

Safety Data Sheet



Section 1: Identification

Product identifier

| | |
|--------------------------|---|
| Product Name | • Normal Butane |
| Synonyms | • Butane; N-Butane |
| CAS Number | • 106-97-8 |
| SDS Number/Grade | • 0001NOR001 |
| Molecular Formula | • CH ₃ CH ₂ CH ₂ CH ₃ |

Relevant identified uses of the substance or mixture and uses advised against

| | |
|------------------------|------------------|
| Recommended use | • Fuel component |
|------------------------|------------------|

Details of the supplier of the safety data sheet

| | |
|----------------------------|---|
| Manufacturer | • Northern Tier Energy 301 St. Paul Park Road St. Paul Park, MN 55071 United States www.ntenergy.com NTE.MSDS@ntenergy.com |
| Telephone (General) | • 651-459-9771 |

Emergency telephone number

| | |
|---------------------|----------------|
| Manufacturer | • 877-627-5463 |
|---------------------|----------------|

Section 2: Hazard Identification

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

Classification of the substance or mixture

| | |
|----------------------|---|
| OSHA HCS 2012 | • Flammable Gases 1 Liquefied Gas Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects Simple Asphyxiant |
|----------------------|---|

Label elements

OSHA HCS 2012

DANGER



| | |
|--------------------------|---|
| Hazard statements | • Extremely flammable gas Contains gas under pressure; may explode if heated |
|--------------------------|---|

May cause drowsiness or dizziness
May displace oxygen and cause rapid suffocation.

Precautionary statements

- Prevention** • Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
Avoid breathing gas.
Use only outdoors or in a well-ventilated area.
- Response** • Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Eliminate all ignition sources if safe to do so.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.
- Storage/Disposal** • Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Protect from sunlight.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS

Classification of the substance or mixture

WHMIS

- Compressed Gas - A
Flammable Gases - B1

Label elements

WHMIS



- Compressed Gas - A
Flammable Gases - B1

Other hazards

WHMIS

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

- Material does not meet the criteria of a substance.

Mixtures

| Composition | | | | | |
|---------------|-------------|---|-----------|---|----------|
| Chemical Name | Identifiers | % | LD50/LC50 | Classifications According to Regulation/Directive | Comments |
| | | | | | |

| | | | | | |
|-------------------------|--------------|----------------|---|--|-----|
| Butane | CAS:106-97-8 | 95% TO 100% | Inhalation-Rat LC50 • 658000 mg/m ³ 4 Hour(s) | OSHA HCS 2012: Flam. Gas 1; Press. Gas; STOT SE 3: Narc. (Inhl); Simp. Asphyx.; | NDA |
| Isobutane [1% TO 4%] | CAS:75-28-5 | 1% TO 4% | Inhalation-Rat LC50 • 658000 mg/m ³ 4 Hour(s) | OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.; | NDA |
| Propene [0.4% TO 2%] | CAS:115-07-1 | 0.4% TO 2% | NDA | OSHA HCS 2012: Flam. Gas 1; Press. Gas; | NDA |

Section 4: First-Aid Measures

Description of first aid measures

Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

Skin

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has not occurred, immediately and thoroughly wash contaminated skin with soap and water.

Eye

- If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation, pain, swelling, lacrimation or photophobia persist, get medical attention as soon as possible.

Ingestion

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5: Fire-Fighting Measures

Extinguishing media

Suitable Extinguishing Media

- For small fires, Class B fire extinguishing media such as CO₂, dry chemical, foam (AFFF/ATC) or water spray.
For large fires, water spray, fog or foam (AFFF/ATC)

Unsuitable Extinguishing Media

- No data available

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- EXTREMELY FLAMMABLE
Will form explosive mixtures with air.
Vapors may travel to source of ignition and flash back.
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
Containers may explode when heated.
Ruptured cylinders may rocket.

