Safety Data Sheet

Section 1: Identification

Product Name: Field Grade Butane

Recommended Use: Chemical Processing

Manufacturer:
Anadarko Petroleum Corporation
1201 Lake Robins Dr.
The Woodlands, TX 77380
United States
www.anadarko.com
(832) 636-1000 (General)

Emergency Telephone Number:
ChemTel: (831) 248-0585 (International)
(800) 255-3924 (North America)

Section 2: Hazard Identification

Classification:
- Flammable Gases 1
- Gases Under Pressure- Liquefied gas

Label Elements:

DANGER

Hazard Statements:
- Extremely flammable gas.
- Contains gas under pressure, may explode if heated.
- Gas may reduce oxygen in confined spaces.

Precautionary Statements:

Prevention
- Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
- Eliminate all ignition sources if safe to do so.

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

Storage/Disposal
- Store in a well-ventilated place. Protect from extreme heat.
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Other information:

NFPA 704 Hazard Class
Health: 1
Flammability: 4
Instability: 0

(0-Minimum, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

HMIS Hazard Rating

Health	**1**
Flammability	**4**
Physical Hazard	**0**

(0-Minimum, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Section 3: Composition/Information on Ingredients

Component	CAS Number	Concentration
n-Butane	106-97-8	60 - 65%
Isobutane	75-28-5	28 - 30%
Propane	74-98-6	0.5 - 5%

All concentrations are percent by weight unless ingredient is gas. Gas concentrations are in percent by volume.

Synonyms: n-Butane

Section 4: First-Aid Measures

Inhalation: If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Skin: Not likely to cause a problem due to high volatility of product. Contact with liquid or rapidly expanding gases released under high pressure may cause frostbite. Treat burned or frostbitten skin by flushing or immersing the affected area(s) in lukewarm water. Do not rub affected area. Do not remove clothing that adheres due to freezing. After sensation has returned to the frostbitten skin, keep skin warm, dry, and clean. If blistering occurs, apply a sterile dressing. Seek immediate medical attention.

Eye: Direct contact with concentrated gas may cause minor irritation.

Ingestion:	Not likely to cause a problem due to high volatility of product.
Most Important Symptoms and Effects, both Acute and Delayed:	Refer to Section 11 - Toxicological Information.
Notes to Physician:	Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Section 5: Fire-Fighting Measures

Suitable Extinguishing Media:	Dry chemical or carbon dioxide is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.
Unsuitable Extinguishing Media:	Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Unusual Fire and Explosion Hazards:	Closed containers can explode due to buildup of pressure when exposed to extreme heat. Caution- Material is extremely flammable.
Hazardous Combustion Products:	Smoke, vapors, oxides of carbon.
Advice for Firefighters:	Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH- approved pressure-demand self-contained breathing apparatus with full face piece and full protective clothing.

Section 6: Accidental Release Measures

Personal Precautions:	Flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate area and allow to evaporate. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons downwind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out.
Emergency Procedures:	Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.
Environmental Precautions:	Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

Methods for Containment and Clean-up: Notify relevant authorities in accordance with all applicable regulations. Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for Safe Handling: Provide adequate ventilation. Do not enter storage areas or confined spaces unless adequately ventilated. Vapors are heavier than air and may travel along the floor and in the bottom of containers. Vapors may be ignited by a spark, a hot surface or an ember. Take precautionary measures against static discharges. Do not breathe gas. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. The product is extremely flammable. May form explosive mixtures with air. Avoid heat, sparks, open flames and other ignition sources. Observe good industrial hygiene practices.

Conditions for Safe Storage: Store in pressurized container. Provide adequate ventilation. Keep away from heat, sparks and open flame.

Section 8: Exposure Controls/Personal Protection

Component	ACGIH	NIOSH	OSHA	Other
n-Butane	TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)	TWA: 800 ppm TWA: 1900 mg/m^3		
Isobutane	TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)	TWA: 800 ppm TWA: 1900 mg/m^3		
Propane	TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)	TWA: 1000 ppm TWA: 1800 mg/m^3	TWA: 1000 ppm	

Engineering Measures/Controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Respiratory Protection: None required while threshold limits are kept below maximum allowable concentrations; if TWA exceeds limits, NIOSH approved respirator must be worn. Refer to 29 CFR 1910.134 or European Standard EN 149 for complete regulations.

Eye/Face Protection: The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z.87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.

Skin/Body Protection: Wear thermal insulating gloves and face shield or eye protection when working with materials that present thermal hazards (hot or cold).

Environmental Exposure Controls: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapor.

