



Safety Data Sheet

60% N-BU / 20% ISO / 20% PRO

Section 1: Product and Company Identification

Purity Cylinder Gases, Inc.

2580 28th St SW
Wyoming, MI 49519
P: (616)532-2375
www.puritygas.com

Product Code: 60% N-BU / 20% ISO / 20% PRO

Part Number: SP NBU TM2

Synonyms:

Recommended Use:

Usage Restrictions:

Section 2: Hazards Identification



Danger

Hazard Classification:

Flammable (Category 1)
Gases Under Pressure

Hazard Statements:

Contains gas under pressure; may explode if heated
Extremely flammable gas

Precautionary Statements

Prevention:

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Response:

Eliminate all ignition sources if safe to do so.
Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Storage:

Protect from sunlight.
Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

	CAS #	Concentration
N-Butane	106-97-8	60
Isobutane	75-28-5	20
Propane	74-98-6	20

	Chemical Substance	Chemical Family	Trade Names
N-Butane	Butane	Hydrocarbons, Aliphatic, Saturated	N-BUTANE; LIQUIFIED PETROLEUM GAS; NORMAL BUTANE; BUTYL HYDRIDE; LPG; UN 1011; C4H10
Isobutane	ISOBUTANE	Hydrocarbons, Aliphatic, Saturated	2-METHYL PROPANE; TRIMETHYL METHANE; UN 1969; C4H10
Propane	PROPANE	Hydrocarbons, Aliphatic, Saturated	N-PROPANE; DIMETHYLMETHANE; PROPYL HYDRIDE; R-290; PROPYLHYDRIDE; LIQUEFIED PETROLEUM GAS; LPG; >96% NATURAL GRADE; >99.9% PURE GRADE; UN 1978; C3H8

Section 4: First Aid Measures

	Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
N-Butane	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Not likely route of exposure.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Isobutane	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.
Propane	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.	Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	If a large amount is swallowed, get medical attention.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.	For inhalation, consider oxygen.

Section 5: Fire Fighting Measures

	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
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	Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
N-Butane	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes.	<ul style="list-style-type: none"> ▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. ▪ Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. ▪ NA ▪ NA
Isobutane	Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes	<ul style="list-style-type: none"> ▪ Any self-contained breathing apparatus with a full facepiece. ▪ Any self-contained breathing apparatus with a full facepiece.
Propane	Regular dry chemical, high expansion foam Large fires: Flood with fine water spray.	Carbon monoxide, carbon dioxide, water and toxic and irritating fumes	<ul style="list-style-type: none"> ▪ Any self-contained breathing apparatus with a full facepiece. ▪ Any self-contained breathing apparatus with a full facepiece.

Section 6: Accidental Release Measures

	Personal Precautions	Environmental Precautions	Methods for Containment
N-Butane	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Isobutane	Keep unnecessary people away, isolate hazard area and deny entry. Do not touch spilled material. Ventilate closed spaces before entering.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.
Propane	Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Do not touch spilled material.	Avoid heat, flames, sparks and other sources of ignition.	Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition.

	Methods for Cleanup	Other Information
N-Butane	Stop leak, evacuate area. Use protective equipment. Contact emergency personnel.	None
Isobutane	Contact emergency personnel. Avoid ignition sources.	None
Propane	Contact emergency personnel	None

Section 7: Handling and Storage

	Handling	Storage
N-Butane	Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Keep separated from incompatible substances.	Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110.
Isobutane	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.
Propane	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

	Exposure Guidelines
N-Butane	N-BUTANE: 800 ppm (1900 mg/m ³) OSHA TWA (vacated by 58 FR 35338, June 30, 1993) 800 ppm (1900 mg/m ³) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m ³) OSHA TWA 1000 ppm (1800 mg/m ³) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA

Exposure Guidelines	
Isobutane	ISOBUTANE: 800 ppm (1900 mg/m3) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m3) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (1800 mg/m3) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA
Propane	PROPANE: 1000 ppm (1800 mg/m3) OSHA TWA 1000 ppm (1800 mg/m3) NIOSH recommended TWA 10 hour(s) LIQUIFIED PETROLEUM GAS (LPG): 1000 ppm (1800 mg/m3) OSHA TWA 1000 ppm ACGIH TWA 1000 ppm (1800 mg/m3) NIOSH recommended TWA 10 hour(s) ALIPHATIC HYDROCARBON GASES ALKANE (C1-C4): 1000 ppm ACGIH TWA

Engineering Controls

Handle only in fully enclosed systems.

	Eye Protection	Skin Protection	Respiratory Protection
N-Butane	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply.
Isobutane	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Any self-contained breathing apparatus with a full facepiece.
Propane	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.	Any self-contained breathing apparatus with a full facepiece.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

	Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
N-Butane	Gas	Colorless	Colorless	NA	Gas	Unpleasant odor	NA
Isobutane	Gas	Colorless	Colorless	N/A	Gas	Petroleum odor	N/A
Propane	Gas	Clear	Colorless	N/A	Gas	Gasoline odor	N/A

	Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
N-Butane	-76 F (-60 C) (CC)	NA	630.96 (log = 2.80) (estimated from water solubility)	549 F (287 C)	0.085	0.019
Isobutane	-126 F (-88 C) (CC)	Not available	Not available	864 F (462 C)	0.084	0.018
Propane	-157 F (-105 C)	Not available	Not available	842 F (450 C)	0.095	0.021

	Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
N-Butane	30 F (-1 C)	-216 F (-138 C)	1557 mmHg @ 20 C	2.1 (Air=1)	0.5788 @ 0 C	0.15	NA	6.16 ppm	NA	NA
Isobutane	10 F (-12 C)	-254 F (-159 C)	3.1 atm @ 21 C	2 (Air=1)	0.549 @ 20 C	Slightly soluble	Not applicable	Not available	Not applicable	0.0077 cP @ 25 C
Propane	-40 F (-40 C)	-310 F (-190 C)	6398 mmHg @ 21.1 C	1.55 (Air=1)	0.5853 @ -45 C	Very slightly soluble	Not applicable	5000-20000 ppm	Not applicable	Not available

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
N-Butane	58.12	C-H3-(C-H2)2-C-H3	NA	NA	100%	NA	Alcohol, ether, chloroform

	Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
Isobutane	58.12	C4-H10	Not available	Not available	100%	Not applicable	Soluble: Alcohol, ether, chloroform
Propane	44.11	C-H3-C-H2-C-H3	0.116	Not available	Not available	Not applicable	Soluble: Absolute alcohol, ether, chloroform, benzene, turpentine

Section 10: Stability and Reactivity

	Stability	Conditions to Avoid	Incompatible Materials
N-Butane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogen compounds
Isobutane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, halogen compounds
Propane	Stable at normal temperatures and pressure.	Stable at normal temperatures and pressure.	Oxidizing materials, combustible materials, halogen compounds,

	Hazardous Decomposition Products	Possibility of Hazardous Reactions
N-Butane	Oxides of carbon.	Will not polymerize.
Isobutane	Oxides of carbon	Will not polymerize.
Propane	Oxides of carbon	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

	Oral LD50	Dermal LD50	Inhalation
N-Butane	LC(50): 658 mg/l (270,000 ppm) butane (4 hour-rat)	Not established	Irritation, nausea, vomiting, headache, drowsiness, symptoms of drunkenness, tingling sensation, suffocation, convulsions, coma, can displace oxygen at high concentrations
Isobutane	LC50, 1 hr, rat = 285,000 ppmv	Not available	Irritation, nausea, vomiting, headache, symptoms of drunkenness, suffocation, convulsions, coma
Propane	LC50 Inhalation Gas. Rat >800000 ppm 15 minutes	Not available	Central nervous system depression, difficulty breathing, nausea, vomiting, irregular heartbeat, headache, symptoms of drunkenness, disorientation, suffocation, convulsions, coma

	Eye Irritation	Skin Irritation	Sensitization
N-Butane	Frostbite, blurred vision	Blisters, frostbite	Carcinogenicity, Category 1A; H350: May cause cancer. Germ cell mutagenicity, Category 1B; H340: May cause genetic defects.
Isobutane	Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	Respiratory tract irritation, central nervous system depression, difficulty breathing
Propane	Liquid: frostbite, blurred vision	Liquid: blisters, frostbite	No health hazards classified.

Chronic Effects

	Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
N-Butane	None	Not established	Not established	No data
Isobutane	Not available	Not available	Not available	No data
Propane	Not available	Not available	Not available	No data

Section 12: Ecological Information

Fate and Transport

	Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
N-Butane	Fish toxicity: NA Invertebrate toxicity: NA Algal toxicity: NA Phyto toxicity: NA Other toxicity: Expected to exist entirely in the	NA	NA	NA

	vapor phase in ambient air.			
Isobutane	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available
Propane	Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

N-Butane	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Isobutane	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Propane	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

Shipping Name	Compressed gas, flammable, n.o.s. (N-Butane, Propane)
UN Number	UN1954
Hazard Class	2.1
Hazard Information	FLAMMABLE GAS

Individual Component Information

	Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
N-Butane	Butane	UN1011	2.1	Not applicable	2.1	Forbidden	150 kg	NA
Isobutane	ISOBUTANE see also PETROLEUM GASES, LIQUEFIED	UN1969	2.1	Not applicable	2.1	Forbidden	150 kg	N/A
Propane	Propane	UN1978	2.1	Not applicable	2.1	Forbidden	150 kg	N/A

Canadian Transportation of Dangerous Goods

	Shipping Name	UN Number	Class	Packing Group / Risk Group
N-Butane	Butane	UN 1011	2.1	NA
Isobutane	Isobutane	UN1969	2.1	Not applicable
Propane	Propane	UN1978	2.1	Not applicable

Section 15: Regulatory Information

U.S. Regulations

	CERCLA Sections	SARA 355.30	SARA 355.40
N-Butane	Not regulated.	Not regulated.	Not regulated.

Isobutane	Not regulated.	Not regulated.	Not regulated.
Propane	Not regulated.	Not regulated.	Not regulated.

SARA 370.21

	Acute	Chronic	Fire	Reactive	Sudden Release
N-Butane	Yes	No	Yes	No	Yes
Isobutane	Yes	No	Yes	No	Yes
Propane	Yes	No	Yes	No	Yes

SARA 372.65

N-Butane	Not regulated.
Isobutane	Not regulated.
Propane	Not regulated.

OSHA Process Safety

N-Butane	Not regulated.
Isobutane	Not regulated.
Propane	Not regulated.

State Regulations

	CA Proposition 65
N-Butane	Not regulated.
Isobutane	Not regulated.
Propane	Not regulated.

Canadian Regulations

	WHMIS Classification
N-Butane	A, B1
Isobutane	A, B1.
Propane	A, B1.

National Inventory Status

	US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
N-Butane	Listed on inventory.	Not listed.	Listed on inventory.
Isobutane	Listed on inventory.	Not listed.	Listed on inventory.
Propane	Listed on inventory.	Not listed.	Listed on inventory.

Section 16: Other Information

	NFPA Rating
N-Butane	HEALTH=1 FIRE=4 REACTIVITY=0
Isobutane	HEALTH=1 FIRE=4 REACTIVITY=0
Propane	HEALTH=2 FIRE=4 REACTIVITY=0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard