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Cambridge Isotope Laboratories, Inc.

50 Frontage Road, Andover, MA 01810-5413 USA
800.322.1174 (N.AMERICA) 978.749.8000 (INTERNATIONAL)
www.isotope.com

CERTIFICATE OF ANALYSIS

Product Name: 4% METHANOL +
(Isotopic Label & Enrichment Specification) 96% METHANOL-D4

Lot Number: BP-621

Catalog Number: DLM-5007-0

Product Information

Chemical Purity Specification: $\geq 98\%$
Labeled CAS Number: NA
Unlabeled CAS Number: 67-56-1
Molecular Weight: 36.07
Chemical Formula: CD3OD
Storage: Store at room temperature away from light and moisture.
Stability: Stable if stored under recommended conditions.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible.

Approved by: *Jeffrey O'Neill*

Jeffrey O'Neill, Quality Assurance

Quality Control Tests and Results

¹H NMR for Chemical Purity

Pass

CAMBRIDGE ISOTOPE LABORATORIES
50 Frontage Road, Andover, Massachusetts 01810

Material Safety Data Sheet

PLEASE NOTE: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally unavailable, but are assumed to be similar or identical to the corresponding unlabeled compound. While the information contained is believed to be accurate, it does not claim to be all inclusive, and should be used only as a guide. CIL, Inc. extends no warranties with respect hereto and disclaims all liabilities from reliance thereon. Judgments as to the suitability of the data presented with respect to the use of the product are the responsibility of the purchaser and intended user.

Section 1. Chemical Product and Company Identification
4% Methanol + 96% Methanol-D4 **CATALOG NO. DLM-5007**

Cambridge Isotope Laboratories, Inc. 50 Frontage Road Andover, MA 01810 USA.	Emergency Telephone No. USA: 1-800-424-9300 USA, for Information: (800) 322-1174	Emergency Telephone No. INT: 1-202-483-7616 International, for Information: (978) 749-8000
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Date Prepared: 29-Sep-00 Supersedes: All previous.

Section 2. Hazard, Ingredients/Identity Information Hazardous Components (Specific Chemical Identity; Common Names) Chemical Names Methanol Methanol-D4	RTECS No.: OSHA PEL 8 TWA 200ppm (skin) Not available.	PC1400000 ACGIH TLV TWA 200ppm STEL 250ppm (skin) Not available.
CAS Number 67-56-1 (Unlabeled) 811-98-3		

Section 3. Hazard Identification.

Appearance:	Colorless liquid.
Potential health effects:	Exposure can cause gastrointestinal disturbances. May cause convulsions.
Routes of Entry:	Inhalation, ingestion, and skin absorption.
Symptoms of exposure:	Not available.
Target organs:	Eyes, kidneys, liver, heart.
Warnings:	Flammable. Toxic. Irritating to eyes and skin.

Section 4. First Aid Measures.

On contact, flush eyes and skin with lots of water for at least 15 min.	Breathing: If breathing is difficult, give oxygen.
Eyes: (Separate eyelids with fingers when flushing.)	Not breathing: If not breathing, give artificial respiration.
If inhaled, remove to fresh air.	Swallowed: Wash out mouth with water if person is conscious.
Call a physician.	Remove contaminated clothing and shoes.

Section 5. Fire-Fighting Measures.

Extinguishing Media:	Water spray, carbon dioxide, dry chemical powder, appropriate foam.
Methods and cautions:	Wear self-contained breathing apparatus and protective clothing.
	Flammable liquid. Emits toxic fumes under fire conditions.
	Vapor may travel considerable distance to ignition source and flashback.
	Container explosion may occur under fire conditions.
Flammable LEL:	6% (Methanol-D4) Flammable UEL: 36% (Methanol-D4)

Section 6. Accidental Release Measures.

Evacuate area. Shut off all sources of ignition. Wear self-contained breathing apparatus and protective clothing.
 Cover with dry lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors.
 Ventilate area and wash spill site after material pickup is complete.
 Hygiene warning: Wash thoroughly after handling.
 Respiratory protection: Wear appropriate NIOSH/MSHA approved respirator.

4% Methanol + 96% Methanol-D4

DLM-5007

Section 7. Handling and Storage.

General warning: Flammable. Toxic. Irritating to eyes and skin.
Handling procedures: Avoid contact with eyes, skin, and clothing.
Storage procedures: Store at room temperature away from light and moisture. Keep tightly closed.
Hygiene instructions: Wash thoroughly after handling.
Other: Use only in a chemical fume hood.

Section 8. Exposure Controls and Personal Protection.

General controls: Avoid prolonged or repeated exposure.
Eye/face protection: Chemical safety goggles.
Skin Protection: Wear suitable protective clothing.
Respiratory protection: Wear appropriate NIOSH/MSHA approved respirator.

Section 9. Physical/Chemical Characteristics.

Molecular weight:	36.07 (Methanol-D4)	Autoignition temperature:	725°F (Methanol-D4)
Appearance:	Colorless liquid.	Flash point/Method:	52°F (Methanol-D4)
Odor:	Not available.	Melting point:	-98°C (Methanol-D4)
Physical state:	Liquid.	Boiling point:	64.6°C (Methanol-D4)
pH:	Not available.	Freezing point:	Not available.
Vapor pressure:	97.68mm @ 20°C (Methanol-D4)		
Vapor density:	1.1 (Methanol-D4)		
Solubility in water:	Not available.		
Specific gravity/density:	0.791 (Methanol-D4)		

Section 10. Stability and Reactivity.

Chemical Stability: Stable if stored under recommended conditions.
Conditions to Avoid: Heat, sparks and open flames. Protect from moisture.
Incompatibilities: Oxidizing agents, acids, acid chlorides, acid anhydrides, alkali metals, reducing agents.
Hazardous Decomposition: Toxic fumes of carbon monoxide and carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11. Toxicological Information (see Section 3 on first page).

Acute data: Causes eye and skin irritation.
May be harmful if absorbed through the skin.
Toxic if inhaled or swallowed.
Material may be irritating to mucous membranes and upper respiratory tract.

Chronic data: Toxicological properties have not been fully investigated, to the best of our knowledge.

Section 12. Ecological Information (impact if released into environment).

Not available.

Section 13. Disposal Considerations.

Burn in a chemical incinerator with afterburner and scrubber.
Exert extra care in igniting as this material is highly flammable.
Observe all Federal, State, and Local Laws.

Section 14. Transport Information.

Follow all Federal, State and Local transportation guidelines.

Section 15. Regulatory Information.

This product is subject to SARA Section 313 reporting requirements.

Section 16. Other Information.

Not available.