

**Section 1: IDENTIFICATION**

Product Identifier: Mixed Butane

Other Means of Identification: LPG; Butane.

SDS Number: 611100

Product Code: 611100

Product Use: Feedstock; Fuel gas; Blend stock.

Restrictions on Use: Not available.

Manufacturer/Supplier: U.S. Oil & Refining Co.
3001 Marshall Ave.
Tacoma, WA 98421

Emergency Phone: U.S. Oil & Refining Co.: (253) 383-1651
CHEMTREC: 800-424-9300

Date of Preparation of SDS: October 20, 2014

Section 2: HAZARD(S) IDENTIFICATION

CLASSIFICATION: Flammable Gases, Category 1
Gases Under Pressure - Liquefied Gas
Simple Asphyxiant

LABEL ELEMENTS

**Hazard
Symbol(s):**



Signal Word: Danger

**Hazard
Statements:** Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

PRECAUTIONARY STATEMENTS

Prevention: Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.

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

Storage: Store in a well-ventilated place.
Protect from sunlight.

Disposal: Not applicable.

Hazards Not Otherwise Classified: No applicable information was found.



SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Mixed Butane

Date of Preparation: October 20, 2014

Ingredients with Unknown Acute Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% vol./vol.
Butane	n-Butane	106-97-8	60 - 74
Propane, 2-methyl-	Isobutane	75-28-5	15 - 18
Pentane	n-Pentane	109-66-0	2 - 5
Butane, 2-methyl-	Isopentane	78-78-4	4 - 5, 5 - 8.8*
Propane	Not available.	74-98-6	1 - 2.5

* Multiple concentration ranges are listed due to production variability, and in conformance with Canadian WHMIS requirements.

Section 4: FIRST-AID MEASURES

Inhalation: If inhaled: Remove victim to fresh air. If breathing or the heart stops, trained personnel should immediately begin artificial respiration (AR) or cardiopulmonary resuscitation (CPR) respectively. Get medical attention immediately.

Acute and delayed symptoms and effects: May displace oxygen and cause rapid suffocation. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact: If on skin: Flush or immerse the affected area(s) in lukewarm water. Do not rub affected area. Remove non-adhering contaminated clothing. Do not remove adherent material or clothing. Get medical attention immediately.

Acute and delayed symptoms and effects: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside. May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Eye Contact: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Acute and delayed symptoms and effects: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Permanent eye damage or blindness could result. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion: Not a normal route of exposure.

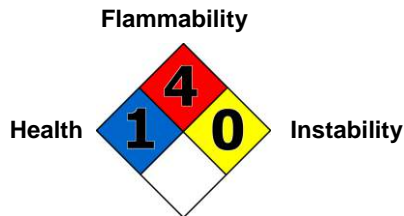


Acute and delayed symptoms and effects: Not a normal route of exposure.

Note to Physicians: Symptoms may not appear immediately. This material may be a cardiac sensitizer. Avoid the use of epinephrine and other sympathomimetic drugs.

Section 5: FIRE-FIGHTING MEASURES

NFPA 704



SUITABLE/UNSUITABLE EXTINGUISHING MEDIA

Suitable Extinguishing Media: Small Fire: Dry chemical or CO₂.
Large Fire: Water spray or fog. Move undamaged containers from fire area if it can be done safely.

Unsuitable Extinguishing Media: Not available.

SPECIFIC HAZARDS

Extremely flammable gas. Contains gas under pressure; may explode if heated. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may travel to source of ignition and flash back. Containers exposed to fire may vent and release flammable gas through pressure relief devices. Containers may explode when heated. Ruptured containers may rocket. **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. **ALWAYS** stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Products of Combustion: Oxides of carbon.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is sensitive to static discharge.

**SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS**

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Vapors may cause dizziness or asphyxiation without warning. May be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. Wear positive pressure self-contained breathing apparatus (SCBA).

Section 6: ACCIDENTAL RELEASE MEASURES**PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES**

- Personal Precautions:** Ventilate the area. Stay upwind and away from release. Avoid direct contact with material.
- Protective Equipment:** Emergency eyewash capability should be available. Wear respirator protection as conditions warrant.
- Emergency Procedures:** As an immediate precautionary measure, isolate spill or leak area for at least 330 feet in all directions. Keep unauthorized personnel away. Stay upwind. Gas is heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Keep out of low areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. The use of explosion proof electrical equipment is recommended.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

- Methods for Containment:** Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors or divert vapor cloud drift. Prevent spreading of vapors through sewers, ventilation systems and confined areas. Avoid allowing water runoff to contact spilled material. Do not direct water at spill or source of leak.
- Methods for Clean-Up:** Isolate area until gas has dispersed.

