



MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/21/2013

Version 1.3

SECTION 1. Identification

Product identifier

Product number	106028
Product name	Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

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

Identified uses	Reagent for analysis
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America SDS Phone Support: +1-978-715-1335 General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 2, H225
Acute toxicity, Category 3, Inhalation, H331
Acute toxicity, Category 3, Oral, H301
Acute toxicity, Category 3, Dermal, H311
Specific target organ systemic toxicity - single exposure, Category 1, H370
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word
Danger

Hazard Statements

H225 Highly flammable liquid and vapor.
H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled.

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

106028

Version 1.3

Product name

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H370 Causes damage to organs.

Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P309 + P310 IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	CD ₃ OD	CD ₄ O (Hill)
CAS-No.	811-98-3	
Molar mass	36.07 g/mol	

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

(2H4)methanol (>= 90 % - <= 100 %)

811-98-3

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Immediately apply artificial respiration. If necessary oxygen. Immediately call in physician.

Skin contact

After skin contact: wash off with plenty of water. Immediately remove contaminated clothing. If available swab with polyethylene glycol 400. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

Ingestion

After swallowing: fresh air. Make victim drink ethanol (e.g. 1 drinking glass of a 40% alcoholic beverage). Call a doctor immediately (mention methanol ingestion). Only in exceptional cases, if no medical care is available within one hour, induce vomiting (only in fully conscious persons) and make victim drink ethanol again (approx. 0.3 ml of a 40% alcoholic beverage/kg body weight/hour).

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	106028	Version 1.3
Product name	Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™	

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Drowsiness, Dizziness, narcosis, agitation, spasms, inebriation, Nausea, Vomiting, Headache, blindness, Impairment of vision, Coma
Drying-out effect resulting in rough and chapped skin.

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Foam, Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

Development of hazardous combustion gases or vapors possible in the event of fire.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Cool closed containers exposed to fire with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

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according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

106028

Version 1.3

Product name

Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities

Keep locked up or in an area accessible only to qualified or authorized persons. Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

Storage temperature: no restrictions.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>(2H4)methanol</i>	<i>811-98-3</i>		
ACGIH	Time Weighted Average (TWA):	200 ppm	
	Short Term Exposure Limit (STEL):	250 ppm	
	Skin designation:		Can be absorbed through the skin.
NIOSH/GUIDE	Recommended exposure limit (REL):	200 ppm 260 mg/m ³	
	Skin designation:		Can be absorbed through the skin.
	Short Term Exposure Limit (STEL):	250 ppm 325 mg/m ³	
OSHA_TRANS	PEL:	200 ppm 260 mg/m ³	
Z1A	Time Weighted Average (TWA):	200 ppm 260 mg/m ³	
	Skin designation (Final Rule Limit applies):		Can be absorbed through the skin.
	Short Term Exposure Limit (STEL):	250 ppm 325 mg/m ³	

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

106028

Version 1.3

Product name

Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance. Work under hood. Do not inhale substance/mixture.

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Flame retardant antistatic protective clothing

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	characteristic
Odor Threshold	No information available.
pH	No information available.
Melting point	-98 °C
Boiling point/boiling range	148.1 °F (64.5 °C) at 1,013 hPa
Flash point	52 °F (11 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	5.5 %(V)
Upper explosion limit	36.5 %(V)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	106028	Version 1.3
Product name	Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™	

Vapor pressure	128 hPa at 68 °F (20 °C)
Relative vapor density	No information available.
Relative density	0.79 g/cm ³ at 68 °F (20 °C)
Water solubility	at 68 °F (20 °C) soluble
Partition coefficient: n-octanol/water	log Pow: -0.77 (experimental) (Lit.) Bioaccumulation is not expected (log Pow <1).
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	0.597 mPa.s at 68 °F (20 °C)
Explosive properties	No information available.
Ignition temperature	851 °F (455 °C) Method: DIN 51794

SECTION 10. Stability and reactivity

Reactivity

Vapors may form explosive mixture with air.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Risk of explosion with:

Oxidizing agents, perchlorates, salts of oxyhalogenic acids, halogen oxides, Nitric acid, nitrogen oxides, nonmetallic oxides, chromosulfuric acid, chlorates, hydrides, zinc diethyl, halogens, magnesium, hydrogen peroxide

Exothermic reaction with:

acid halides, Acid anhydrides, Reducing agents, acids

Generates dangerous gases or fumes in contact with:

Alkaline earth metals, Alkali metals, Hydrogen

Conditions to avoid

Warming.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number

106028

Version 1.3

Product name

Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

various plastics, magnesium, zinc alloys

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

Central nervous system

gastrointestinal tract

Acute oral toxicity

LDLO human: 143 mg/kg (RTECS)

LD50 rat: 5,628 mg/kg (IUCLID)

Symptoms: Nausea, Vomiting

absorption

Acute inhalation toxicity

LC50 rat: 85.26 mg/l; 4 h (IUCLID)

Symptoms: Irritation symptoms in the respiratory tract.

absorption

Acute dermal toxicity

LD50 rabbit: ca. 17,100 mg/kg

(External MSDS)

absorption

Skin irritation

Drying-out effect resulting in rough and chapped skin.

