

SAFETY DATA SHEET

This Safety Data Sheet complies with the relevant requirements of the New Zealand Hazardous Substances (Identification) Regulations 2001, Hazardous Substances (Emergency Management) Regulations 2001, Hazardous Substances (Disposal) Regulations 2001, and the Health & Safety in Employment Act 1992.

1. Product and Supplier Identification

Product: Methanol (CH₃OH) **Non-Emergency Tel. #:** 646 754 9700

Synonyms: Methyl alcohol, methyl hydrate, wood spirit, methyl hydroxide **Emergency Tel. #:** 0800 361 230 (New Zealand)

Product Use: Solvent, fuel, feedstock

Company Identification: Methanex NZ Ltd.,
Mamaku Road
Waitara
Private Bag 2011
New Plymouth
New Zealand

2. Hazards Identification

Dangerous Goods: Class 3, Subsidiary Risk 6.1
Packing Group II

Hazardous Substance (HSNO): 3.1B (Flammable Liquid)
6.1D (Acute Toxicity)
6.4A (Eye Irritant)
6.8B (Reproductive / Developmental Toxicant)
6.9A (Target Organ Toxicant)
9.3C (Terrestrial Vertebrate Ecotoxicity)

Precautionary Statements:

Prevention Keep out of reach of children.
Read label before use.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Use personal protective equipment as required.
Use only non-sparking tools.
Ground/bond container and receiving equipment.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fumes/gas/mist/vapours/spray.
Obtain special instructions before use.
Wear protective gloves and eye/face protection.
Keep container tightly closed.
Keep away from heat/sparks/open flame – No smoking.

Use explosion-proof electrical/ventilating/lighting equipment.
 Take precautionary measures against static discharge.
 Use only outdoors or in well-ventilated area.
 Read Safety Data Sheet before use.
 Avoid release to the environment.

Response

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, get medical advice/attention.
- IF ON SKIN OR HAIR: Remove/take off immediately all contaminated clothing. Rinse with water/shower using soap. Wash all contaminated clothing before reuse.
- IF SWALLOWED: Call a poison centre or doctor/physician immediately. Rinse mouth. Do not induce vomiting.

Get medical advice/attention if you have been exposed or feel unwell after handling this product. See also Section 4.

Storage Store in a well-ventilated place. Keep cool. See also Section 7.

Disposal Dispose of waste/spilt product and containers in accordance with relevant legislation. See also Section 13.

3. Composition

Component	% (w/w)
Methanol (CAS 67-56-1)	99-100

4. First Aid Measures

Note: *Emergency showers and eye wash stations are necessary in workplaces where methanol is used.*

Eye Contact: Remove contact lenses if worn. In case of contact, immediately flush eyes with plenty of clean running water for at least 15 minutes, lifting the upper and lower eyelids occasionally. Obtain medical attention.

Skin Contact: In case of contact, remove contaminated clothing. In a shower, wash affected areas with soap and water for at least 15 minutes. Seek medical attention if irritation occurs or persists. Wash clothing before reuse.

Inhalation: Remove to fresh air, restore or assist breathing if necessary. Obtain medical attention.

Ingestion: Swallowing methanol is potentially life threatening. Onset of symptoms may be delayed for 18 to 24 hours after digestion. If conscious and medical aid is not immediately

available, do not induce vomiting. In actual or suspected cases of ingestion, transport to medical facility immediately.

NOTE TO PHYSICIAN: Acute exposure to methanol, either through ingestion or breathing high airborne concentrations can result in symptoms appearing between 40 minutes and 72 hours after exposure. Symptoms and signs are usually limited to CNS, eyes and gastrointestinal tract. Because of the initial CNS's effects of headache, vertigo, lethargy and confusion, there may be an impression of ethanol intoxication. Blurred vision, decreased acuity and photophobia are common complaints. Treatment with ipecac or lavage is indicated in any patient presenting within two hours of ingestion. A profound metabolic acidosis occurs in severe poisoning and serum bicarbonate levels are a more accurate measure of severity than serum methanol levels. Treatment protocols are available from most major hospitals and early collaboration with appropriate hospitals is recommended.

5. Fire Fighting Measures

Flash point:	11°C (TCC)
Autoignition temperature:	385 °C (NFPA 1978), 470 °C (Kirk-Othmer 1981; Ullmann 1975)
Lower Explosive Limit:	6% (NFPA, 1978)
Upper Explosion Limit:	36% (NFPA, 1978), 36.5% (Ullmann, 1975)
Sensitivity to Impact:	Low
Sensitivity to Static Discharge:	Low
Hazardous Combustion Products:	Toxic gases and vapours; oxides of carbon and formaldehyde.
Extinguishing Media:	Small fires: Dry chemical, CO ₂ , water spray Large fires: Water spray, AFFF(R) (Aqueous Film Forming Foam (alcohol resistant)) type with either a 3% or 6% foam proportioning system.

Fire Fighting Instructions: Methanol burns with a clean clear flame that is almost invisible in daylight. Stay upwind! Isolate and restrict area access. Concentrations of greater than 25% methanol in water can be ignited. Use fine water spray or fog to control fire spread and cool adjacent structures or containers. Contain fire control water for later disposal. Fire fighters must wear full face, positive pressure, self-contained breathing apparatus or airline and appropriate protective clothing. Protective fire fighting structural clothing is not effective protection from methanol. Do not walk through spilled product.

HAZCHEM: 2WE

6. Accidental Release Measures

Overview: Flammable liquid which can burn without a visible flame. Release can cause an immediate risk of fire and explosion. Eliminate all ignition sources, stop leak and use absorbent materials. If necessary, contain spill by diking. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapour and fire hazard. Maximize methanol recovery for recycling or re-use. Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Wear adequate personal protection and remove all sources of ignition. Notify all governmental agencies as required by law.

Personal Protection: Full face, positive pressure self-contained breathing apparatus or airline, and protective clothing must be worn. Protective fire fighting structural clothing is not effective protection from methanol.

Environmental Precautions: Biodegrades easily in water Methanol in fresh or salt water may have serious effects on aquatic life. A study on methanol's toxic effects on sewage sludge bacteria reported little effect on digestion at 0.1% while 0.5% methanol retarded digestion. Methanol will be broken down to carbon dioxide and water.

Remedial Measures: Flammable liquid. Release can cause an immediate fire/explosion hazard. Eliminate all sources of ignition, stop leak and use absorbent materials. Collect liquid with explosion proof pumps. Do not walk through spill product as it may be on fire and not visible.

Large Spills: If necessary, contain spill by diking. Fluorocarbon alcohol resistant foams may be applied to spill to diminish vapour and fire hazard. Maximize methanol recovery for recycling or reuse. Collect liquid with explosion proof pumps.

Small Spills: Soak up spill with non-combustible absorbent material. Recover methanol and dilute with water to reduce fire hazard. Prevent spilled methanol from entering sewers, confined spaces, drains, or waterways. Restrict access to unprotected personnel. Put material in suitable, covered, labeled containers. Flush area with water.

7. Handling and Storage

Handling Procedures: No smoking or open flame in storage, use or handling areas. Use explosion proof electrical equipment. Ensure proper electrical grounding procedures are in place.

Storage: Store in totally enclosed equipment, designed to avoid ignition and human contact. Tanks must be grounded, vented, and should have vapour emission controls. Tanks must be diked. Avoid storage with incompatible materials. Anhydrous methanol is non-corrosive to most metals at ambient temperatures except for lead, nickel, monel, cast iron and high silicon iron. Coatings of copper (or copper alloys), zinc (including galvanized steel), or aluminum are unsuitable for storage. These materials may be attacked slowly by the methanol. Storage tanks of welded construction are normally satisfactory. They should be designed and built in conformance with good engineering practice for the material being stored. While plastics can be used for short term storage, they are generally not recommended for long-term storage due to deterioration effects and the subsequent risk of contamination.