Section 7: HANDLING AND STORAGE**PRECAUTIONS FOR SAFE HANDLING:**

Extremely flammable. Keep away from heat, sparks, open flames, and hot surfaces. The area should be posted as "No Smoking" and have the proper electrical classification. Refer to NFPA 77 or API RP 2003 for specific bonding/grounding requirements as electrostatic charge may accumulate. Use good hygiene practices and wear appropriate Personal Protective Equipment (see Section 8). Handle only in adequate ventilation. Gas can accumulate in confined spaces and limit Oxygen available for breathing. Containers and equipment may present cold burn hazard. Do not pierce or burn a container, even if considered "empty", as it may contain explosive vapors.



Mixed Butane

SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Date of Preparation: October 20, 2014

CONDITIONS FOR SAFE STORAGE:

Use approved containers that are tightly closed and clearly labeled. Store in a cool, dry, well-ventilated location. Protect storage container from physical damage, sunlight, and all sources of ignition. Post area as "No Smoking". Outdoor or detached storage is preferred. Store away from all incompatible materials: strong acids, strong bases, strong oxidizers, and chlorine. The storage area should comply with NFPA.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Component	ACGIH	OSHA
Butane [CAS No. 106-97-8]	1000 ppm (TWA); (2001)	800 ppm (TWA) [Vacated]
Isobutane [CAS No. 75-28-5]	1000 ppm (STEL); (2012)	No PEL established.
Pentane [CAS No. 109-66-0]	1000 ppm (TWA); (2013)	1000 ppm (TWA), 2950 mg/m ³ (TWA); 600 ppm (TWA); 750 ppm (STEL) [Vacated]
Isopentane [CAS No. 78-78-4]	1000 ppm (TWA); (2013)	1000 ppm (TWA), 2950 mg/m ³ (TWA); 600 ppm (TWA); 750 ppm (STEL) [Vacated]
Propane [CAS No. 74-98-6]	Asphyxia	1000 ppm (TWA), 1800 mg/m ³ (TWA);

PEL: Permissible Exposure Limit

TWA: Time-Weighted Average

STEL: Short-Term Exposure Limit

ENGINEERING CONTROLS

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection:

Wear goggles or face shield as needed to prevent eye and face contact. Use equipment for eye protection that meets the standards referenced by OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection:

Wear protective gloves. Wear cold insulating gloves. If contact with forearms is likely, wear gauntlet style gloves. Consult manufacturer specifications for further information.

Skin and Body Protection:

Wear protective clothing and/or apron. Flame resistant clothing is recommended.

Respiratory Protection:

If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then a NIOSH-



approved self-contained breathing apparatus must be used. Supplied air breathing apparatus must also be used when oxygen concentrations are low or if exposure levels are not known.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Emergency eyewash should be available near operations presenting a potential splash exposure. Avoid skin exposure. Promptly remove contaminated clothing, gloves, and shoes.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless gas, or colorless liquid when pressurized.
Color:	Colorless.
Odor:	Faint hydrocarbon odor. May have mercaptan odor.
Odor Threshold:	Not available.
Physical State:	Gas, or liquid under pressure.
pH:	Not applicable.
Melting Point / Freezing Point:	-138.3 °C (-217 °F)
Initial Boiling Point:	Not available.
Boiling Range:	-0.6 °C (31 °F) (Butane)
Flash Point:	-60 °C (-76 °F)
Evaporation Rate:	High.
Flammability (solid, gas):	Extremely flammable gas.
Lower Flammability Limit:	1.6 % (Butane)
Upper Flammability Limit:	8.4 % (Butane)
Vapor Pressure:	50 psi at 15.6 °C (60 °F)
Vapor Density:	2.0 (Air = 1) at 15.6 °C (60 °F)
Relative Density:	0.6 (Water = 1) at 15.6 °C (60 °F)
Solubilities:	Insoluble in water.
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	405 °C (761 °F) (Butane)
Decomposition Temperature:	Not available.
Viscosity:	Not available.



Mixed Butane

SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Date of Preparation: October 20, 2014

Percent Volatile, wt. %: 100

VOC content, wt. %: 100

Section 10: STABILITY AND REACTIVITY

Reactivity: Stable under normal storage conditions.

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: None known.

Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat. Heat will build pressure in containers.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers. Chlorine.