Section 9: Physical and Chemical Properties

Physical Form:	Liquid gas
Appearance:	Colorless gas
Color:	Colorless
Odor:	Odorless or slight hydrocarbon or mercaptan odor
Odor Threshold:	No data available
Boiling Point:	31°F (-0.44°C)
Melting Point:	No data available
Decomposition Temperature:	No data available
pH:	No data available
Specific Gravity (air=1):	2.11
Water Solubility:	Slightly soluble
Viscosity:	No data available
Explosive Properties:	No data available
Oxidizing Properties:	No data available
Vapor Pressure:	37 psia (2670 mmHg) @ 100°F (37.78°C)
Vapor Density (air=1):	2.1
Evaporation Rate (water=1):	No data available
VOC (Wt.):	No data available
VOC (Vol.):	No data available
Flash Point (TCC):	-76°F (-60°C)
UEL:	8.4%
LEL:	1.9%
Autoignition:	550°F (288°C)
Flammability (solid, gas):	No data available
Octanol/Water Partition Coefficient:	No data available

Section 10: Stability and Reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Stable under normal temperatures and pressures.
Possibility of Hazardous Reactions:	Hazardous polymerization will not occur.
Conditions to Avoid:	Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.
Incompatible Materials:	Strong oxidizers, strong acids.
Hazardous Decomposition Products:	Decomposition will not occur if handled and stored properly. In case of a fire, oxides of carbon, hydrocarbons, vapors, and smoke may be produced.

Section 11: Toxicological Information

Components	CAS Number	Acute Toxicity
n-Butane (60 - 65%)	106-97-8	Inhalation-Rat LC50: 658 mg/m³ 4 Hour(s)
Isobutane (28 - 30%)	75-28-5	Inhalation-Rat LC50 : 570000 ppm 15 Minute(s)
Propane (0.5 - 5%)	74-98-6	Inhalation-Rat LC50: 1443 ppm 15 Minute(s)

Potential Health Effects

Inhalation: Breathing of high concentrations may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness. Suffocation (asphyxiant) hazard - if allowed to accumulate to concentrations that reduce oxygen below safe breathing levels.

Skin: Not expected to be irritating. Contact with the liquefied or pressurized gas may cause frostbite.

Eye: Not expected to be irritating. Contact with the liquefied or pressurized gas may cause momentary freezing followed by swelling and eye damage.

Ingestion: Ingestion is unlikely.

Chronic (Delayed): Prolonged exposure may cause chronic effects.

Mutagenic Effects: This product is not reported to have any mutagenic effects.

Carcinogenic Effects: This product is not reported to have any carcinogenic effects.

Reproductive Effects: No data available.

Section 12: Ecological Information

Toxicity: Physical properties indicate that petroleum gases will rapidly volatilize from the aquatic environment and that acute and chronic effects would not be observed in practice.

Persistence and Degradability: Expected to be readily biodegradable. Oxidizes rapidly by photo-chemical reactions in air.

Bioaccumulative Potential: Not expected to bioaccumulate significantly.

Mobility in Soil: Because of their extreme volatility, air is the only environmental compartment that hydrocarbon gases will be found.

Other Adverse Effects: No studies have been found.

Section 13: Disposal Considerations

Product Waste: Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging Waste: Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14: Transport Information

	UN Number	UN Proper Shipping Name	Transport Hazard Class(es)	Packing Group
DOT	UN1011	Butane	2.1	NDA
TDG	UN1011	Butane	2.1	NDA
IMO/IMDG	UN1011	Butane	2.1	NDA
IATA/ICAO	UN1011	Butane	2.1	NDA

Special Precautions for User: Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II Of MARPOL 73/78 and the IBC Code: Data lacking.

Section 15: Regulatory Information

CERCLA/SARA – Section 311/312 (Title III Hazard Categories)
Acute Health: Yes
Chronic Health: No
Fire Hazard: Yes
Pressure Hazard: Yes
Reactive Hazard: No

International Hazard Classification

Canada:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by Regulations.

WHMIS Hazard Class:
A
B1

National Chemical Inventories

Component	CAS Number	TSCA
n-Butane	106-97-8	Yes
Isobutane	75-28-5	Yes
Propane	74-98-6	Yes

Section 16: Other Information

Last Revision Date: 30/September/2010

Preparation Date: 29/May/2015

Other Information: Version 1

Disclaimer/Statement of Liability: The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor makes no warranties, expressed or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose or course of performance or usage of trade. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Key to abbreviations

NDA = No data available
LD = Lethal Dose
TC = Toxic Concentration
D = Toxic Dose
ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
STEL = Short Term Exposure Limits are based on 15-minute exposures
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures