

## MATERIAL SAFETY DATA SHEET

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**Emergency Number (CHEMTREC): 1-800-424-9300**

### SECTION 1 – CHEMICAL IDENTIFICATION

**Chemical Name: Methanol**

Synonyms: Methyl Alcohol  
Formula: CH<sub>3</sub>OH  
Chemical Family: Alcohol

### SECTION 2 – COMPOSITION

<u>Components</u>	<u>Percentage</u>	<u>PEL/TLV</u>	<u>CAS Number</u>	<u>EINECS Number</u>
Methanol	100	200 ppm	67-56-1	200-659-6

Note: N.E. = Not Established    N/A = Not Applicable

### SECTION 3 – HAZARDS IDENTIFICATION

**Emergency Overview:** Danger! Flammable liquid. Poison. Cannot be made nonpoisonous. Harmful or fatal if swallowed. Harmful if inhaled. May cause blindness if swallowed or inhaled in large amounts. May cause central nervous system effects. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. May cause reproductive and fetal effects. May be absorbed through intact skin. Target organs: kidneys, liver, heart, central nervous system, eyes, lungs, brain, pancreas.

**NFPA ratings**

1 Health  
3 Flammability  
0 Reactivity  
Specific Hazards:  
N/A

- Inhalation:** May cause irritation of mucous membranes and respiratory tract. May cause central nervous system depression with symptoms of dizziness, headache, nausea, drowsiness, lethargy, convulsions, vertigo, disorientation, visual impairment, and permanent blindness. High levels of exposure may result in collapse, unconsciousness, coma, and death due to respiratory failure.
- Skin Contact:** May cause moderate irritation. Prolonged and repeated contact may result in defatting and drying of the skin which may lead to dermatitis and increased chance of secondary infection.
- Skin Absorption:** May be absorbed through the skin in harmful amounts with symptoms paralleling those of ingestion or inhalation.
- Eye Contact:** Causes severe eye irritation characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. May cause painful

sensitization to light.

**Ingestion:** May be fatal or cause blindness if swallowed. May cause gastrointestinal irritation with symptoms of nausea, vomiting, and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression with symptoms of dizziness, headache, nausea, and drowsiness. High levels of exposure may result in collapse, unconsciousness, coma, and death due to respiratory failure. May cause cardiopulmonary system effects. Fatal human dose considered to be 100-125 ml. Death from a dose of less than 30 ml has been reported.

**Effects of Chronic Exposure:** Chronic exposure may cause reproductive disorders, teratogenic effects, and mutagenic effects. Prolonged exposure may damage the liver, kidneys, and heart.

#### **SECTION 4 – FIRST AID MEASURES**

**Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Hold eyes open while flushing out with water. Seek medical attention immediately.

**Skin Contact:** Immediately remove contaminated clothing and shoes. Flush skin with water for at least 15 minutes. Use soap if available or follow by washing with soap and water. Do not reuse contaminated clothing without laundering. If irritation persists, seek medical attention.

**Inhalation:** Remove victim to fresh air. If breathing is difficult, give oxygen. If not breathing, administer artificial respiration. Seek medical attention immediately.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. **Never give anything by mouth to an unconscious person.** Induce vomiting immediately by giving one teaspoon of Syrup of Ipecac or sticking finger down throat. Keep head below hips to prevent aspiration of liquid into lungs. Seek medical attention immediately.

#### **SECTION 5 – FIREFIGHTING MEASURES**

**Flash Point Temperature:** 51.8°F, 11°C

**Autoignition Temperature:** 867.2°F, 464°C

**Flammable Limits:** Lower: 6.0% Upper: 36.0%

**Extinguishing Media:** Water, Dry Chemical, “Alcohol” Foam, Carbon Dioxide

**Firefighting Procedures:** Firefighters should wear NIOSH approved self-contained breathing apparatus and appropriate protective clothing to prevent contact. Cool exposed containers with water.

**Unusual Fire and Explosion Information:** Do not use direct stream of water to fight fire. Methanol will float and can be re-ignited on the surface. Containers can build up pressure if subjected to heat of the fire and may explode. Flashback hazard – vapors are heavier than air and can collect in low areas forming an explosive methanol and air mixture.

**Environmental Note:** Prevent product from getting into sewers or surface waters.

## SECTION 6 – ACCIDENTAL RELEASE MEASURES

Isolate the hazard area and deny entry to nonessential personnel. Emergency responders and/or clean-up personnel should wear appropriate protective clothing and equipment when responding. Stop flow if safe to do so. Remove all ignition sources. A vapor suppressing foam may be used to reduce vapors. Prevent from entering sewers or surface waters. Collect liquid in containers and seal shut. Absorb remaining material with a noncombustible absorbent such as earth, sand, or vermiculite and collect for disposal.

## SECTION 7 – HANDLING AND STORAGE

**DANGER!** Flammable:

Keep away from heat, sparks, and open flames. Keep containers tightly closed. Store away from strong oxidizing agents in a cool dry place. Use adequate explosion-proof ventilation to prevent accumulation of static charge. When pouring or transferring materials, containers must be bonded and grounded. Do not store in aluminum or lead containers.

**DO NOT** weld, heat, or drill on or near full or empty containers. Empty containers can contain explosive vapors.

Do not breath vapors or mist. Minimize skin contact. Wash with soap and water before eating, drinking, smoking, or using toilet facilities. Launder contaminated clothing before reuse. Properly dispose of contaminated leather articles, including shoes that cannot be decontaminated.

## SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Respiratory Protection:** Utilize NIOSH approved half face or full face supplied air respirator, or self-contained breathing apparatus. Cartridge respirators have a very short service life when used for methanol. Consult with an Industrial Hygienist before determining which respirators to use. Respirators must be utilized in compliance with OSHA regulations 29CFR1910.134.

**Ventilation:** Use explosion-proof ventilation equipment. Utilize local exhaust to control vapors. Do not rely on general exhaust.

**Protective Gloves:** Neoprene, butyl, PVC, or viton gloves are recommended.

**Eye Protection:** Chemical goggles and face shield.

**Other Protective Equipment:** Wear additional protective clothing as required to prevent skin contact. This may include chemical aprons, chemical resistant boots, and chemical resistant suits. Safety shower and eyewash are necessary in work area.

**Work Practices:** Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove contaminated clothing and launder before reuse. Shower after work using plenty of soap and water.

**Electrical Equipment:** Class I Division 2 or higher.

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** clear, colorless liquid      **Threshold Odor Conc:** 141 ppm

<b>Odor:</b>	alcohol	<b>Boiling Point:</b>	148.5 °F, 64.7°C
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	0.7910	<b>Freezing Point:</b>	-144.4°F, -98°C
<b>Evaporation Rate (ether = 1):</b>	5.2	<b>Vapor Density (Air=1):</b>	1.11
<b>Soluble in:</b>	most organic solvents	<b>Vapor Pressure:</b>	128 mm Hg @ 20°C
<b>Solubility in Water:</b>	Miscible	<b>% Volatiles by Volume:</b>	100
<b>Viscosity:</b>	0.55 cP @ 20°C	<b>Molecular Weight:</b>	32.04

## SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.  
 Hazardous Polymerization: Will not occur.  
 Conditions to Avoid: Incompatible materials, ignition sources, excess heat.  
 Incompatible Materials: **Explodes on contact with:** chloroform + sodium methoxide, diethyl zinc.

**Violent reaction with:** alkyl aluminum salts, acetyl bromide, chloroform + sodium hydroxide, chromium oxide, cyanuric chloride, iodine + ethanol + mercuric oxide, lead perchlorate, perchloric acid, phosphorus trioxide, potassium hydroxide + chloroform, nitric acid.

Strong oxidizing agents, strong acids, isocyanates, aliphatic amines, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), beryllium dihydride, metals (e.g., potassium, magnesium), oxidants (e.g., barium perchlorate, bromine, sodium hypochlorite, chlorine, hydrogen peroxide), potassium tert-butoxide, carbon tetrachloride + metals (e.g., aluminum, magnesium, zinc), dichloromethane.

Will attack some forms of plastics, rubber, and coatings.

Decomposition Products: Carbon monoxide, carbon dioxide, formaldehyde, irritating and toxic fumes and gases.

## SECTION 11 – TOXICOLOGICAL INFORMATION

### Occupational Exposure Limits

OSHA	PEL:	200 ppm	STEL:	250 ppm
ACGIH	TLV:	200 ppm	STEL:	250 ppm
NIOSH	IDLH:	6000 ppm		

Eye:	100 mg/24H MODERATE (rabbit)	85JCAE -, 187, 86
Skin:	20 mg/24 H MODERATE (rabbit)	85JCAE -, 187, 86
Inhalation:	LCLo: 1,000 ppm (monkey)	IECHAD 23, 931, 31
	TCLo: 300 ppm (human) eye, pulmonary, CNS effects	NPIRI* 1, 74, 74
	LC50: 64,000 ppm/4 H (rat)	NPIRI* 1, 74, 74
Oral:	LDLo: 143 mg/kg (human)	34ZIAG -, 382, 69
	LDLo: 428 mg/kg (human)	NPIRI* 1, 74, 74
Skin:	LDLo: 393 mg/kg (monkey)	IECHAD 23, 931, 31

Methanol is a suspected mutagen, reproductive hazard and teratogen. Methanol is eliminated from the body very slowly and should be considered a cumulative poison.

Carcinogenicity listed by: NTP: No IARC: No OSHA: No

## **SECTION 12 – ECOLOGICAL INFORMATION**

### **Ecotoxicity**

Fish: LC50: 13 mg/l (rainbow trout fingerling)  
LC50: 29,400 mg/l/96 H (fathead minnow, 28 days old)  
LC50: 8000 mg/l (trout)

Mobility: Expected to be highly mobile in soil and may leach into groundwater.

Degradation: Expected to biodegrade in soil or water very rapidly. Estimated half life of 17.8 days.

Bioaccumulative Potential: Not expected to bioaccumulate.

## **SECTION 13 – DISPOSAL INFORMATION**

Place in a city, state, or federally permitted disposal facility. Handle in accordance with all applicable regulations.

## **SECTION 14 – TRANSPORTATION INFORMATION**

DOT Shipping Description: Methanol, 3, UN1230, II  
RQ: 5000 pounds (2270 kilograms)

## **SECTION 15 – REGULATORY INFORMATION**

TSCA: All components are listed on the TSCA Inventory.

SARA Title III

Acute: Yes

Chronic: Yes

Fire: Yes

Reactivity: No

Pressure: No

Methanol is on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, and Massachusetts.

## **SECTION 16 – OTHER INFORMATION**

First revision: January 18, 2006.

### **DISCLAIMER**

The information contained in this Material Safety Data Sheet is offered in good faith as accurate but does not purport to be all-inclusive. Health and safety precautions in this Material Safety Data Sheet may not be adequate for all individuals and/or situations. It is the user's responsibility to determine the suitability of any material for a specific purpose, adopt such safety precautions as may be necessary and

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