Hazardous Decomposition Products: Oxides of carbon. Not anticipated under normal conditions.

Section 11: TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE: Eye contact. Skin contact. Inhalation.

ACUTE EXPOSURE

PRODUCT TOXICITY

Oral: Not available.

Dermal: Not available.

Inhalation: Gas reduces oxygen available for breathing.

COMPONENT TOXICITY

Component	CAS No.	LD ₅₀ oral	LD ₅₀ dermal	LC ₅₀
Butane	106-97-8	Not available.	Not available.	658000 mg/m ³ (rat); 4H
Isobutane	75-28-5	Not available.	Not available.	570000 ppm (rat); 15M
Pentane	109-66-0	400 mg/kg (rat)	Not available.	364000 mg/m ³ (rat); 4H
Isopentane	78-78-4	Not available.	Not available.	Not available.
Propane	74-98-6	Not available.	Not available.	Not available.

Target Organs: Skin. Eyes. Respiratory system. Cardiovascular system. Nervous system.

SYMPTOMS (including delayed and immediate effects)

Inhalation: May displace oxygen and cause rapid suffocation. May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin: Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Symptoms of frostbite include change in skin color to white or grayish-yellow. The pain after contact with liquid can quickly subside. May cause skin irritation. Signs/symptoms may include localized redness, swelling, and itching.



Mixed Butane

SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Date of Preparation: October 20, 2014

- Eye:** Contact with rapidly expanding or liquefied gas may cause irritation and/or frostbite. Permanent eye damage or blindness could result. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.
- Ingestion:** Not a normal route of exposure.
- Skin Sensitization:** Not available.
- Respiratory Sensitization:** Not available.
- Medical Conditions Aggravated By Exposure:** Not available.

CHRONIC EFFECTS (from short and long-term exposure)

- Target Organs:** Skin. Eyes. Respiratory system. Cardiovascular system. Nervous system.
- Chronic Effects:** Not available.
- Carcinogenicity:** This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.
- Mutagenicity:** Not available.
- Reproductive Effects:** Not available.
- Developmental Effects**
- Teratogenicity:** Not available.
- Embryotoxicity:** Not available.
- Toxicologically Synergistic Materials:** Not available.




Section 12: ECOLOGICAL INFORMATION

- Ecotoxicity:** Not available.
- Persistence / Degradability:** Not available.
- Bioaccumulative Potential:** Petroleum gases would quickly evaporate from the surface. Adverse effects or accumulation in aquatic organisms is unlikely.
- Mobility in Soil:** Due to volatility, air is the only environment in which petroleum gases would be found.
- Other Adverse Effects:** Not available.

Section 13: DISPOSAL CONSIDERATIONS

- Disposal Instructions:** Not applicable. Material is a gas at ambient conditions and would not typically be managed as a waste. Disposal of container and unused contents should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

**Section 14: TRANSPORT INFORMATION**

REGULATORY INFORMATION	ID NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP	PLACARD
DOT Classification	UN1075	Guide 115	PETROLEUM GASES, LIQUEFIED	2.1	N/A	
TDG Classification	UN1075	Guide 115	PETROLEUM GASES, LIQUEFIED	2.1	N/A	
IATA/ICAO	UN1075	Guide 115	PETROLEUM GASES, LIQUEFIED	2.1	N/A	

Section 15: REGULATORY INFORMATION**CHEMICAL INVENTORIES****US (TSCA)**

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

FEDERAL REGULATIONS**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Classification: Class A - Compressed Gas.
Class B1 - Flammable Gases.

Hazard Symbols:**United States**

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Mixed Butane**

SAFETY DATA SHEET / MATERIAL SAFETY DATA SHEET

Date of Preparation: October 20, 2014

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Butane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Isobutane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Pentane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Isopentane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000
Propane	Not listed.	Not listed.	Not listed.	Not listed.	Not listed.	10000

SARA SECTION 311/312 - EPA HAZARD CATEGORIES

<u>ACUTE HEALTH</u>	<u>CHRONIC HEALTH</u>	<u>FIRE</u>	<u>SUDDEN RELEASE OF PRESSURE</u>	<u>REACTIVE</u>
-	-	X	X	-

STATE REGULATIONS**California**

California Prop 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16: OTHER INFORMATION**Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use.

Date of Preparation of SDS: October 20, 2014

SDS Expiry Date (Canada): October 19, 2017

Version: 1.2

GHS SDS Prepared by: Deerfoot Consulting Inc.

Phone: (403) 720-3700