Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name:	Methanol	**Trade Name:**	Methanol
Product Use:	Many.		
Chemical Name:	Methanol	**Synonym:**	methyl alcohol, carbinol, wood spirit, wood alcohol, pyroxylic
Chemical Formula:	CH_3OH	**Chemical Family:**	Alcohol
Telephone:	**Emergencies:** * 1-800-363-0042	**Supplier /Manufacture:**	Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
		Phone:	905-803-1600
		Fax:	905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD_{50} (Species & Routes)	LC_{50} (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Methanol	100	67-56-1	5628 mg/kg (oral)	64000 ppm	200 ppm

3. Hazards Identification

Emergency Overview


DANGER! Flammable liquid, poison. May form explosive mixtures with air. May be fatal or cause blindness if swallowed. Harmful or fatal if inhaled or absorbed through the skin. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation. Swallowing. Skin absorption. Skin contact. Eye contact.

THRESHOLD LIMIT VALUE: TLV-TWA Data from 2004 Guide to Occupational Exposure Values (ACGIH). TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Dizziness, drowsiness and disturbances of vision, and tingling, numbness, and shooting pains in the hands and forearms.

SKIN CONTACT:

Prolonged contact with the skin may cause reddening and defatting of the skin. STEL: 250 ppm (ACGIH, OSHA).

Prolonged or widespread skin contact with the liquid may result in the absorption of harmful amounts of material.

SKIN ABSORPTION:	
SWALLOWING:	Nausea, abdominal pain, vomiting, headache, dizziness, shortness of breath, weakness, fatigue, leg cramps, restlessness, confusion, drunken behavior, visual disturbances, drowsiness, coma and death. There may be a delay of several hours between ingestion of methanol and the onset of signs and symptoms. The effects observed are in part due to acidosis and partially to cerebral edema. Visual effects include blurred vision, diplopia, changes in colour perception, restrictions of visual fields, complete blindness. Ingestion of moderate quantities of methanol also produces metabolic acidosis. Onset of symptoms may be delayed up to 48 hours. 60 - 200 ml is a fatal dose for most adults. Ingestion of as little as 10 ml has caused blindness. With massive overdoses, liver, kidney and heart muscle injury has been described.
EYE CONTACT:	Liquid may cause mild redness and swelling of the conjunctiva with transient superficial injury of the cornea.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:
Not available.

OTHER EFFECTS OF OVEREXPOSURE:
None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
Due to its defatting properties, methanol may aggravate an existing skin condition, e.g., eczema. Due to its liver and kidney-injuring potential, may exacerbate existing liver and/or kidney diseases.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:
None currently known.

CARCINOGENICITY:
Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:
Remove contaminated clothing and flush skin thoroughly with water.

SWALLOWING:
If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

EYE CONTACT:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

NOTES TO PHYSICIAN:
The combination of visual disturbances, metabolic acidosis, and formic acid in the urine is evidence of methanol poisoning. The therapeutic intravenous administration of ethanol (10 ml per hour) allows it to be preferentially oxidized and reduces production of methanol metabolites. Acidosis must be treated by means of intravenous sodium bicarbonate, and methanol elimination may be increased by hemodialysis, as indicated.

5. Fire Fighting Measures

FLAMMABLE :	Yes.	**IF YES, UNDER WHAT CONDITIONS?**	Forms explosive mixtures with air and oxidizing agents. May ignite in presence of flames or sparks.
FLASH POINT (test method)	CLOSED CUP: 11.1°C (52°F). (Tag.)	**AUTOIGNITION TEMPERATURE**	385°C (725°F)
FLAMMABLE LIMITS IN AIR, % by volume:	**LOWER:** 6	**UPPER:**	36.5

EXTINGUISHING MEDIA:

CO2, dry chemical, foam. Water may be ineffective. Use water spray or fog to reduce flammable vapours.

SPECIAL FIRE FIGHTING PROCEDURES:

DANGER! Evacuate all personnel from danger area. Immediately cool cylinders with water spray from maximum distance taking care not to extinguish flames. Remove ignition source if without risk. If flames are accidentally extinguished. Explosive re-ignition may occur; therefore, appropriate measures should be taken; e.g., total evacuation. Reapproach with extreme caution. Use self-contained breathing apparatus. Stop flow of gas if without risk while continuing cooling water spray. Remove all containers from area if without risk. Allow fire to burn out.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Flammable liquid. Forms explosive mixtures with air and oxidizing agents. Container may rupture due to heat of fire. Do not extinguish flames due to possibility of explosive re-ignition. Vapours form from this product and may travel or be moved by air currents an ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with approved device. No part of a container should be subjected to temperature higher than 52 C. Burns with an almost invisible flame.

HAZARDOUS COMBUSTION PRODUCTS:

These products are carbon oxides (CO, CO2) and water.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Possible.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

DANGER! Immediately evacuate all personnel from danger area. Forms explosive mixtures with air. Use self-contained breathing apparatus and protective clothing where needed. Remove all sources of ignition if without risk. Reduce vapours with fog or fine water spray. Shut off leak if without risk. Ventilate area of leak or move leaking container to well ventilated area. Flammable vapours may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device. Cover with absorbent or flush with water. Prevent runoff.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

DANGER: Flammable volatile liquid. May form explosive mixtures with air. Ground all equipment. Only use spark-proof tool and explosion-proof equipment. Keep away from head, sparks, and open flame. Store and use with adequate ventilation at all times. Safety shower and eyewash fountain should be immediately available. May be fatal or cause blindness if swallowed. Do not leave container open.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Furnace gas atmospheres produce by the use of methanol and nitrogen are similar to endothermic gas atmospheres in that they contain substantial quantities of carbon monoxide, hydrogen and nitrogen. Carbon monoxide is toxic having a TLV-TWA of 50 parts-per-million (ACGIH) in air. Flammable carbon monoxide and highly flammable hydrogen form explosive mixtures with air. Since the atmospheres contain no oxygen they will not support life. It is therefore, imperative that he spent atmospheres be burned and vented to a save location.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Extremely flammable, volatile liquid. Do not get liquid or vapours in eyes, on skin, or clothing. Safety showers and eyewash fountains should be immediately available. Use only in a closed system. Use only spark-proof tools and explosion-proof equipment. Keep away from heat, sparks, and open flame. ***Forms explosive mixtures with air.*** Ground all equipment. Store and use with adequate ventilation at all times. Close valve after each use; keep closed even when empty. ***Prevent reverse flow.*** *Reverse flow into container may cause rupture. Use a check valve or other protective device in any line or piping from the container.* ***When returning container to supplier,*** *be sure valve is closed, then install valve outlet plug tightly.* ***Never work on a pressurized system.*** *If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak.* ***Never place a container where it may become part of an electrical circuit.***

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST:	An explosion-proof local exhaust system is acceptable. See SPECIAL.
MECHANICAL (general):	Inadequate. See SPECIAL.
SPECIAL:	Use only in a closed system. Use local exhaust ventilation to maintain exposure below the applicable limits.
OTHER:	See SPECIAL.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION:	Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA.
SKIN PROTECTION:	Wear work gloves when handling cylinders. Nitrile gloves.
EYE PROTECTION:	Wear safety glasses when handling cylinders. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE:	Liquid.	**FREEZING POINT:**	-97.7°C (-143.9°F)	**pH:**	Not applicable.
BOILING POINT	64.66°C (148.4°F)	**VAPOUR PRESSURE**	17.1 kPa (@ 20°C)	**MOLECULAR WEIGHT:**	32.04 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1)	0.79	**SOLUBILITY IN WATER,**	Complete.		
SPECIFIC GRAVITY: VAPOUR (air = 1)	1.11	**EVAPORATION RATE** (Butyl Acetate=1):	>1 compared to (Butyl Acetate = 1)	**COEFFICIENT OF WATER/OIL DISTRIBUTION:**	Not applicable.
VAPOUR DENSITY:	Not available.	**% VOLATILES BY VOLUME:**	100% (v/v).	**ODOUR THRESHOLD:**	Not available.

APPEARANCE & ODOUR: Colourless. Odour: Alcohol-like.

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	None known.
INCOMPATIBILITY (materials to avoid):	Acids, alkali metals, halogens, halogen compounds, oxidizing agents, lead and its alloys, magnesium and VITON (fluoroelastomer). (VITON is a trademark of E. I. duPont de Nemours & Co., Inc.).
HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition or burning may produce carbon monoxide/carbon dioxide.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS OF REACTIVITY:	None known.

11. Toxicological Information

See section 3.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Methanol

HAZARD CLASS:	IDENTIFICATION #:	PRODUCT RQ:
CLASS 3: Flammable liquid. CLASS 6.1: Poisonous material.	UN1230	100 L

SHIPPING LABEL(s): Flammable liquid

PLACARD (when required): Flammable liquid

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, nonventilated compartment of vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

WHMIS (Canada)

Class B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
Class D-2A: Material causing other toxic effects (VERY TOXIC).
Class D-2B: Material causing other toxic effects (TOXIC).

International Regulations

EINECS Not available.

DSCL (EEC)

R11- Highly flammable.
R23/25- Toxic by inhalation and if swallowed.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH **1**
FLAMMABILITY **3**
PHYSICAL HAZARD **0**

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: Not available.

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1	Safe Handling and Storage of Compressed Gas
P-14	Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
SB-2	Oxygen-Deficient Atmospheres
V-1	Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7	Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
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PREPARATION INFORMATION:

DATE: **10/15/2004**

DEPARTMENT: **Safety and Environmental Services**

TELEPHONE: **905-803-1600**

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety nformation, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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