



# 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. 2333.

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

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

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

<b>Section 4 FIRE AND EXPLOSION HAZARDS</b>		
<b>Flammability –</b> Yes	<b>If yes, under which conditions?</b> Natural gas can present an extreme fire hazard when mixed in appropriate concentrations with air in the presence of a viable ignition source.	
<b>Means of Extinction –</b>	Dry Chemical, Carbon Dioxide (CO <sub>2</sub> ), or Dry Chemical, Carbon Dioxide, foam, or water fog <i>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.</i>	
<b>Flash Point (°C) and Method</b> Not Applicable	<b>Upper Explosion Limit</b> 16.0% (estimate)	<b>Lower Explosion Limit</b> 4.0% (estimate)
<b>Ignition Temperature (°C)</b> Approximately 593°	<b>Hazardous Combustion Products</b> CO <sub>2</sub> , CO, NO <sub>x</sub> , SO <sub>2</sub>	<b>Explosion Data/Sensitivity to Mechanical Impact</b> Not Applicable
<b>Rate of Burning</b> Depends on degree of confinement and concentration in air	<b>Explosive Power</b>	<b>Sensitivity to Static Discharge</b> Yes (Low)

<b>Section 5 REACTIVITY DATA</b>	
<b>Chemical Stability –</b> Yes	<b>If no, under which conditions?</b>
<b>Incompatibility with other substances –</b> Yes	<b>If so, which ones?</b> Avoid oxidizers such as air, oxygen, chlorine, oxygen fluoride, bromine pentafluoride, etc. <i>Note: Natural gas ignites spontaneously when mixed with chlorine dioxides.</i>
<b>Reactivity and under what conditions?</b>	When appropriate concentrations of natural gas are mixed with oxidizing agents in the presence of a viable ignition source, an uncontrolled explosive reaction can occur.
<b>Hazardous Decomposition Products</b>	CO <sub>2</sub> - trace amounts of oxides of sulphur and nitrogen (SO <sub>2</sub> and NO <sub>x</sub> ), CO - if starved of oxygen during combustion
<b>Hazardous Polymerization?</b>	Will not occur.

<b>Section 6</b>		<b>TOXICOLOGICAL PROPERTIES</b>		
<b>Route of Entry</b> –	Inhalation Acute			
<b>Effects of Acute Exposure to Product</b> –	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.			
<b>Effects of Chronic Exposure to Product</b> –	None Reported			
<b>LD50 (Specify Species &amp; Route)</b> Not Applicable	<b>Irritancy</b> None Reported	<b>Exposure Limits</b> 1000 ppm		
<b>LC50 (Specify Species &amp; Route)</b> Not Applicable	<b>Sensitization</b> None Reported	<b>Synergistic Materials</b> Other Asphyxiants		
<b>Toxic Effects</b> –	None reported with respect to: <input type="checkbox"/> Carcinogenicity <input type="checkbox"/> Mutagenicity <input type="checkbox"/> Reproductive Toxicity <input type="checkbox"/> Teratogenicity			
<b>General</b> –	Simple asphyxiant toxicity is based on availability of oxygen. The minimal oxygen content in air should be 18% under normal atmospheric condition (equivalent to a partial pressure (pO <sub>2</sub> ) of 135 mm of Hg).			

<b>Section 7</b>		<b>PREVENTATIVE MEASURES</b>	
<b>Personal Protective Equipment</b> –	CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head, remaining body area. In IDLH environments, personal protective equipment must include a positive pressure, self contained breathing apparatus.		
<b>Gloves (Specify)</b> Not normally required	<b>Respiratory (Specify)</b> If engineering controls and work practices are not effective in controlling exposure to methane, then wear suitable respiratory protection.		
<b>Eyes (Specify)</b> Safety goggles not normally required	<b>Footwear (Specify)</b> Refer to Personal Protective Equipment		
<b>Clothing (Specify)</b> Non-sparking, flame-retardant when in areas where potential flash fires may occur.	<b>Other (Specify)</b> Appropriate hearing protection, goggles and clothing should be utilized when potential for direct contact with high pressure gas release exists.		
<b>Engineering Controls (Specify)</b> –	Use spark proof or intrinsically safe equipment when dealing with potentially explosive atmosphere. Adequate ventilation and adequate venting of possible combustion products are required.		
<b>Leak and Spill Procedures</b> –	Evacuate area if necessary. Have leak made safe. Eliminate ignition sources such as flames or electrical sparks. Ventilate areas.		
<b>Waste Disposal</b> –	Not Applicable		
<b>Handling Procedures and Equipment</b> –	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.		
<b>Storage Requirements</b> –	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.		
<b>Special Shipping Information</b> –	Natural gas when transported by pipeline governed by the law of a province is exempt from Transportation of Dangerous Goods Act.		

<b>Section 8 FIRST AID MEASURES</b>	
<b>Skin</b>	Abrasions – Clean with soap and water then bandage. Burns – Seek medical attention.
<b>Eye</b>	Flush with water to remove foreign objects. If irritation persists obtain medical assistance.
<b>Inhalation</b>	Remove victim from contaminated area to fresh air. Administer artificial respiration if required and seek medical assistance.
<b>Ingestion</b>	Not applicable.

<b>Section 9 PREPARATION OF M.S.D.S.</b>	
<b>Additional Information and Comments:</b>	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.
<b>Sources Used:</b>	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; Ontario Regulation 654/86; Merck Index 10th edition.
<b>Reviewed By:</b>	Kelly Lee, SCS Occupational Health & Safety Consulting
<b>Authorized By:</b>	Marcia Simpson, Manager, EHS Services, Canada East
<b>Phone Number:</b>	<b>Preparation Date:</b>
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**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.