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24 HOUR EMERGENCY NUMBER (CHEMTREC)
USA: 800-424-9300
International: 703-527-3887

All non-emergency numbers should be directed to Tedia Customer Service at 800-PURITY1

SAFETY DATA SHEET

Methyl Alcohol

SDS No. M0144

Distributed by:
Rocky Mountain Reagents
SCIENTIFIC SOLUTIONS SINCE 1951
4621 Technology Drive, Golden, CO 80403
ph: (303) 762-0800 fax: (303) 762-1240
Product #: M1044, M1045, M1046, M1064

1 IDENTIFICATION

1.1 Product Identifier:
Chemical Name: Methyl Alcohol
Synonyms: Methanol, Methyl alcohol, Hydroxymethane, Carbinol, Wood alcohol
CAS No.: 67-56-1

1.2 Recommended Use and Restrictions:
Use: Laboratory research, analytical applications, and industrial manufacturing. Suitable for use as a solvent in chemical synthesis, cleaning, or processing.
Restrictions: Not for use in food, drugs, cosmetics, medical devices, or household consumer products unless explicitly certified.
Regulatory Note: This product may be subject to TSCA requirements. For commercial/industrial use in the United States, the buyer is responsible for verifying TSCA compliance. Laboratory users should confirm appropriate exemptions apply to their research use.

1.3 Supplier:
Tedia Company LLC, 1000 Tedia Way, Fairfield, Ohio 45014 USA
Phone: 513-874-5340 | Website: www.tedia.com

1.4 Emergency Phone Number:
CHEMTREC (USA): 800-424-9300
CHEMTREC (International): +1-703-527-3887

2 HAZARD IDENTIFICATION

2.1 Classification of the Substance/Mixture
GHS Classification:
Flammable Liquids (Category 2), H225
Acute Toxicity – Oral (Category 3), H301
Acute Toxicity – Dermal (Category 3), H311
Acute Toxicity – Inhalation (Category 3), H331
Specific Target Organ Toxicity – Single Exposure (STOT-SE, Category 1), H370 (central nervous system, eyes, optic nerve)

2.2 GHS Label Elements
Hazard Pictograms:



Signal Word: DANGER

Hazard Statements:
H225: Highly flammable liquid and vapor.
H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H331: Toxic if inhaled.
H370: Causes damage to organs (central nervous system, eyes, optic nerve).

Precautionary Statements:
P210: Keep away from heat/sparks/open flames/hot surfaces. 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.
P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P264: Wash skin 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 gloves/protective clothing/eye protection/face protection.
P301+P310: IF SWALLOWED: Immediately call a poison center or doctor/physician.
P303+P361+P353: IF ON SKIN (or hair): Remove/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.
P311: Call a poison center or doctor/physician.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P501: Dispose of contents/container to an approved waste disposal plant.

2.3 Other Hazards
Readily forms explosive vapor-air mixtures at temperatures above its flash point (11°C/52°F). Prolonged or repeated exposure may cause blindness or permanent neurological damage.

2.4 Emergency Overview
Highly flammable liquid and vapor. Toxic if swallowed, inhaled, or in contact with skin. Causes damage to central nervous system, eyes, and optic nerve. Symptoms include headache, dizziness, nausea, visual disturbances, and unconsciousness.

2.5 HMIS Rating:
Health – 3 Flammability – 3 Physical Hazard – 0 PPE – F (Gloves, goggles, respirator)
NOTE: HMIS ratings (0–4) reflect hazard severity under normal use. Higher values indicate greater risk. PPE recommendations are minimal; users must assess specific conditions.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance Identification
Chemical Name: Methanol

Hazardous	Ingredient	CAS No.	EC No.	Concentration	Molecular Formula
Yes	Methanol	67-56-1	203-659-6	100%	CH_4O

4 FIRST AID MEASURES

4.1 Description of First Aid Measures
Inhalation: Remove victim to fresh air immediately. Keep at rest in a position comfortable for breathing. If breathing is difficult, administer oxygen if available and you are trained to do so. If unconscious or not breathing, provide artificial respiration using a pocket mask or bag-valve device to avoid rescuer exposure and seek immediate medical attention.

Skin Contact: Remove contaminated clothing promptly. Wash skin thoroughly with soap and water for at least 15 minutes. If irritation develops or persists, obtain medical advice. Discard contaminated clothing as hazardous waste.