Corrosion rates for several construction materials:

<0.508 mm/year	Cast iron, monel, lead, nickel
<0.051 mm/year	High silicon iron
Some attack	Polyethylene
Satisfactory	Neoprene, phenolic resins, polyesters, natural rubber, butyl rubber
Resistant	Polyvinyl chloride, unplasticized

8. Exposure Controls, Personal Protection

New Zealand Workplace Exposure Standards:	TWA	200 ppm 262 mg/m ³
	STEL	250 ppm 328 mg/m ³

Engineering Controls: In confined areas, local and general ventilation should be provided to maintain airborne concentrations below permissible exposure limits. Ventilation systems must be designed according to approved engineering standards.

Respiratory Protection: NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits.

Skin protection: Butyl and nitrile rubbers are recommended for gloves. Check with manufacturer. Wear chemical resistant pants and jackets, preferably of butyl or nitrile rubber. Check with manufacturer.

Eye and Face Protection: Face shield and chemical splash goggles when transferring is taking place.

Footwear: Chemical resistant, and as specified by the workplace.

Other: Eyewash and showers should be located near work areas. NOTE: PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean, fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

9. Physical and Chemical Properties

Appearance: Liquid, clear, colourless

Odour: Mild characteristic alcohol odour

Odour Threshold: detection: 4.2 - 5960 ppm
(geometric mean) 160 ppm
recognition: 53 - 8940 ppm
(geometric mean) 690 ppm

pH: Not applicable

Vapour Pressure: 12.8 kPa @ 20°C

Solubility: Completely soluble

Vapour Density: 1.105 @ 15°C

Freezing Point: -97.8 °C

Boiling Point: 64.7 °C @ 101.3 kPa

Critical Temperature: 239.4 °C

Specific Gravity (water = 1): 0.791 @ 20°C

Evaporation Rate: 4.1 (n-butyl acetate =1)

Partition Coefficient: Log P (oct) = -0.82

Solubility in other Liquids: Soluble in all proportions in other alcohols, esters, ketones, ethers and most other organic solvents

10. Stability and Reactivity

Chemical Stability: Yes

Incompatibility: Yes. Avoid contact with strong oxidizers, strong mineral or organic acids, and strong bases. Contact with these materials may cause a violent or explosive reaction. May be corrosive to lead, aluminum, magnesium, and platinum.

Conditions of Reactivity: Presence of incompatible materials and ignition sources.

Hazardous Decomposition Products: Formaldehyde, carbon dioxide, and carbon monoxide.

Hazardous Polymerization: Will not occur.

11. Toxicological Information

Exposure Limits:

ACGIH TLV-TWA: 200 ppm, skin
STEL: 250 ppm, skin notation
OSHA PEL: 200 ppm
TLV Basis, critical effects: neuropathy, vision, central nervous system

LD₅₀: 5628 mg/kg (oral/rat), 20 ml/kg (dermal/rabbit)
LC₅₀: 64000 ppm (rat)

Note: Exposure limits may vary from time to time and from one jurisdiction to another. Check with local regulatory agency for the exposure limits in your area.

Routes of Entry:

Skin Contact: Moderate Eye Contact: Moderate Ingestion: Major Inhalation: Major

Effects of Short-Term (Acute) Exposure:

Inhalation: Inhalation of high airborne concentrations can also irritate mucous membranes, cause headaches, sleepiness, nausea, confusion, loss of consciousness, digestive and visual disturbances and even death. NOTE: Odour threshold of methanol is several times higher than the TLV-TWA. Depending upon severity of poisoning and the promptness of treatment, survivors may recover completely or may have permanent blindness, vision disturbances and/or nervous system effects. Concentrations in air exceeding 1000 ppm may cause irritation of the mucous membranes.

Skin Contact: Methanol is moderately irritating to the skin. Methanol can be absorbed through the skin and harmful effects have been reported by this route of entry. Effects are similar to those described in "Inhalation"

Eye Contact: Methanol is a mild to moderate eye irritant. High vapour concentration or liquid contact with eyes causes irritation, tearing and burning.

