

Methanol

Safety Data Sheet

According to ABNT NBR 14725-4

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Version: 4.0



SECTION 1: Identification of Product and Company

1.1. Product identifier

Product form	: Substance
Trade name	: Methanol
Chemical name	: methanol
EC No.	: 200-659-6
CAS No	: 67-56-1
Formula	: CH ₃ OH

1.2. Relevant identified uses of the substance or mixture and uses advised against

Uses of the substance or mixture	: Solvent, Fuel, Feedstock
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1.3. Supplier's details

Methanex Corporation
1800 Waterfront Centre,
V6C 3M1 200 Burrard Street - Canada
T (604).661.2600

1.4. Emergency telephone number

Emergency number	: + 55 21 3958 1449 Chemtrec Rio de Janeiro, Brazil
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids, Category 2
Acute toxicity (oral), Category 3
Acute toxicity (dermal), Category 3
Acute toxicity (inhal.), Category 3
Serious eye damage/eye irritation, Category 2A
Specific target organ toxicity — single exposure, Category 1

2.2. Label elements

GHS-BR labelling

Hazard pictograms (GHS-BR)



Signal word (GHS-BR)

: Danger

Hazard statements (GHS-BR)

: H225 - Highly flammable liquid and vapour
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H319 - Causes serious eye irritation
H370 - Causes damage to organs

Precautionary statements (GHS-BR)

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, ventilating, lighting equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P261 - Avoid breathing vapours
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective clothing, protective gloves, eye protection, face protection
P301+P310 - IF SWALLOWED: Immediately call a doctor
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308+P311 - IF exposed or concerned: Call a POISON CENTER

P330 - Rinse mouth
P337+P313 - If eye irritation persists: Get medical advice/attention
P361+P364 - Take off immediately all contaminated clothing and wash it before reuse
P370+P378 - In case of fire: Use Water spray to extinguish
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to licensed waste management site

2.3. Other hazards not contributing to the classification

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%
Methanol (Main constituent)	(CAS No) 67-56-1	100

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). Call a POISON CENTRE or doctor/physician. Methanol is toxic and flammable. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment and remove any sources of ignition).
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. Obtain medical attention.
First-aid measures after skin contact	: Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Immediately call a POISON CENTRE or doctor/physician. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Remove contact lenses, if present and easy to do. Continue rinsing. Ensure that folded skin of eyelids is thoroughly washed with water. Obtain medical attention if pain, blinking or redness persist.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: Symptoms may include dizziness, headache, nausea and loss of coordination. CNS depression. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Symptoms/injuries after skin contact	: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Repeated and/or prolonged skin contact may cause irritation.
Symptoms/injuries after eye contact	: Causes serious eye irritation.
Symptoms/injuries after ingestion	: Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Chronic symptoms	: Some teratogenic and fetotoxic effects, were observed in animal studies but are inconclusive.

4.3. Indication of any immediate medical attention and special treatment needed

Other medical advice or treatment	: Treat symptomatically. The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Antidote is fomepizole which enhances elimination of metabolic formic acid. This must be administered by a trained medical professional only. For specialist advice physicians should contact the Poison Control Centre.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Synthetic Fire fighting foam AR-FFF (3% solution). Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream. Water may be effective for cooling, diluting, or dispersing methanol, but may not be effective for extinguishing a fire because it will not cool methanol below its flash point. If water is used for cooling, the solution will spread if not contained. Mixtures of methanol and water at concentrations greater than 20% methanol are still considered flammable.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Highly flammable liquid and vapour. Can accumulate in confined spaces, resulting in a toxicity and flammability hazard. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases. Under fire conditions closed containers may rupture or explode. Flame may be invisible during the day. The use of infrared and or heat detection devices is recommended.
- Explosion hazard : May form flammable/explosive vapour-air mixture.
- Reactivity : Stable under normal conditions.