Eye Contact: Immediately flush eyes with gently flowing water for at least 15 minutes, holding eyelids open to ensure complete rinsing. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists. Use an eye wash station if available.

Ingestion: Rinse mouth with water. Do NOT induce vomiting due to risk of aspiration. Never give anything by mouth to an unconscious person. Seek immediate medical attention. If vomiting occurs naturally, position victim in a left lateral decubitus position (recovery position) to minimize aspiration risk. Seek emergency medical help.

4.2 Most Important Symptoms and Effects
Acute Effects:
Inhalation: Dizziness, headache, nausea, visual disturbances, CNS depression.
Skin Contact: Redness, irritation, defatting dermatitis (prolonged exposure).
Eye Contact: Severe pain, blurred vision, potential corneal damage.
Ingestion: Abdominal pain, vomiting, metabolic acidosis, CNS depression, blindness (delayed onset).

Chronic Effects:
Prolonged exposure may cause liver damage, optic nerve atrophy, or permanent visual impairment.

4.3 Indication of Immediate Medical Attention and Special Treatment
Ingestion (even small amounts) – Methanol toxicity can be fatal.
Administer ethanol or fomepizole as antidote under medical supervision.
Eye exposure – Risk of corneal injury.
Persistent inhalation symptoms (drowsiness, confusion, visual disturbances).
Provide SDS to medical personnel.

Notes for Physicians:
Methanol is highly flammable – Avoid ignition sources during treatment.
Antidote: Ethanol or fomepizole (4-methylpyrazole) to inhibit methanol metabolism.
Monitor for metabolic acidosis (blood gas analysis, serum methanol levels).
Hemodialysis may be required in severe cases.
Effects may be delayed (12–24 hours for visual symptoms).
Avoid epinephrine (may exacerbate cardiac arrhythmias).

5 FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media
Use alcohol-resistant foam, dry chemical powder (ABC or BC), or carbon dioxide (CO_2).
Water spray may be used to cool exposed containers and protect firefighters, but avoid direct streams (methanol is fully water-

miscible, and runoff can spread flames).

5.2 Specific Hazards Arising from the Chemical:
Methanol forms explosive vapor-air mixtures (LEL: 6%, UEL: 36%). Hazardous combustion products include carbon monoxide (CO), Formaldehyde – Irritant and potential carcinogen. Vapors are only slightly heavier than air and may travel along the ground to ignition sources, causing flashback fires.

5.3 Protective Equipment:
Wear self-contained breathing apparatus (SCBA, NIOSH-approved) and full firefighting turnout gear (including flame-resistant clothing and face shield).
Use water spray to cool exposed containers but avoid direct streams.

5.4 Additional Firefighting Guidance
Auto-ignition temperature: 464°C (867°F)
Flash point: 11°C (52°F) – flammable at room temperature.
Approach fires upwind to avoid inhalation of toxic vapors.
Prevent runoff from entering drains or waterways (Methanol is highly soluble and poses an environmental hazard).

5.5 National Fire Protective Association: Health - 1, Flammability - 3, Reactivity - 0
Note: NFPA ratings are for emergency response only and reflect acute exposure risks.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions
Immediately evacuate non-essential personnel upwind.
Eliminate all ignition sources within 50 feet (15 meters).
Wear NIOSH-approved SCBA (for vapors >200 ppm) and chemical-resistant PPE (Viton® gloves + Tychem® suit).

6.2 Environmental Precautions
Prevent entry into sewers/waterways using absorbent booms or dikes.
EPA Reportable Quantity (RQ): 5,000 lbs (2270 kg) per 40 CFR 302.4.
CERCLA Hazardous Substance: RQ = 5,000 lbs (immediate reporting to NRC: 1-800-424-8802).

6.3 Containment and Cleanup Methods
For releases <5,000 lbs:
Contain with inert absorbents (clay, polypropylene pads).
Collect in DOT-approved containers.
Ventilate area with explosion-proof fans to disperse vapors.

For releases ≥5,000 lbs (or any quantity entering waterways):
Notify NRC, EPA, and state/local authorities immediately.
Methanol is fully water-soluble.

6.4 Reporting Requirements
EPA:
≥5,000 lbs (454 kg): Report to NRC within 15 minutes (40 CFR 302.6).
Any release to waterways: Immediate notification to State and Local agencies (Clean Water Act).