Ingestion: Swallowing even small amounts of methanol could potentially cause blindness or death. Effects of sub lethal doses may be nausea, headache, abdominal pain, vomiting and visual disturbances ranging from blurred vision to light sensitivity.

Effects of Long-Term (Chronic) Exposure: Repeated exposure by inhalation or absorption may cause systemic poisoning, brain disorders, impaired vision and blindness. Inhalation may worsen conditions such as emphysema or bronchitis. Repeated skin contact may cause dermal irritation, dryness and cracking.

Medical Conditions Aggravated By Exposure: Emphysema or bronchitis.

Sensitization:	No
Carcinogenicity:	Not listed by IARC, NTP, ACGIH, or OSHA as a carcinogen.
Teratogenicity:	No
Reproductive toxicity:	Reported to cause birth defects in rats exposed to 20,000 ppm
Mutagenicity:	Insufficient data
Synergistic products:	None Known

12. Ecological Information

DO NOT discharge into sewer or waterways.

log K_{ow} : -0.82 – -0.66

Half-life (hr) air: 427

Half-life (hr) H₂O surface water: 5.3 – 64

Henry's Law constant (atm m³/mol): 1.35E-04

BOD 5 if unstated: 0.76 – 1.12

COD: 1.05 – 1.50, 99%

ThOD: 1.05

BCF: 0.2 – 10

Toxicity Fish: LC₅₀(96): 11 – 15 mg/L

TLm(48 hr): 8000mg/L (trout)

Toxicity Arthropoda: NOEL 10 g/L/48 hr (Daphnia)

HSNO Classification: 9.3C – Harmful to terrestrial vertebrates

13. Disposal Considerations

Recycle wherever possible. Large volumes may be suitable for re-distillation or, if contaminated, incinerated. Can be disposed of in a sewage treatment facility. Methanol levels of up to 0.1% act as a food source for bacteria; above this level may be toxic to bacteria. When pumping through sewage collection systems, the level of methanol should be kept below the flammable range (a 25% methanol/water mixture is non-flammable at temperatures below 39°C). 1 ppm of methanol is equivalent to 1.5 ppm BOD loading in the sewage plant.

Container disposal:

Empty containers may contain hazardous residue. Return to supplier for reuse if possible. If disposing of containers, ensure they are well rinsed with water, then disposed of at an authorised landfill. After cleaning, all existing labels should be removed.

14. Transport Information

Land Transport: Methanol, Class 3(6.1),
UN1230, P.G. II

Air Transport: Methanol, Class 3(6.1), UN1230, P.G. II
Packaging Instruction: 305,
1 litre maximum per package,

Marine Transport: Methanol, Class 3(6.1), UN1230, P.G. II, Flash Point = 12 °C
EmS No. F-E, S-D
Stowage Category "B", Clear of living quarters

15. New Zealand Regulatory Information

ERMA REGISTRATION NUMBER: HSR001186

HSNO CLASSIFICATIONS: 3.1B (Flammable Liquid)
6.1D (Acute Toxicity)

6.4A (Eye Irritant)
6.8B (Reproductive / Developmental Toxicant)
6.9A (Target Organ Toxicant)
9.3C (Terrestrial Vertebrate Ecotoxicity)

HSNO CONTROLS: Trigger quantities for this substance

- Approved Handler Test Certificate
250 litres (>5 L containers)
500 litres (≤5 L containers)
- Location Test Certificate
50 litres (open container)
100 litres (closed container >5 L)
250 litres (closed container <5 L)
- Hazardous Atmosphere Zone
1 litre (open continuously)
5 litres (open occasionally)
25 litres (decanting)
100 litres (closed containers)
- Emergency Management
Fire Extinguishers (250 L)
Emergency Response Plan (1000 L)
- Secondary Containment
1000 litres
- Signage
250 litres

16. Other Information

Preparation Date: February 9, 2007

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. This document is intended as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

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