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid fire-fighting water entering the environment.
- Protection during firefighting : Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1. For non-emergency personnel

- Protective equipment : Wear suitable protective clothing, gloves and eye or face protection.
- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Wear suitable protective clothing and eye or face protection.
- Emergency procedures : Remove ignition sources. Ensure adequate ventilation. Avoid inhalation of vapours. Avoid contact with eyes, skin and clothing.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Methanol's main physical behavior if spilled to water is described as "dissolves/evaporates" in the European Behaviour Classification system for chemicals (reported in IMO (2011)). GESAMP hazard profile: methanol does not bioaccumulate and is readily biodegradable in the aquatic environment (IMO2011). Methanol is fully miscible in water and cannot be recovered.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Stop leak if safe to do so. Remove all sources of ignition. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. Use a non-sparking shovel. Wash spill area with soapy water. Large spills: Dike to collect large liquid spills. Alcohol resistant foams may be applied to spill to diminish vapour and fire hazard. Remove liquid by intrinsically safe pumps or vacuum equipment designed for vacuuming flammable materials (i.e. equipped with inert gases and ignition sources controlled). Place in suitable, covered, labelled containers.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.
- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. No open flames. No smoking. Use only explosion-proof equipment. Use only non-sparking tools. Do not breathe Vapours.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands and forearms thoroughly after handling.

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7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical equipment. Have appropriate fire extinguishers and spill cleanup equipment in or near storage area.
Storage conditions	: Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Oxidising agents. Keep in fireproof place. Keep container tightly closed. Do not store in confined spaces.
Storage area	: Store at room temperature. Keep out of direct sunlight. Store in a dry area. Keep container in a well-ventilated place. Fireproof storeroom. Keep locked up. Provide the tank with earthing. Unauthorized persons are not admitted.
Packaging materials	: SUITABLE MATERIAL: Steel. Stainless steel. Iron. Glass. MATERIAL TO AVOID: Lead. Aluminium. zinc. Polyethylene. PVC.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Methanol (67-56-1)		
USA	Local name	Methanol
USA	ACGIH TWA (ppm)	200 ppm
USA	ACGIH TWA (mg/m ³)	262 mg/m ³
USA	ACGIH STEL (ppm)	250 ppm
USA	ACGIH STEL (mg/m ³)	327 mg/m ³
USA	NIOSH REL (TWA) (ppm)	200 ppm
USA	NIOSH REL (TWA) (mg/m ³)	260 mg/m ³
USA	NIOSH REL (STEL) (ppm)	250 ppm
USA	NIOSH REL (STEL) (mg/m ³)	325 mg/m ³

8.2. Exposure controls

Appropriate engineering controls	: Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Both local exhaust and good general room ventilation must be provided not only to control exposure but also to prevent formation of flammable mixtures. Emergency safety showers should be available in the immediate vicinity of any potential exposure. Use only explosion-proof equipment.
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8.3. Personal protective equipment

Personal protective equipment	: Avoid all unnecessary exposure.
Hand protection	: Wear natural rubber, neoprene, butyl rubber gloves. Disposable gloves must be replaced after each use.
Eye protection	: Chemical goggles or safety glasses. Face-shield.
Skin and body protection	: Wear chemical resistant overall.
Respiratory protection	: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear a positive pressure full face self-contained breathing apparatus or a full face supplied air respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear.
Molecular mass	: 32.04 g/mol
Colour	: Colourless.
Odour	: alcohol odour.
Odour threshold	: 4.2 - 5960 ppm
pH	: Not applicable
Melting point	: -97.8 °C
Freezing point	: -97.6 °C
Boiling point	: 64.7 °C
Flash point	: 11 °C
Relative evaporation rate (butylacetate=1)	: 4.1

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Flammability (solid, gas)	: No data available
Explosive limits	: 5.5 - 36.5 vol %
Vapour pressure	: 12.8 kPa @ 20°C
Relative vapour density at 20 °C	: 1.1
Relative density	: 0.791 - 0.793 @ 20°C
Relative density of saturated gas/air mixture	: 1.0
Density	: 792 kg/m³
Solubility	: Miscible with water.
Partition coefficient: n-octanol/water	: -0.77 (log value)
Auto-ignition temperature	: 464 °C
Decomposition temperature	: Not available
Viscosity, kinematic	: Not available
Viscosity, dynamic	: 0.8 cP (20 °C)
Explosive properties	: vapors may form explosive mixture with air.
Oxidizing properties	: Not oxidizing.