7 HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Use only in well-ventilated areas (e.g., fume hood, local exhaust ventilation).
Ground and bond containers during transfer to prevent static discharge.
Avoid contact with strong oxidizers (e.g., peroxides, nitric acid, halogens) and metals (e.g., lithium, aluminum hydrides – may react

violently).
Use non-sparking tools and explosion-proof equipment in handling areas.
Do not breathe vapors/mists; use respiratory protection if ventilation is inadequate (see Section 8).
Avoid contact with eyes, skin, and clothing. Wash thoroughly with soap and water after handling.
Remove contaminated clothing immediately; wash skin and clothing before reuse.
Empty containers may retain hazardous residues (liquid/vapor). Do not puncture, weld, grind, or expose to heat, sparks, or open flames.

7.2 Storage Conditions
Store in a flammable liquids cabinet or approved safety can.
Keep containers tightly closed and clearly labeled when not in use.
Store in a cool, dry, well-ventilated area away from:
Ignition sources (heat, sparks, open flames, static electricity).
Incompatible materials (oxidizers, acids, alkalis).
Segregate from reactive metals (e.g., sodium, potassium).
Keep locked to prevent unauthorized access.

Additional Notes:
Never pressurize, cut, weld, drill, or grind containers, even when empty.
Monitor vapor concentrations to ensure levels remain below occupational exposure limits (see Section 8).

8 EXPOSURE CONTROLS/PPE

8.1 Exposure Limits
OSHA PEL (TWA): 200 ppm (260 mg/m³)
ACGIH TLV (TWA): 200 ppm (260 mg/m³) [skin notation]
NIOSH REL (TWA): 200 ppm (260 mg/m³) [skin notation]
NIOSH IDLH: 6,000 ppm (based on acute CNS and visual effects)

8.2 Engineering Controls
Use local exhaust ventilation (LEV) or process enclosure
Ensure adequate general ventilation (minimum 6 air changes/hour)
Ground and bond all equipment to prevent static discharge
Explosion-proof electrical systems required in handling areas

8.3 Personal Protective Equipment (PPE)
Respiratory Protection:
<200 ppm: None needed with verified engineering controls
200-6,000 ppm: Full-face APR with organic vapor cartridges + P100 filters
≥1,000 ppm (IDLH): NIOSH-approved SCBA required

Eye/Face Protection:
Chemical splash goggles
Face shield (when splashing risk exists)

Skin Protection:
Viton® (≥0.7 mm) or Silver Shield® (Methanol penetrates nitrile/neoprene).
Chemical-resistant apron or suit (when splash risk exists)
Closed-toe shoes with chemical-resistant uppers

Other Protection:
Static-dissipative footwear in flammable areas
Safety showers and eye wash stations must be accessible

8.4 General Hygiene Measures
Prohibit eating/drinking/smoking in work areas.
Wash hands/face thoroughly after handling.
Launder contaminated clothing before reuse.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 General Information
a) Appearance: Clear, colorless liquid
b) Odor: Characteristic alcoholic, slightly sweet
c) Odor threshold: 100 ppm (readily detectable)
d) pH: ~7.0 (neutral)
e) Melting point/freezing point: -97.6°C (-143.7°F)
f) Boiling point: 64.7°C (148.5°F)
g) Flash point: 11°C (52°F) (closed cup)
h) Evaporation rate: 6.3 (ether = 1.0)
i) Flammability: Highly flammable liquid (GHS Category 2)
j) Upper/lower flammability or explosive limits:
Upper explosive limit (UEL): 36%
Lower explosive limit (LEL): 6%
k) Vapor pressure: 97 mmHg at 20°C
l) Vapor density: 1.1 (air = 1)
m) Relative density: 0.791 at 20°C (water = 1)
n) Solubility: Fully miscible with water and organic solvents
o) Partition coefficient (log Kow): -0.77
p) Autoignition temperature: 464°C (867°F)
q) Decomposition temperature: >250°C (forms formaldehyde, CO)
r) Viscosity: 0.59 mPa·s at 20°C
s) Explosive properties: None
t) Oxidizing properties: None

9.2 Other Safety Characteristics
Refractive index: 1.328 at 20°C
Dielectric constant: 32.6 at 25°C
Electrical conductivity: 1.5×10^{-6} S/m (static accumulation risk)