Hazardous Combustion Products

- No data available

Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Wear positive pressure self-contained breathing apparatus (SCBA).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
 Move containers from fire area if you can do it without risk.
FIRE: 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: ALWAYS stay away from tanks engulfed in fire.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.
FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.
FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Ventilate the area before entry. Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile)

Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Containment/Clean-up Measures

- All equipment used when handling the product must be grounded. 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; do not put water directly on leak, spill area or inside container. Do not direct water at spill or source of leak. Isolate area until gas has dispersed.

Section 7 - Handling and Storage

Precautions for safe handling

Handling

- Use only with adequate ventilation. Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container. Wear appropriate personal protective equipment, avoid direct contact. Avoid breathing gas. Avoid contact with skin, eyes, and clothing. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

Conditions for safe storage, including any incompatibilities

Storage

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat,

ignition and direct sunlight. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over.

Section 8 - Exposure Controls/Personal Protection

Control parameters

| Exposure Limits/Guidelines | | | |
|-----------------------------|--------|-----------------|-----------------------------|
| | Result | ACGIH | NIOSH |
| Normal Butane (106-97-8) | STELs | 1000 ppm STEL | Not established |
| | TWAs | Not established | 800 ppm TWA; 1900 mg/m3 TWA |
| Propene (115-07-1) | TWAs | 500 ppm TWA | Not established |
| Isobutane (75-28-5) | STELs | 1000 ppm STEL | Not established |
| | TWAs | Not established | 800 ppm TWA; 1900 mg/m3 TWA |
| Butane (106-97-8) | STELs | 1000 ppm STEL | Not established |
| | TWAs | Not established | 800 ppm TWA; 1900 mg/m3 TWA |

Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

Personal Protective Equipment

Respiratory

- Use atmosphere supplying respirators in the event of oxygen deficiency, when material produces vapors that exceed permissible limits or when excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 1910.134.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear insulated gloves to prevent skin contact and frostbite.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

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

Section 9 - Physical and Chemical Properties

Information on Physical and Chemical Properties

| Material Description | | | |
|----------------------|-------------------|------------------------------|---|
| Physical Form | Gas | Appearance/Description | A colorless liquefied gas with slight hydrocarbon odor. |
| Color | Colorless | Odor | Slight hydrocarbon odor. |
| Odor Threshold | No data available | | |
| General Properties | | | |
| Boiling Point | 31 F(-0.5556 C) | Melting Point/Freezing Point | No data available |

| | | | |
|-------------------------------------|---|-----------------|--------------------------|
| Decomposition Temperature | No data available | pH | Neutral |
| Specific Gravity/Relative Density | = 0.6 @ 0 C(32 F) Water=1 | Density | 4.86 lbs/gal @ 32 F(0 C) |
| Water Solubility | 100 % Complete | Viscosity | No data available |
| Volatility | | | |
| Vapor Pressure | 842 to 2662 mmHg (torr) @ 70 F (21.1111 C) | Vapor Density | 2 Air=1 |
| Evaporation Rate | No data available | Volatiles (Wt.) | 100 % |
| Volatiles (Vol.) | 100 % | | |
| Flammability | | | |
| Flash Point | -76 F(-60 C) | UEL | 8.4 % |
| LEL | 1.6 % | Autoignition | 761 F(405 C) |
| Flammability (solid, gas) | No data available | | |
| Environmental | | | |
| 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

- Excessive heat, sources of ignition and open flames.

Incompatible materials

- Strong oxidizers such as nitrates, perchlorates, chlorine, fluorine.

Hazardous decomposition products

- Carbon monoxide.

Section 11 - Toxicological Information

Information on toxicological effects

| Components | | |
|----------------------|----------|---|
| Butane (95% TO 100%) | 106-97-8 | Acute Toxicity: Inhalation-Rat LC50 • 658000 mg/m ³ 4 Hour(s) |
| Isobutane (1% TO 4%) | 75-28-5 | Acute Toxicity: Inhalation-Rat LC50 • 57 pph 15 Minute(s); Behavioral:Tremor; Behavioral:Convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration:Respiratory depression |

