

# GAS INNOVATIONS

## MATERIAL SAFETY DATA SHEET (MSDS)

## BUTENE

### PRODUCT IDENTIFICATION

▪D.O.T. SHIPPING NAME	(1-Butene)
▪SYNONYM (S)	Liquefied Petroleum Gas, Ethylethylene, Alpha-Butene, Butene-1
▪D.O.T. I.D. NUMBER	UN-1012
▪D.O.T. HAZZARD CLASS	2.1 Flammable Gas
▪D.O.T. LABEL (S)	Flammable Gas
▪C.A.S. NUMBER	106-98-9
▪CHEMICAL FORMULA	C <sub>4</sub> H <sub>8</sub> or CH <sub>3</sub> CH <sub>2</sub> CH: CH <sub>2</sub> or CH <sub>2</sub> :CHCH <sub>2</sub> CH <sub>3</sub>

### PHYSICAL DATA

▪MOLECULAR WEIGHT	56.108
▪FREEZING POINT	-185.3°C, -301.6°F
▪BOILING POINT	-6.5°C, 20.7 °F
▪VAPOR PRESSURE	162kPa (gauge), 23.5 psig @ 21.1°C
▪SPECIFIC VOLUME	0.418 m <sub>3</sub> /kg, 6.7 ft <sub>3</sub> /lb @ 1 atm, 21.1°C
▪RELATIVE DENSITY, (air=1)	2.00 @ 1 atm, 20°C
▪SOLUBILITY IN WATER	Negligible
▪DESCRIPTION	At room temperature and atmospheric pressure 1-butene is a colorless, flammable gas. It is shipped as a liquefied gas under its own vapor pressure.

### FIRE AND EXPLOSION HAZARD DATA

▪FLAMMABLE LIMITS IN AIR	1.6 – 9.3 % by volume
▪AUTO-IGNITION TEMPERATURE	384°C, 723°F
▪FIRE FIGHTING PROCEDURES	The only safe way to extinguish a 1-Butene fire is to stop the flow of gas. IF the flow cannot be stopped, let the fire burn out while cooling the cylinder and the surroundings using a water spray. Personnel may have to wear approach-type protective suits and positive pressure self-contained breathing apparatus. Firefighters' turnout gear may be inadequate
▪UNUSUAL HAZARDS	1. Cylinders exposed to fire may rupture with violent force. Extinguish surrounding fire and keep cylinders cool by applying water from a maximum possible distance with a water spray. 2. Flammable gases may spread from a spill after the fire is extinguished and be subject to re-ignition.

Date prepared: September 7, 2007

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## HEALTH HAZARD DATA

- PERMISSIBLE EXPOSURE LIMITS
- ACCUTE EFFECTS OVEREXPOSURE
- CHRONIC EFFECTS OF OVEREXPOSURE

OSHA TWA       None established  
ASGIH TWA      None established

1-Butene is a simple asphyxiant. Inhalation of high concentration may cause rapid respiration, dizziness, fatigue, and nausea. Massive exposure may cause unconsciousness and death. Contact with the liquid may cause frostbite.  
Unknown.

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## FIRST AID INFORMATION

- INHALATION
- CONTACT

Move victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.  
Treat for frostbite.

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## REACTIVITY DATE

- STABILITY
- INCOMPATIBILITY
- HAZARDOUS DECOMPOSITION/ OXIDATION PRODUCTS
- POLYMERIZATION

( X ) Stable. ( ) Unstable.  
Oxidizing material.  
Carbon monoxide, carbon dioxide  
  
( ) Will not occur ( X ) May Occur

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## SPILL OR LEAKAGE PROCEDURE

Shut off all ignition sources and ventilate the area.

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## PRECAUTIONS

- STORAGE RECOMMENDATIONS
- PERSONAL PROTECTIVE EQUIPMENT
- BEFORE USING THE GAS

Cylinders should be stored and used in dry, cool, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers

1. Eye protection – Safety glasses should be worn.
2. Respiratory protection – Positive pressure self-contained breathing apparatus should be worn if it is suspected that 1-butene is in the air. Gas displaces the air and causes a deficiency of oxygen and the possibility of asphyxiation.
3. Skin protection – No special equipment is required. Gloves are recommended for cylinder handling.

1. Secure the cylinders to prevent it from falling or being knocked over.
2. Install check valves or traps to prevent suckback to the cylinder.
3. Ground all lines and equipment.
4. Leak check the lines and equipment.
5. Have an emergency plan covering steps to be taken in the event of an accidental release.

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## **DISCLAIMER**

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Date prepared: September 7, 2007

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