

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

SRM Number: 1586
MSDS Number: 1586
SRM Name: Isotope Labeled and Unlabeled
Priority Pollutants in Methanol

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Description: This Standard Reference Material (SRM) consists of two separate methanol solutions intended primarily for use in the evaluation and calibration of analytical instrumentation for the determination of priority pollutants as classified by the U.S. Environmental Protection Agency (EPA). A unit of SRM 1586 consists of six 2 mL ampoules. The ten priority pollutants (SRM 1586-2) solution contains either deuterium or carbon-13 while the other solution (SRM 1586-1) contains the same compounds with no isotopes except those naturally occurring.

Substance: Methanol

Other Designations: Wood alcohol; wood spirit; methyl hydroxide; methyl alcohol

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0-4): Health = 2 Fire = 3 Reactivity = 0

Major Health Hazards: Skin and eye irritation, central nervous system depression, and nerve damage.

Physical Hazards: Flammable liquid and vapor. Vapor may cause flash fire.

Potential Health Effects

Inhalation: Exposure may cause irritation of the mucous membranes, coughing, tracheitis, bronchitis, tinnitus, unsteady gait, twitching constipation, nystagmus, and blepharospasms. Repeated exposure may result in recurrent headaches, diminution of vision, enlargement of the liver, and allergic reactions.

Skin Contact: Exposure may cause irritation. Skin absorption may occur and cause metabolic acidosis and effect on the eyes and central nervous system. Repeated or long-term exposure may lead to defatting of the skin resulting in erythema, scaling, and eczematoid dermatitis.

Eye Contact: Vapors may cause irritation. High concentrations have been reported to cause violent inflammation of the conjunctiva and epithelial defects of the cornea. Repeated or prolonged contact may cause conjunctivitis.

Ingestion: Ingestion may result in mild and transient inebriation and subsequent drowsiness. Liver, kidney, heart, stomach, intestine and pancreatic damage may also occur. Death may occur due to respiratory failure. As little as 15 mL has caused blindness; the usual fatal dose is 60–240 mL.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	_____	<u>X</u>
In the International Agency Report on Carcinogens (IARC) Monographs	_____	<u>X</u>
By the Occupational Safety and Health Administration (OSHA)	_____	<u>X</u>

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component ^(a)	CAS Registry	EC Number (EINECS)	Nominal Concentration
Methanol	67-56-1	200-659-6	>99 %

^(a) This SRM is a mixture containing trace amounts of ten priority pollutants in methanol. These compounds have been reported to have toxic, mutagenic and /or carcinogenic properties. The trace amounts found in this SRM do not require individual MSDS information under current OSHA regulations, only hazardous components 1 % or greater; carcinogens 0.1 % or greater are listed. For the actual concentrations see the Certificate of Analysis.

EC Classification: T, F
EC Risk (R No.): 11, 23/24/25, 39/23/24/25
EC Safety (S No.): 7, 16, 36/37, 45

EC Risk/Safety Phrases: Refer to Section 15, "Regulatory Information".

Note: EC information is based on the concentration of methanol in solution. The listed EC information is for a methanol solution of 20 % or greater.

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Eye Contact: Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Skin Contact: Rinse affected area with copious amounts of water followed by washing with soap and water for at least 15 minutes while removing contaminated clothing. Seek medical attention, if needed.

Ingestion: Contact a poison control center immediately for instructions. Give water to rinse out mouth. Never give liquids to a person with reduced awareness or becoming unconscious. If vomiting occurs, keep head lower than hips to prevent aspiration. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

Extinguishing Media: Alcohol-resistant foam, carbon dioxide, regular dry chemical, water.

Fire Fighting: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point: 11 °C (52 °F)

Method Used: Closed Cup

Autoignition Temp: 385 °C (725 °F)

Flammability Limits in Air

UPPER (Volume %): 36

LOWER (Volume %): 6

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Absorb small spills with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Handling and Storage: Store and handle in accordance with all current regulations and standards. Ampoules should be stored at room temperature. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

ACGIH (TWA): 200 ppm

ACGIH (STEL): 250 ppm

ACGIH: Skin – potential significant contribution to overall exposure by the cutaneous route

OSHA (TWA): 200 ppm; 260 mg/m³

NIOSH (TWA): 200 ppm; 260 mg/m³

NIOSH (STEL): 250 ppm; 325 mg/m³
NIOSH (IDLH): 6000 ppm
NIOSH: Potential for dermal absorption.