Eye irritation

Irritations of mucous membranes

Sensitization

Sensitization test: guinea pig

Result: negative

(IUCLID)

Genotoxicity in vivo

Mutagenicity (mammal cell test): micronucleus.

Result: negative

(IUCLID)

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number
Product name

106028
Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

Version 1.3

Genotoxicity in vitro

Ames test

Result: negative
(IUCLID)

CMR effects

Carcinogenicity:

Did not show carcinogenic effects in animal experiments.

Mutagenicity:

Regarding the available data the classification criteria are not fulfilled.

Teratogenicity:

Regarding the available data the classification criteria are not fulfilled.

Reproductive toxicity:

Regarding the available data the classification criteria are not fulfilled.

Specific target organ systemic toxicity - single exposure

Causes damage to organs.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Systemic effects:

acidosis, drop in blood pressure, agitation, spasms, inebriation, Dizziness, Drowsiness, Headache, Impairment of vision, blindness
narcosis, Coma

Symptoms may be delayed.

Damage to:

Liver, Kidney, Cardiac, Irreversible damage of the optical nerve.

Further data:

Handle in accordance with good industrial hygiene and safety practice.

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according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

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106028

Version 1.3

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Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 *Lepomis macrochirus* (Bluegill sunfish): 15,400 mg/l; 96 h (in soft water) (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC5 *E.sulcatum*: > 10,000 mg/l; 72 h (Lit.)

EC50 *Daphnia magna* (Water flea): > 10,000 mg/l; 48 h (IUCLID)

Toxicity to algae

EC50 *Pseudokirchneriella subcapitata* (green algae): ca. 22,000 mg/l; 96 h (External MSDS)

IC5 *Scenedesmus quadricauda* (Green algae): 8,000 mg/l; 8 d (IUCLID)

Toxicity to bacteria

EC5 *Pseudomonas fluorescens*: 6,600 mg/l; 16 h (IUCLID)

Toxicity to fish (Chronic toxicity)

NOEC *Oryzias latipes* (Orange-red killifish): 7,900 mg/l; 200 h (External MSDS)

Persistence and degradability

Biodegradability

99 %; 30 d

OECD Test Guideline 301D

Readily biodegradable.

Biochemical Oxygen Demand (BOD)

600 - 1,120 mg/g (5 d)

(IUCLID)

Chemical Oxygen Demand (COD)

1,420 mg/g

(IUCLID)

Theoretical oxygen demand (ThOD)

1,500 mg/g

(Lit.)

Ratio BOD/ThBOD

BOD5 76 %

Closed Bottle test

Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -0.77

(experimental)

(Lit.) Bioaccumulation is not expected (log Pow <1).

Mobility in soil

No information available.

Other adverse effects

Stability in water

2.2 yr

reaction with hydroxyl radicals (IUCLID)

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Product number 106028 Version 1.3
Product name Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

Additional ecological information

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 1230
Proper shipping name	METHANOL
Class	3
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1230
Proper shipping name	METHANOL
Class	3 (6.1)
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 1230
Proper shipping name	METHANOL
Class	3 (6.1)
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-E S-D

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Flammable Liquid
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 106028 Version 1.3
Product name Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™

Fire Hazard
Chronic Health Hazard

SARA 313

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

DEA List I

Not listed

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Ingredients

(2H4)methanol

Pennsylvania Right To Know

Ingredients

(2H4)methanol

New Jersey Right To Know

Ingredients

(2H4)methanol

California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Ingredients

(2H4)methanol

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: This product contains one or several components listed in the Canadian NDSL.
Ingredients
(2H4)methanol

SECTION 16. Other information

Details in analogy to the undeuterated compound.

Training advice

Provide adequate information, instruction and training for operators.

MATERIAL SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number	106028	Version 1.3
Product name	Methanol-D4 deuteration degree min. 99.8 % for NMR spectroscopy MagniSolv™	

Full text of H-Statements referred to under sections 2 and 3.

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.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 08/21/2013

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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