10 STABILITY AND REACTIVITY

10.1 Stability
Stable under normal conditions (temperature, pressure).
Conditions to avoid:
Open flames, sparks, static discharge (flammability risk - flash point 11°C/52°F)
Temperatures >25°C (accelerates vapor formation)
Confined spaces (vapor accumulation hazard - vapor density 1.1, slightly heavier than air)

10.2 Reactive Hazards
Hazardous polymerization: Will not occur (monomer stable).
Incompatible materials:
Strong oxidizers (e.g., nitric acid, hydrogen peroxide - violent reactions)
Reactive metals (e.g., potassium, sodium - forms flammable hydrogen gas)
Strong acids (exothermic reactions)
Alkylating agents (risk of exothermic reactions)

10.3 Hazardous Decomposition Products

Thermal decomposition (>250°C):
Carbon monoxide (CO)
Formaldehyde (CH_2O)

Combustion products:
Carbon monoxide (CO)
Carbon dioxide (CO_2)

11 TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity
Oral Toxicity (LD_{50}): 5,628 mg/kg (rat) [ECHA Registered Substance Data]
Dermal Toxicity (LD_{50}): >20,000 mg/kg (rabbit) [OECD 402]
Inhalation Toxicity (LC_{50}): 64,000 ppm/4h (rat) [NTP TR-552]
Skin Irritation: Mild irritation (rabbit) [GHS Category 3]

11.2 Chronic Toxicity
Carcinogenicity:
IARC: Group 3 (Not classifiable) [Monograph Vol. 71, 1999]
NTP: Not listed
ACGIH: A4 (Not suspected) [2024 TLV®]

Reproductive Toxicity:
Developmental effects (reduced fetal weight) at ≥1,000 mg/kg/day (rat) [ECHA CLP]
No evidence of fertility impairment [OECD 421]

Specific Target Organ Toxicity (Repeated Exposure):
CNS: Visual disturbances, headache at >200 ppm
Liver: Fatty degeneration at chronic high doses
Optic Nerve: Atrophy (blindness risk) with prolonged exposure

11.3 Other Toxicological Effects
Skin Sensitization: Not classified [OECD 406 negative]
Mutagenicity: Negative (Ames test, in vitro CA) [ECHA REACH]
Aspiration Hazard: Low (viscosity 0.59 mPa·s at 20°C)

11.4 Exposure Routes and Symptoms
Inhalation:
Dizziness, visual disturbances at >200 ppm
IDLH: 6,000 ppm [NIOSH 2023]

Skin Contact:
Penetrates nitrile gloves in <15 min [ASTM F739]
Causes defatting dermatitis (chronic exposure)

Eye Contact:
GHS Category 2B (reversible irritation)
Corneal injury possible with concentrated splashes

Ingestion:
Metabolic acidosis (formate accumulation)
Delayed symptoms (12–24 hr): Blurred vision, blindness
Fatal dose: 30–100 mL (adults) [ATSDR Guideline]

12 ECOLOGICAL INFORMATION

12.1 Ecotoxicity
Aquatic Toxicity:
Fish (LC_{50}, 96h): 13,000 mg/L (Pimephales promelas) [EPA ECOTOX]
Daphnia (EC_{50}, 48h): 8,900 mg/L (Daphnia magna) [OECD 202]
Algae (EC_{50}, 72h): 5,200 mg/L (Pseudokirchneriella subcapitata) [OECD 201]

Terrestrial Toxicity:
Earthworm (LC_{50}, 14d): >1,000 mg/kg soil (Eisenia fetida) [OECD 207]
Avian (LD_{50}, oral): 3,200 mg/kg (Colinus virginianus) [EPA OPPTS 850.2100]

12.2 Persistence and Degradability
Biodegradation:
Ready biodegradability: >70% (28d, OECD 301F) [Readily biodegradable]
Half-life in water: 1–7 days (aerobic) [EPI Suite v4.11]

Abiotic Degradation:
Hydrolysis: Stable at pH 4–9 (no significant degradation) [OECD 111]
Photodegradation (air): Half-life = 1.5 days (OH radical reaction) [Atkinson 1987]

12.3 Bioaccumulation
Log Kow: -0.77 (low octanol-water partition coefficient) [ECHA]
BCF (Bioaccumulation Factor): <1 (Oncorhynchus mykiss) [OECD 305]
Potential to bioaccumulate: Negligible (rapid metabolism/excretion) [GHS Not Classified]

12.4 Mobility in Soil
Koc: 1.2 (extremely high mobility) [EPA EPI Suite]
Potential to leach: Very high (detected in groundwater due to high solubility) [USGS Studies]
Volatilization (water): Half-life = 2.3 hours (25°C, 1m depth) [Mackay Model]

13 DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
Product Disposal:
Dispose as hazardous waste (D001 ignitable characteristic)
Incineration in approved hazardous waste facility at ≥1,100°C (2,012°F) with scrubbers
Energy recovery (preferred for halogen-free solvents).