Ventilation: Use local exhaust ventilation system. Ensure compliance with applicable exposure limits. Refer to the ACGIH document, *Industrial Ventilation, a Manual of Recommended Practices*.

Respirator: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Wear chemical safety goggles. An eyewash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Colorless liquid, alcohol odor

Odor Threshold: 100 ppm

Molar Mass (g/mol): 32.04

Molecular Formula: CH₃OH

Melting Point: -94 °C (-137 °F)

Boiling Point: 65 °C (149 °F)

Vapor Pressure: 97.25 mmHg at 20 °C

Vapor Density (air = 1): 1.11

Specific Gravity (water = 1): 0.7914

Water Solubility: Soluble

10. STABILITY AND REACTIVITY

Stability: X Stable Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition.

Incompatible Materials: Halogens, oxidizing materials, combustible materials, metals, bases, and acids.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Oxides of carbon and miscellaneous decomposition products.

Hazardous Polymerization: Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation X Skin X Ingestion

Toxicity Data:

Rat, Oral LC₅₀: 5628 mg/kg

Rat, Inhalation LC₅₀: 83.2 mg/L (4 h)

Target Organ(s): Nervous system

Health Effects (Acute and Chronic): See Section 2, "Hazards Identification" for potential health effects.

Medical Conditions Aggravated by Exposure: Eye disorders, skin disorders, and kidney disorders.

Mutagenic, Reproductive, and Tumorigenic Toxic Effects: The components of this material have been reviewed and the Registry of Toxic Effects of Chemical Substances (RTECS) publishes the following endpoints.

Tumorigenic: No data available.

Mutagenic: Rat, Oral: 10 µmol/kg (DNA damage)
Human, lymphocyte: 300 mmol/L (DNA inhibition)

Reproductive: Rat, Inhalation TClO: 20 000 ppm/7 h (pregnant, 1–22 d, Specific developmental abnormalities: musculoskeletal, cardiovascular, and urogenital system.)

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: Fish Toxicity: Fathead minnow (*Pimephales promelas*) LC₅₀ (static): >100 mg/L (96 h)
Steelhead trout (*Oncorhynchus mykiss*) LC₅₀ (static): 18–20 mL/L (96 h)

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local requirements. Subject to disposal regulations: U.S. EPA 40CFR 262.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Methanol, Hazard Class 3 (6.1), UN1230, Packing Group II, Excepted Qty: Yes, E2.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): 5000 lb (2270 kg) final RQ.
SARA Title III Section 302 (40 CFR 355.30): Not regulated for this material.
SARA Title III Section 304 (40 CFR 355.40): Not regulated for this material.
SARA Title III Section 313 (40 CFR 372.65): 0.1 % de minimis concentration.
OSHA Process Safety (29 CFR 1910.119): Not regulated for this material.
SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE:	Yes
CHRONIC:	Yes
FIRE:	Yes
REACTIVE:	No
SUDDEN RELEASE:	No

STATE REGULATIONS

California Proposition 65: Not listed.

CANADIAN REGULATIONS

WHMIS Classification: Not provided for this material.

EUROPEAN REGULATIONS

EC Classification:

F: Flammable
T: Toxic

EC Risk (R No.):

R11 – Highly flammable.
R23/24/25 – Toxic by inhalation, in contact with skin and if swallowed.
R39/23/24/25 – Toxic: Danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.

EC Safety (S No.):

S7 – Keep container tightly closed.
S16 – Keep away from sources of ignition – No smoking.
S36/37 – Wear suitable protective clothing and gloves.
S45 – In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed.

TSCA 12(b)

Export Notification: Not listed.

16. OTHER INFORMATION

Sources: ChemAdvisor, Inc., MSDS *Methyl Alcohol*, 20 December 2011.

EC; European Chemical Substance Information System (ESIS), *Methanol*, CAS No. 67-56-1; available at <http://esis.jrc.ec.europa.eu/> (accessed Jan 2012).

NIOSH Registry of Toxic Effects of Chemical Substances (RTECS), *Methanol*, No. PC1400000, CAS No. 67-56-1; May 2009; available at <http://www.cdc.gov/niosh-rtecs/PC155CC0.html> (accessed Jan 2012).

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.