

# Material Safety Data Sheet

## NATURAL GAS

### I. PRODUCT INFORMATION

Product Name: Natural Gas  
Chemical Synonyms: Marsh Gas, Methane (CH<sub>4</sub>)  
Material Use: Heating Fuel

Supplier: TransCanada Pipelines Limited/**Vermont Gas**  
450 - First Street S. W. **85 Swift Street**  
P.O. Box 1000, Station M **So. Burlington**  
Calgary, Alberta **VT, 05403**  
T2P 4K6

Emergency Phone Number (24 hour) : TransCanada-1-888-982-7222  
**VERMONT GAS SYSTEMS 1-802-863-4511**

WHMIS Classification: Class A - Compressed Gas  
Class B - Flammable Gas

TDG Classification: PIN/UN 1971; Classification 2.1 - Flammable Gas

### II. INGREDIENTS OF PRODUCT

	WT/WT	CAS #	Threshold Limit Value
Methane	60 - 100%	74-82-8	N/AP-Asphyxiant
Ethane	0.2 - 25%	74-84-0	N/AP-Asphyxiant
Nitrogen	0 - 12%	7727-37-9	N/AP-Asphyxiant
Propane	0 - 6.5%	74-98-6	2500 ppm
Carbon Dioxide	0 - 5%	124-38-9	5000 ppm
Butane	0 - 2%	106-97-8	800 ppm

Note: Ingredients listed are typical, exact composition may vary

### III. PHYSICAL DATA

Physical State: Gas at room temperature and pressure

Odor and Appearance: Colorless; normally odorless; **HOWEVER - Vermont Gas adds mercaptan odorants which gives the gas a "rotten egg" or sulphur type odor.**

### III. PHYSICAL DATA cont'd

Odour Threshold:	Odorized gas has an odour threshold of 20% of the LFL or lower flammable limit)
Specific Gravity:	Not applicable
Vapour Pressure:	No Data Available
Vapour Density (AIR=1):	0.53 - 0.73
% Volatile (by volume):	100%
Evaporation Rate:	Not applicable
Boiling Point (1 ATM.):	-162 degrees C ; (-259 degrees F)
Melting Point:	-183 degrees C : (-297 degrees F)
pH:	Not Applicable
Coefficient of Oil/Water Distribution:	No Data Available; slightly soluble in water (0.0022% as methane)

### IV. FIRE AND EXPLOSION DATA

Flashpoint (Test Method):	Flammable gas - not applicable
Auto-ignition Temperature:	482 - 649 degrees C ; (900 - 1200 degrees F)
Flammable Limit (% Volume in Air):	Lower: 3.8 Upper: 17.0
Fire and Extinguishing Substances:	Dry chemical, carbon dioxide (CO <sub>2</sub> ), water spray or fog using manufacturers' recommended application techniques
Sensitivity to Static Discharge:	Not Available
Sensitivity to Impact:	Not Applicable
Hazardous Combustion Products:	Carbon monoxide, carbon dioxide

#### IV. FIRE AND EXPLOSION DATA cont'd

##### Special Fire Fighting Procedures

Evacuate all unnecessary personnel. Control release of gas by limiting flow or shutting off using pipeline/ control valves. Full-face, positive pressure, self-contained breathing apparatus and appropriate protective clothing must be worn by all individuals required to enter hazard area. Do not extinguish burning product unless flow can be stopped safely. Use water spray to disperse vapours and protect personnel affecting shut-off. If flames are accidentally extinguished, explosive re-ignition may occur if ignition sources are not controlled. Stay upwind. If product is leaking but not on fire, evacuation of downwind persons should be considered. Flashback may occur along vapour trail. Move containers from fire area if no risk. Be alert to container rupture potential if tanks involved in fire. If transport or storage containers are exposed to direct flame, or fire becomes uncontrollable, evacuate area. Use water from safe distances to keep fire-exposed containers cool.

##### Unusual Fire and Explosion Hazards

Product is highly flammable gas. May be ignited by contact with heat, sparks, or open flame. Forms explosive mixtures with air and oxidizing agents. Flammable vapours may spread from natural gas liquid spill. Gas may accumulate in confined spaces.

#### V. REACTIVITY DATA

##### Stability:

Stable

##### Incompatibilities:

Oxidizing materials, halogen compounds (e.g. Chlorine, Bromine Pentafluoride, Oxygen Difluoride, Nitrogen Trifluoride, Chlorine Dioxide).

Conditions to  
Avoid:

High temperature, chemical incompatibilities,  
sources of ignition (i.e. open flame, static  
discharge, spark source)

Hazardous  
Decomposition  
Products:

Rapid decompression may result in severe  
cooling with freeze burns. Thermal  
decomposition will produce carbon dioxide  
(with trace amounts of oxides or sulphur and  
nitrogen) and carbon monoxide.

**VI. OCCUPATIONAL EXPOSURE LIMITS**

No specific exposure limits for methane. Methane is classed as a simple asphyxiant. Federal, state and provincial authorities should be consulted for pertinent limits on allowable atmospheric oxygen content. The ACGIH recommends a limit of 1000 ppm in air be applied for all simple asphyxiants and a minimum of 18% (vol.) be maintained.

