

MATERIAL SAFETY DATA SHEET

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

As required by law, this pamphlet is provided to update your health and safety information about Natural Gas. If you have questions or concerns about the WHMIS legislation, please contact your local Ministry of Labour office. If you have questions or concerns about this Natural Gas Material Safety Data Sheet, please contact Environment, Health & Safety at 1-800-571-8446 ext. 4503.

Section 1		MATERIAL IDENTIFICATION AND USE	
Material Name/Identifier:		NATURAL GAS	
Supplier:	UNION GAS LIMITED 50 Keil Drive North Chatham, Ontario, N7M 5M1	Emergency Telephone Numbers: PROVINCE WIDE – 1-877-969-0999	
Chemical Name:	Methane	Chemical Family: Aliphatic Hydrocarbon, Alkane C1-C4	
Material Use:	Primarily a heating fuel - domestic, commercial and industrial	Trade Names & Synonyms: Methane Natural Gas (with high methane content)	
Regulatory Classification:			
WHMIS:	Class A, - Compressed Gas Class B, Division 1 - Flammable Gas	NFPA/HMIS Rating: Health 1/1 Flammability 4/4 Reactivity 0/0	
TDG:	Shipping Name - Natural Gas, Compressed (with high methane content)		
UN/PIN:	1971	DSL: Listed	
Class:	2.1		

Section 2		HAZARDOUS INGREDIENTS		
Hazardous Ingredients	Approx. Concentration(%)	C.A.S. Number	Exposure Limits	LD50 / LC 50 Species and Route
Natural Gas (Predominantly Methane)	100%	8006-14-2	1000 ppm* (as Aliphatic Hydrocarbons)	Based on Oxygen Displacement (as methane)

*ACGIH – 2012 Notice of Intended Changes: Removal of TLV based on categorization as simple asphyxiant.

Section 3 PHYSICAL DATA			
Physical State Gas	Odour Odourless Gas (mercaptan odour added)	Appearance Colourless Gas	Odour Threshold (ppm) Mercaptan - 1 ppb
Specific Gravity 0.554 @ 24 °C (as methane)	Vapour Pressure 613 atm @ 24 °C (as methane)	Vapour Density (Air = 1) 0.53 - 0.7 (as methane)	Evaporation Rate Not Applicable
Boiling Point (°C) -161.4 °C (as methane)	Freezing Point (°C) -182.6 °C (as methane)	pH Not Available	Coef. of Water/Oil Dist 1.09 (as methane)

Section 4 FIRE AND EXPLOSION HAZARDS			
Flammability Yes	If yes, under which conditions? Natural gas can present an extreme fire hazard when mixed in appropriate concentrations with air in the presence of a viable ignition source.		
Means of Extinction	Dry Chemical, Carbon Dioxide (CO ₂) or foam. Note: Do not extinguish a fire involving natural gas unless the flow of gas can be stopped, otherwise explosive gas-air mixture could be formed creating a far more dangerous environment than the original fire.		
Flash Point (°C) and Method Not Available	Upper Explosion Limit 16.0% (estimate)	Lower Explosion Limit 4.0% (estimate)	
Auto Ignition Temperature (°C) Approximately 593°	Hazardous Combustion Products CO ₂ , CO, NO _x , SO ₂	Sensitivity to Mechanical Impact Not applicable	
Rate of Burning Depends on degree of confinement and concentration in air	Explosive Power	Sensitivity to Static Discharge Yes (Low)	

Section 5 REACTIVITY DATA	
Chemical Stability. If no, under which conditions? Yes	Hazardous polymerization will not occur.
Incompatibility with other substances. If so, which ones? Yes	Avoid oxidizers (e.g. air, oxygen) and halogens (chlorine, oxygen fluoride, bromine pentafluoride, etc.). Note: Natural gas ignites spontaneously when mixed with chlorine dioxides.
Reactivity:	When appropriate concentrations of natural gas are mixed with oxidizing agents (e.g. peroxides, perchlorates, chlorine, liquid oxygen) in the presence of a viable ignition source, an uncontrolled explosive reaction can occur.
Hazardous Decomposition Products:	CO ₂ , trace amounts of oxides of sulphur and nitrogen (SO ₂ and NO _x), CO (if starved of oxygen during combustion).
Hazardous Polymerization:	Will not occur.