| GHS Properties | Classification |
|-------------------------------|-----------------------------------|
| Respiratory sensitization | OSHA HCS 2012 • No data available |
| Serious eye damage/Irritation | OSHA HCS 2012 • No data available |
| Acute toxicity | OSHA HCS 2012 • No data available |

| | |
|----------------------------------|--|
| Aspiration Hazard | OSHA HCS 2012 • No data available |
| Carcinogenicity | OSHA HCS 2012 • No data available |
| Skin corrosion/Irritation | OSHA HCS 2012 • No data available |
| Skin sensitization | OSHA HCS 2012 • No data available |
| STOT-RE | OSHA HCS 2012 • No data available |
| STOT-SE | OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects |
| Toxicity for Reproduction | OSHA HCS 2012 • No data available |
| Germ Cell Mutagenicity | OSHA HCS 2012 • No data available |

Potential Health Effects

Inhalation

Acute (Immediate)

- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death.

Chronic (Delayed)

- No data available

Skin

Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

Chronic (Delayed)

- No data available

Eye

Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

Chronic (Delayed)

- No data available

Ingestion

Acute (Immediate)

- Ingestion can cause burns similar to frostbite.

Chronic (Delayed)

- No data available

Key to abbreviations

LC = Lethal Concentration

Section 12 - Ecological Information

Toxicity

- Non-mandatory section - information about this substance not compiled for this reason.

Persistence and degradability

- Non-mandatory section - information about this substance not compiled for this reason.

Bioaccumulative potential

- Non-mandatory section - information about this substance not compiled for this reason.

Mobility in Soil

- Non-mandatory section - information about this substance not compiled for this reason.

Other adverse effects

- Non-mandatory section - information about this substance not compiled for this reason.

Section 13 - Disposal Considerations

Waste treatment methods

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 | Environmental hazards |
|-----|-----------|-------------------------|----------------------------|---------------|-----------------------|
| DOT | UN1011 | Butane | 2.1 | NDA | NDA |
| TDG | UN1011 | BUTANE | 2.1 | NDA | NDA |

Special precautions for user

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- No data available

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications • Acute, Fire, Pressure(Sudden Release of)

| Inventory | | | | |
|-----------|----------|------------|-------------|------|
| Component | CAS | Canada DSL | Canada NDSL | TSCA |
| Butane | 106-97-8 | Yes | No | Yes |
| Isobutane | 75-28-5 | Yes | No | Yes |
| Propene | 115-07-1 | Yes | No | Yes |

Canada

Labor

Canada - WHMIS - Classifications of Substances

- | | | |
|-------------|----------|---------------------------------------|
| • Butane | 106-97-8 | A, B1 |
| • Isobutane | 75-28-5 | A, B1 (listed under Methyl-2 propane) |
| • Propene | 115-07-1 | A, B1 |

Canada - WHMIS - Ingredient Disclosure List

- | | | |
|----------|----------|-----|
| • Butane | 106-97-8 | 1 % |
|----------|----------|-----|

| | | |
|-------------|----------|------------|
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

Environment**Canada - CEPA - Priority Substances List**

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

United States**Labor****U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - OSHA - Specifically Regulated Chemicals

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

Environment**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

| | | |
|-------------|----------|--------------------------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | 1.0 % de minimis concentration |

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - California - Proposition 65 - Developmental Toxicity

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

| | | |
|-------------|----------|------------|
| • Butane | 106-97-8 | Not Listed |
| • Isobutane | 75-28-5 | Not Listed |
| • Propene | 115-07-1 | Not Listed |

Section 16 - Other Information**Revision Date**

- 29/October/2015

Preparation Date

- 30/November/2010

Disclaimer/Statement of Liability

- The information and recommendations contained herein are based upon tests believed to be reliable. However, Northern Tier Energy does not guarantee their accuracy or completeness nor shall any of this information constitute a warranty, whether expressed or implied, as to the safety of the goods, the merchantability of the goods, or the fitness of the goods for a particular purpose. Adjustment to conform to actual conditions of usage maybe required. Northern Tier Energy assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

Key to abbreviations

NDA = No Data Available

