

## Safety Data Sheet



### Section 1: Identification

#### Product identifier

**Product Name** • Iso-Butane  
**SDS Number/Grade** • 0035NOR001

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

**Recommended use** • Petroleum Refining intermediate

#### 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

**Telephone (General)** • 651-459-9771

#### Emergency telephone number

**Chemtrec** • 800-424-9300

### 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  
Simple Asphyxiant

#### Label elements

**OSHA HCS 2012**

#### 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/or 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/Disposal** • Protect from sunlight. Store in a well-ventilated place.

## 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

- 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
Isobutane	CAS:75-28-5	85% TO 100%	Inhalation-Rat LC50 • 57 pph 15 Minute(s)	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Propane	CAS:74-98-6	0.1% TO 6%	NDA	OSHA HCS 2012: Flam. Gas 1; Press. Gas - Liq.; Simp. Asphyx.	NDA
Butane	CAS:106-97-8	0.5% TO 6%	Inhalation-Rat LC50 • 658 g/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Flam. Gas 1; Press. Gas; STOT SE 3: Narc. (Inhl); Simp. Asphyx.	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**
- SMALL FIRES: Dry chemical or CO<sub>2</sub>.  
LARGE FIRES: Water spray or fog.

- 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.

### 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	OSHA
Propane (74-98-6)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA	1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA
Butane (106-97-8)	STELs	1000 ppm STEL	Not established	Not established
	TWAs	Not established	800 ppm TWA; 1900 mg/m <sup>3</sup> TWA	Not established
Isobutane	STELs	1000 ppm STEL	Not established	Not established

(75-28-5)	TWAs	Not established	800 ppm TWA; 1900 mg/m <sup>3</sup> TWA	Not established
-----------	------	-----------------	---	-----------------

## 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

STEL = Short Term Exposure Limits are based on 15-minute exposures

NIOSH = National Institute of Occupational Safety and Health

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

OSHA = Occupational Safety and Health Administration

## Section 9 - Physical and Chemical Properties

### Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Colorless gas.
Color	Colorless	Odor	No data available
Odor Threshold	No data available		
General Properties			
Boiling Point	11 F(-11.6667 C)	Melting Point/Freezing Point	No data available
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	= 0.557 Water=1	Water Solubility	Moderately soluble 1 to 10 %
Viscosity	No data available		
Volatility			
Vapor Pressure	1582 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	-117 F(-82.7778 C)	UEL	No data available
LEL	No data available	Autoignition	No data available
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		
Isobutane (85% TO 100%)	75-28-5	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 57 pph 15 Minute(s); <i>Behavioral:</i> <b>Tremor; Behavioral:Convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration:Respiratory depression</b>
Butane (0.5% TO 6%)	106-97-8	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 658 g/m <sup>3</sup> 4 Hour(s)
Propane (0.1% TO 6%)	74-98-6	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • >800000 ppm 15 Minute(s); <i>Behavioral:</i> <b>General anesthetic; Behavioral:Ataxia; Lungs, Thorax, or Respiration:Respiratory depression</b>

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 • No data available
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.

- 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 complied for this reason.

### Persistence and degradability

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

### Bioaccumulative potential

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

### Mobility in Soil

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

### Other adverse effects

- Non-mandatory section - information about this substance not complied 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	UN1969	Isobutane	2.1	NDA	NDA
TDG	UN1969	ISOBUTANE	2.1	NDA	NDA

**Special precautions for user** • None specified.

**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

Inventory				
Component	CAS	Canada DSL	Canada NDSL	TSCA
Butane	106-97-8	Yes	No	Yes
Isobutane	75-28-5	Yes	No	Yes
Propane	74-98-6	Yes	No	Yes

## Canada

### Labor

#### Canada - WHMIS - Classifications of Substances

• Isobutane	75-28-5	A, B1 (listed under Methyl-2 propane)
• Propane	74-98-6	A, B1
• Butane	106-97-8	A, B1

#### Canada - WHMIS - Ingredient Disclosure List

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	1 %

### Environment

#### Canada - CEPA - Priority Substances List

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

## United States

### Labor

#### U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

#### U.S. - OSHA - Specifically Regulated Chemicals

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed



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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

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

• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
<b>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</b>		
• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
<b>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</b>		
• Isobutane	75-28-5	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed

## Section 16 - Other Information

- Revision Date**
  - 27/August/2015
- Preparation Date**
  - 27/August/2015
- 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