Section 6 TOXICOLOGICAL PROPERTIES		
Route of Entry:	Inhalation - Acute	
Effects of Acute Exposure to Product:	Natural gas can act as a simple asphyxiant by displacing oxygen. Asphyxiation symptoms include headaches, rapid respiration, nausea, CNS depression, disorientation, unconsciousness, coma and death.	
Effects of Chronic Exposure to Product:	None Reported.	
LD50 (Species & Route) Not Available	Irritancy None Reported	Exposure Limits 1000 ppm* (refer to page 1)
LC50 (Species & Route) Not Available	Sensitization None Reported	Synergistic Materials Other Asphyxiants
Toxic Effects: None reported with respect to: <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Mutagenicity <input type="checkbox"/> Reproductive Toxicity <input type="checkbox"/> Teratogenicity		
General:	Simple asphyxiant toxicity is based on availability of oxygen. The minimal oxygen content in air should be 19.5% under normal atmospheric condition (equivalent to a partial pressure (pO ₂) of 148 mm of Hg).	

Section 7 PREVENTATIVE MEASURES	
Personal Protective Equipment:	CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head and remaining body area. In IDLH environments, protective equipment must include a positive pressure, self contained breathing apparatus.
Gloves (Specify): Not normally required	Respiratory (Specify): If engineering controls and work practices are not effective in controlling exposure, wear suitable air supply respiratory protection.
Eyes (Specify): Safety goggles not normally required	Footwear (Specify): Refer to Personal Protective Equipment.
Clothing (Specify): Non-sparking, flame-retardant when in areas where flash fires may occur.	Other (Specify): Appropriate hearing protection, goggles and clothing should be utilized when potential for direct contact with high pressure gas release exists.
Engineering Controls (Specify):	Use spark proof or intrinsically safe equipment when dealing with potentially explosive atmosphere. Adequate ventilation and adequate venting of possible combustion products are required.
Leak and Spill Procedures:	Evacuate area if necessary. Have leak made safe. Eliminate ignition sources such as flames or electrical sparks. Ventilate areas.
Waste Disposal:	Refer to local regulations.
Handling Procedures and Equipment:	All equipment piping and handling must conform to legislative requirements of the Technical Standards and Safety Act 2000, O.Reg. 212/01 "Gaseous Fuels", and CSA B149.1-05 "Natural Gas and Propane Installation Code" with Ontario Amendments.
Storage Requirements:	Storage in either pressure vessels or underground well facilities must comply with all Ontario Legislation requirements outlined under the Technical Standards & Safety Act, Boiler Pressure Vessels Act and Petroleum Resources Act
Special Shipping Information:	Natural gas when transported by pipeline governed by the law of a province is exempt from Transportation of Dangerous Goods Act.

Section 8 FIRST AID MEASURES	
Skin:	Abrasions – Clean with soap and water then bandage. Burns – Seek medical attention.
Eye:	Flush with water to reduce irritation or remove foreign objects. If irritation persists obtain medical assistance.
Inhalation:	<i>Ensure own safety before attempting to rescue.</i> Remove victim from contaminated area to fresh air. Administer artificial respiration and/or CPR if required. Seek medical assistance.
Ingestion:	Unlikely route of exposure.

Section 9 PREPARATION OF M.S.D.S.	
Additional Information and Comments:	The gas flammability hazard should be considered the primary risk factor since the lower explosive limit (LEL) would typically need to be exceeded before gas toxicity would become significant.
Sources Used:	Documentation of TLV's and BEI's (ACGIH); Handbook of Chemistry and Physics (CRC), 59th edition; Gas Engineers Handbook; North American Combustion Handbook; Canadian Centre for Occupational Health and Safety (ChemInfo, Hazardous Substances Database); Ontario Regulation 654/86; Merck Index 10th ed.
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This MSDS may be found on our web site at www.uniongas.com
Select: About Us/ Safety/Material Safety Data Sheets.

CAUTION: Natural Gas is a complex mixture such that constituent composition may vary. The information contained herein is based on the information available at the indicated date of preparation but no warranty, expressed or implied, is made. Further, the information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty of information, specific uses of the product must be reviewed with the supplier.