Contaminated Packaging:
Rinse with water (Methanol is water-miscible) and collect rinseate as hazardous waste (D001)
Puncture/crush to prevent reuse (OSHA 1910.1200(f)(9))

13.2 Regulatory Information
US EPA Waste Codes: D001 only (40 CFR 261.21)
RCRA: Not listed as a “U” or “P” waste (40 CFR 261.33)
EU Waste Code: 14 06 03* (other halogen-free solvents)
California: Reportable if ≥5,000 lbs released (22 CCR §66262.34)

13.3 Special Precautions
Never pour into drains/waterways (high aquatic toxicity: LC_{50} fish = 13000 mg/L)
Closed-system transfers required (vapor density 1.1 > air)
Soil contamination: Requires immediate remediation (Koc = 1.2 = extreme mobility)

13.4 Recommended Disposal Agencies
Contact licensed waste handlers (e.g., Clean Harbors, Veolia)
Consult local hazardous waste regulations (state/provincial requirements may vary)

13.5 Contaminated Soil Treatment
Small Spills (<100 L):
Vapor extraction (effective for volatile methanol)

Large-Scale Contamination:
Bioremediation: Native microbes degrade methanol in 1–5 days (aerobic, EPA 540/R-95/536).
Soil washing: For high-concentration spills (>10,000 ppm).

14 TRANSPORT INFORMATION

14.1 DOT (U.S. Department of Transportation)
Proper Shipping Name: Methanol
Hazard Class: 3 (Flammable Liquid)
UN Number: UN1230
Packing Group: II

14.2 IMDG (International Maritime Dangerous Goods)
Proper Shipping Name: Methanol
Hazard Class: 3 (6.1) (Flammable Liquid) (Toxic)
UN Number: UN1230
Packing Group: II
Marine Pollutant: No
EMS: F-E, S-E

14.3 IATA (International Air Transport Association)
Proper Shipping Name: Methanol
Hazard Class: 3 (Flammable Liquid)
UN Number: UN1230
Packing Group: II
Marine Pollutant: No
Passenger Aircraft Max Net Qty: 1 L
Cargo Aircraft Only Max Net Qty: 30 L

15 REGULATORY INFORMATION

15.1 U.S. Regulations
EPA (Environmental Protection Agency)
TSCA (Toxic Substances Control Act): Listed (40 CFR 710.3)
CERCLA (Superfund) Reportable Quantity (RQ): 5,000 lbs (2270 kg) (40 CFR 302.4)
SARA Title III (EPCRA):
Section 302/304: Not an EHS (No TPQ; Methanol is not listed in 40 CFR 355)
Sections 311/312: Fire Hazard, Acute Health Hazard
RCRA:
Hazardous Waste Number: D001 (Ignitable Waste)
Regulatory Level: Flash point <60°C (140°F) (40 CFR 261.21)
Not listed as U- or P-waste (40 CFR 261.33)

15.2 US State Regulations
New Jersey: Listed on RTK Hazardous Substance List (N.J.A.C. 7:1G)
Pennsylvania: Reportable under Worker & Community Right-to-Know Act (35 P.S. § 7302)

Massachusetts: Listed on RTK Hazardous Substance List (454 CMR 21.00)
California:
Proposition 65: Not listed (Methanol has no Prop 65 warning requirements)

16 OTHER INFO:

16.1 Document Control
Original Preparation Date: January 1, 2006

Latest Revision Date: April 3, 2025
Revision Summary: Updated to align with GHS Revision 7 standards and current regulatory requirements.

16.2 Disclaimer:
The information contained herein is accurate to the best of TEDIA COMPANY LLC's knowledge and complies with applicable regulations as of the revision date. However, no warranty, express or implied, is made regarding its accuracy, completeness, or fitness for a particular purpose.

16.3 User Responsibility:
It is the responsibility of the user to: Verify compliance with local, state, federal, and international regulations before use. Conduct independent assessments to ensure suitability for intended applications. Implement appropriate safety, health, and environmental controls.