9.2. Other information

VOC content	: 100 %
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SECTION 10: Stability and reactivity

Chemical stability	: The product is stable under storage at normal ambient temperatures. Highly flammable liquid and vapour. May form flammable/explosive vapour-air mixture. Hygroscopic.
Conditions to avoid	: Direct sunlight, High temperature, Open flame, Ignition sources
Hazardous decomposition products	: Heat, Carbon monoxide, Carbon dioxide, Releases flammable gases, Formaldehyde
Incompatible materials	: Oxidizing agents, Strong acids, Strong bases, Methanol is not compatible with gasket and O-rings materials made of Buna-N and Nitrile
Possibility of hazardous reactions	: Under fire conditions closed containers may rupture or explode
Reactivity	: Stable under normal conditions

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Oral: Toxic if swallowed.
Acute toxicity (dermal)	: Dermal: Toxic in contact with skin.
Acute toxicity (inhalation)	: Inhalation: Toxic if inhaled.

Methanol (67-56-1)	
LD50 oral rat	5600 mg/kg
LD50 dermal rabbit	15800 mg/kg
LC50 inhalation rat (ppm)	64000 ppm/4h rat

Skin corrosion/irritation	: Not classified pH: Not applicable
Serious eye damage/irritation	: Causes serious eye irritation. pH: Not applicable
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Causes damage to organs.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

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Potential adverse human health effects and symptoms

: IF INHALED: Symptoms may include dizziness, headache, nausea and loss of coordination. CNS depression. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.

IF ON SKIN: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Repeated or prolonged contact may cause skin irritation.

IF IN EYES: Causes serious eye irritation.

IF SWALLOWED: Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.

Chronic toxicity : Some teratogenic and fetotoxic effects, were observed in animal studies but are inconclusive.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Not classified

Chronic aquatic toxicity : Not classified

Other information : Avoid release to the environment.

Methanol (67-56-1)	
LC50 fish 1	15400 - 29400 mg/l 96 h - Fish
EC50 Daphnia 1	> 10000 mg/l 48 h - Daphnia
EC50 other aquatic organisms 1	22000 mg/l 72h - Selenastrum carpicornutum (Pseudokichnerela subcapitata)

12.2. Persistence and degradability

Methanol (67-56-1)	
Persistence and degradability	Rapidly degradable.

12.3. Bioaccumulative potential

Methanol (67-56-1)	
BCF fish 1	< 10 (Leuciscus idus)
Log Pow	0.82
Bioaccumulative potential	Bioaccumulation unlikely. Based on the n-octanol/water partition coefficient accumulation in organisms is not expected.

12.4. Mobility in soil

Methanol (67-56-1)	
Mobility in soil	Mobile

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

Waste treatment methods : Methanol waste should be handled and stored in a similar manner to methanol products or mixtures. Avoid release to the environment. Collect methanol waste in secure and sealable containers. Refer to section 6 and 7 for information on accidental releases, handling and storage conditions. Methanol waste shall not be mixed together with other waste. Dispose methanol waste in a safe manner in accordance with local and/or national regulations. Use qualified hazardous waste companies to transport and dispose of methanol waste. Recycle wherever possible. Large volumes may be suitable for re-distillation. Empty containers may contain hazardous residue. Never weld, cut or grind empty containers. Empty containers should be thoroughly rinsed with large quantities of clean water. Rinse water should be disposed of as methanol waste.

SECTION 14: Transport information

14.1 National and international Regulations

Overland transport

Transport by sea

UN-No. (IMDG) : 1230

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Proper Shipping Name (IMDG) : METHANOL
Class (IMDG) : 3 - Flammable liquids
Subsidiary risk (IMDG) : 6.1 - Toxic substances
Packing group (IMDG) : II - Substances presenting medium danger
Marine pollutant (IMDG) : False

Air transport

UN-No. (IATA) : 1230
Proper Shipping Name (IATA) : Methanol
Class (IATA) : 3 - Flammable Liquids
Subsidiary risks (IATA) : 6.1 - Toxic substances
Packing group (IATA) : II - Medium Danger

14.2 Other information

No additional information available

SECTION 15: Regulatory information

Brazil Local Regulations : Standard ABNT NBR 14725
Ministerial Order no. 229, of 24 May 2011 – Modifies Regulatory Standard no. 26
Federal Decree no. 2.657, of 3 July 1998 – Promulgates Convention no. 170 of the WLO,
relating to Safety in the Use of Chemicals in the Workplace, signed in Geneva, on 25 June
1990
Regulatory reference : Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on SARA Section 313 (Specific toxic chemical listings)

SECTION 16: Other information

Other information : 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. Methanex Corporation and its subsidiaries make no representations or warranties, either express or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Accordingly, Methanex Corp. will not be responsible for damages resulting from use of or reliance upon this information.

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product