**VII. HEALTH HAZARD INFORMATION****EFFECTS OF ACUTE AND CHRONIC EXPOSURE:**

**Inhalation:** Simple asphyxiant. Adverse health effects occur as the result of the displacement of oxygen. Central nervous system depression can occur if product is present in concentrations that will reduce the oxygen content of air below 18% (vol.). Symptoms may include headache, light-headedness, drowsiness, disorientation, vomiting and seizures. Unconsciousness and death may occur with severe oxygen deprivation. Oxygen concentrations must remain between 19.5% and 25%. No repeated or long-term effects of exposure to low concentrations have been reported.

**Ingestion:** Ingestion is unlikely as natural gas is a gas under normal atmospheric conditions.

**Eyes:** Contact with cold concentrated gas will cause irritation or freeze burns due to frostbite. Contact lenses should not be worn when handling this product.

**Skin:** Contact with cold concentrated gas will result in irritation or freeze burns due to frostbite.

**TOXICITY DATA**

**Irritant Effect:** Contact with cold concentrated gas may result in irritation or freeze burns.

<b>VII. HEALTH HAZARD INFORMATION cont'd</b>
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**TOXICITY DATA cont'd**

Sensitization:	No reported effects
Carcinogenicity:	Not listed by NTP or IARC.
Reproductive Effect:	No specific data
Teratogenic Effect:	No reported effects
Mutagenic Effect:	No reported effects
Synergistic Effect:	No reported effects
LD50/LC50:	Butane LC 50; 658 mg/cubic metre/4 hr Carbon dioxide TcLo; 13 ppm/4 hr

<b>VIII. EMERGENCY FIRST AID PROCEDURES</b>
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Inhalation:	Remove victim to fresh air. Administer artificial respiration if breathing has stopped. Oxygen may be given once breathing has resumed. Keep victim warm and at rest. Obtain medical attention immediately.
Ingestion:	Obtain medical attention immediately.
Eyes:	Immediately flush eyes with water for a minimum of 15 minutes, occasionally lifting both eyelids. Do not use hot water for flushing. Obtain medical attention.
Skin	Remove all contaminated clothing away from ignition sources. Wash affected body parts with large amounts of water. Do not use hot water. Clothing frozen to the skin should be thawed before removal. Get medical attention.

## **IX. ACCIDENTAL RELEASE AND WASTE DISPOSAL PROCEDURES**

Accidental Release:	Call Vermont Gas (802) 863-4511 and local fire department immediately. Proceed with caution. Eliminate all potential ignition sources. Unprotected personnel should be evacuated to safe positions upwind of the release area. Warn all occupants of downwind areas of the explosion potential. Full-face positive pressure, self-contained breathing apparatus or air-line devices, and appropriate protective clothing must be worn by all individuals required to enter release area.
Waste Disposal:	If permissible under applicable federal, state, provincial and municipal requirements, allow complete dissipation of natural gas. Vent gas to safe location, preferably by burning in a flare. If gas cannot be flared, special care must be taken to ensure complete dissipation of the gas to a concentration below its flammable limits.

## **X. PREVENTATIVE MEASURES**

Engineering Controls:	Local and general ventilation must be provided to maintain airborne concentrations below lower explosive limits and to maintain adequate oxygen levels. Ventilation systems must be designed in accordance with approved engineering standards. Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems.
Respiratory Protection:	The use of respiratory protective equipment is only recommended when airborne concentrations and oxygen content cannot be adequately controlled by ventilation. Use a full-face, positive pressure, self-contained breathing apparatus or air-line devices. Equipment should be NIOSH-approved.

Other Protective  
Information:

Protective equipment must be provided to prevent skin and eye contact. Flame retardant clothing must be worn where there is potential for flash fire.

Storage and  
Handling  
Requirements:

Comply with all applicable regulations for the storage and handling of compressed gases and flammable materials. Avoid elevated temperatures. Containers should be grounded. Secure containers. Avoid personal body contact with high pressure gas. Avoid all possible sources of accidental ignition.



**XI. PREPARATION INFORMATION**

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- References:
- American Conference of Governmental Industrial Hygienists (ACGIH) - Documentation of Threshold Limit Values, 1980 and updates to 1999.
  - Canadian Centre for Occupational Health and Safety, CCINFO Disc, Cheminfo Database, Record number 72E.
  - Canutec, 1996 North American Emergency Response Guidebook.
  - Clayton-Patty's Industrial Hygiene and Toxicology, 3<sup>rd</sup> Ed. Vol. II 1982.
  - Controlled Product Regulations, SDR/88-66 amended SOR/88-565, Vol. 122, No. 2.
  - NIOSH Registry of Toxic Effects of Chemical Substances, 1988.
  - Sax, Dangerous Properties of Industrial Materials, 7<sup>th</sup> Ed., 1989.

The information presented in this document represents our present knowledge about this product. Work is continuing to assess the properties and characteristics for compliance under new government laws and regulations as they are ratified