more information, request the relevant Safety Data Sheet from the Dow Customer Information Group.

### Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of propane. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet or Contact Us.

### Additional Information

- Safety Data Sheet (request from the Dow Customer Information Group at [www.dow.com/assistance/dow cig.htm](http://www.dow.com/assistance/dow cig.htm))
- Contact Us ([www.dow.com/assistance/dow cig.htm](http://www.dow.com/assistance/dow cig.htm))
- “Propane,” Hazardous Substances Data Bank (HSDB), National Library of Medicine, TOXNET system ([http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@na+PROPANE](http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@na+PROPANE))

For more business information about DOW™ propane, contact the Dow Customer Information Group at [www.dow.com/assistance/dow cig.htm](http://www.dow.com/assistance/dow cig.htm).
References

3 Propane Safety Data Sheet, The Dow Chemical Company
NOTICES:

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