

GAS INNOVATIONS

MATERIAL SAFETY DATA SHEET (MSDS)

BUTANE

PRODUCT IDENTIFICATION

▪D.O.T. SHIPPING NAME	Butane
▪SYNONYM (S)	Normal Butane, Butane, n-Butane, Butyl Hydride
▪D.O.T. I.D. NUMBER	UN-1011
▪D.O.T. HAZZARD CLASS	2.1 Flammable Gas
▪D.O.T. LABEL (S)	Flammable Gas
▪C.A.S. NUMBER	106-97-8
▪CHEMICAL FORMULA	CH ₃ CH ₂ CH ₂ CH ₃ or C ₄ H ₁₀

PHYSICAL DATA

▪MOLECULAR WEIGHT	58.124
▪FREEZING POINT	-138.4°C, -217.0°F
▪BOILING POINT	-0.6°C, 31.1 °F
▪VAPOR PRESSURE	110 kPa (gauge), 16.3 psig @ 21.1°C
▪SPECIFIC VOLUME	0.400 m ³ /kg, 6.4ft ³ /lb @ 1 atm, 21.1°C
▪RELATIVE DENSITY, (air=1)	2.11 @ 1 atm, 20°C
▪SOLUBILITY IN WATER	3.147 cm ³ /100 cm ³ water @ 1 atm, 0°C
▪DESCRIPTION	At room temperature and atmospheric pressure n-butane is a colorless, flammable, relatively nontoxic gas, with a characteristic natural gas odor. It is shipped as a liquefied gas under its own vapor pressure.

FIRE AND EXPLOSION HAZARD DATA

▪FLAMMABLE LIMITS IN AIR	1.8 – 8.4 % by volume
▪AUTO-IGNITION TEMPERATURE	430°C, 806°F
▪FIRE FIGHTING PROCEDURES	The only safe way to extinguish an n-butane 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. Small secondary fires may be brought under control by using carbon dioxide or a dry chemical fire extinguisher and stopping the flow.

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HEALTH HAZARD DATA	▪ 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.
	▪ PERMISSIBLE EXPOSURE LIMITS	OSHA TWA None established ASGIH TWA 800 ppm (1,900 mg/m ₃)
	▪ ACCUTE EFFECTS OVEREXPOSURE	n-Butane 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 phase may cause frostbite.
	▪ CHRONIC EFFECTS OF OVEREXPOSURE	None known.

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

REACTIVITY DATE	▪ STABILITY	(X) Stable. () Unstable.
	▪ INCOMPATIBILITY	Oxidizing material.
	▪ HAZARDOUS DECOMPOSITION/ OXIDATION PRODUCTS	Carbon monoxide, carbon dioxide
	▪ POLYMERIZATION	(X) Will not occur () May Occur

SPILL OR LEAKAGE PROCEDURE	Shut off all ignition sources and ventilate the area. For controlling large flows, personnel may have to wear approach-type protective suits and self-contained breathing apparatus.
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PRECAUTIONS	▪ STORAGE RECOMMENDATIONS	Cylinders should be stored and used in dry, well-ventilated areas away from sources of heat or ignition. Do not store with oxidizers
	▪ PERSONAL PROTECTIVE EQUIPMENT	1. Eye protection – Safety glasses should be worn. 2. Respiratory protection – Approved respiratory equipment must be worn when airborne concentrations exceed safe levels. 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.
	▪ BEFORE USING THE GAS	1. Secure all lines and equipment. 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. 6.

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