



AIR LIQUIDE AMERICA SPECIALTY GASES, LLC
Air_Liquide_America_Specialty_Gases,_LLC

MATERIAL SAFETY DATA SHEETS

DATE: 4/30/08

SUPPLIER ADDRESS: 500 WEAVER PARK RD

LONGMONT, CO 80501
EMERGENCY PHONE: (888) 253-1635
NUMBER

1. CHEMICAL PRODUCT

PRODUCT NAME: n-BUTANE

SYNONYMS: Methylethylmethane, butyl
hydride or diethyl

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
n-BUTANE	n-C4H10	106-97-8	99+%	800	NE	600	NE

Note: NE = NONE ESTABLISHED

3. HAZARD IDENTIFICATION

*** EMERGENCY OVERVIEW ***
Flammable liquid and gas under pressure.
Can form explosive mixtures with air.
May cause frostbite.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation , Skin

ACUTE EFFECTS: Inhalation may cause asphyxiation due to dilution of available oxygen in the air. Symptoms include lightheadedness, giddiness, disorientation, shortness of breath, and possible cardiac arrhythmias. Skin and eye irritation may occur. Pressure drop through valves and piping may cause extreme cold and frostbite on contact.

CHRONIC EFFECTS: None known

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US Only):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED - No

Continued ...



4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: Immediately flush with copious amounts of water for at least 15 minutes.

SKIN CONTACT: If frostbite occurs, flush affected areas with lukewarm water.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

5. FIRE FIGHTING MEASURES

FLASH POINT: -60 deg.C

AUTOIGNITION TEMPERATURE: 405 deg.C

FLAMMABLE LIMITS: Vol.%

LOWER: 1.9

UPPER: 8.5

EXTINGUISHING MEDIA: Dry chemical or carbon dioxide.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow.

HAZARDOUS COMBUSTION PRODUCTS: Toxic carbon monoxide may be given off during combustion.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Cylinder rupture may occur under fire conditions. Vapors may travel a considerable distance to the source of ignition and flash back. May form explosive mixture in air.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat. Remove sources of ignition and combustibles.

SPECIALIZED EQUIPMENT: None

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure and flammable limits.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Safety glasses

SKIN PROTECTION: Protective gloves to prevent contact with cold equipment.

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Faint disagreeable odor.

PHYSICAL STATE: Gas

VAPOR PRESSURE: @18.8 deg.C: 2 atm

VAPOR DENSITY (AIR=1): 2.05

BOILING POINT (C): -0.5

SOLUBILITY IN WATER: Insoluble

SPECIFIC GRAVITY (H2O=1): Gas

EVAPORATION RATE: Gas

Continued ...



ODOR THRESHOLD: N/Av

10._STABILITY_AND_REACTIVITY_

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Storage near a heat source.

MATERIALS TO AVOID: Oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Toxic carbon monoxide.

11._TOXICOLOGICAL_INFORMATION_

LETHAL CONCENTRATION (LC50): 576,842 ppm, rat 1 hour.

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12._ECOLOGICAL_INFORMATION_

No adverse ecological effects are expected.

13._DISPOSAL_CONSIDERATIONS_

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14._TRANSPORT_INFORMATION_

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Butane

HAZARD CLASS: 2.1 (flammable)

IDENTIFICATION NUMBER: UN1011

REPORTABLE QUANTITIES: None

LABELING: FLAMMABLE GAS

ADR/RID (EU Only): Class 2, 2f

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15._REGULATORY_INFORMATION_

OSHA: Process Safety Management: Material is not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for material is 10,000 lbs.

EU NUMBER: 203-448-7

NUMBER IN ANNEX 1 OF DIR 67/548: Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 13

S: 9-16-33

16._OTHER_INFORMATION_

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS:

N/Ap - Not Applicable

N/Av - Not Available

SA - Simple Asphyxiant

NE - None Established

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