

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 28.11.2013

Version 11.0

## SECTION 1. Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Catalogue No.	113364
Product name	Tetrahydrofuran-D8 deuteration degree min 99.5% for NMR spectroscopy MagniSolv™
REACH Registration Number	A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No.	1693-74-9

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

Identified uses	Reagent for analysis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merck-chemicals.com">www.merck-chemicals.com</a> ).
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### 1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

### 1.4 Emergency telephone number

Please contact the regional company representation in your country.

## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquid, Category 2, H225

Eye irritation, Category 2, H319

Specific target organ toxicity - single exposure, Category 3, Respiratory system, H335

**Carcinogenicity, Category 2, H351**

For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification (67/548/EEC or 1999/45/EC)

F	Highly flammable	R11 - 19
Carc.Cat.3	Carcinogenic Category 3	R40
Xi	Irritant	R36/37

For the full text of the R-phrases mentioned in this Section, see Section 16.

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Product name Tetrahydrofuran-D8 deuteration degree min 99.5% for NMR spectroscopy  
MagniSolv™

## 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

*Hazard pictograms*



*Signal word*

**Danger**

*Hazard statements*

H225 Highly flammable liquid and vapour.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H351 Suspected of causing cancer.  
EUH019 May form explosive peroxides.

*Precautionary statements*

**Prevention**

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P240 Ground/bond container and receiving equipment.

**Response**

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

**Storage**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

**Reduced labelling (≤125 ml)**

*Hazard pictograms*



*Signal word*

**Danger**

*Hazard statements*

H351 Suspected of causing cancer.

*Precautionary statements*

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

CAS-No. 1693-74-9

## 2.3 Other hazards

None known.

## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula C<sub>4</sub>D<sub>8</sub>O (Hill)

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EC-No.	216-898-4
Molar mass	80,16 g/mol

**Hazardous components (REGULATION (EC) No 1272/2008)**

*Chemical Name (Concentration)*

CAS-No.	Registration number	Classification
[2H4]tetrahydro[2H4]furan (<= 100 % )		
1693-74-9	*)	Flammable liquid, Category 2, H225 Eye irritation, Category 2, H319 Specific target organ toxicity - single exposure, Category 3, H335 Carcinogenicity, Category 2, H351

\*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-Statements mentioned in this Section, see Section 16.

**Hazardous components (1999/45/EC)**

*Chemical Name (Concentration)*

CAS-No.	Classification
[2H4]tetrahydro[2H4]furan (<= 100 % )	
1693-74-9	F, Highly flammable; R11-19 Carc.Cat.3; R40 Xi, Irritant; R36/37

For the full text of the R-phrases mentioned in this Section, see Section 16.

**3.2 Mixture**

not applicable

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**SECTION 4. First aid measures**

**4.1 Description of first aid measures**

After inhalation: fresh air. Call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

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

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

**4.2 Most important symptoms and effects, both acute and delayed**

irritant effects, Cough, Shortness of breath  
Dermatitis, narcosis, Headache, drowsiness  
Drying-out effect resulting in rough and chapped skin.

**4.3 Indication of any immediate medical attention and special treatment needed**

No information available.

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**SECTION 5. Firefighting measures**

**5.1 Extinguishing media**

*Suitable extinguishing media*

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Foam, Carbon dioxide (CO<sub>2</sub>), Dry powder

*Unsuitable extinguishing media*

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

**5.2 Special hazards arising from the substance or mixture**

Combustible.

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

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

Forms explosive mixtures with air at ambient temperatures.

**5.3 Advice for firefighters**

*Special protective equipment for firefighters*

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*

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6. Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

**6.2 Environmental precautions**

Do not let product enter drains. Risk of explosion.

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

**6.4 Reference to other sections**

Indications about waste treatment see section 13.

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**SECTION 7. Handling and storage**

**7.1 Precautions for safe handling**

*Advice on safe handling*

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

Observe label precautions.

*Advice on protection against fire and explosion*

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

*Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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## 7.2 Conditions for safe storage, including any incompatibilities

### *Storage conditions*

Protected from light.

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

## 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### **Engineering measures**

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

See section 7.1.

#### **Individual protection measures**

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

splash contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 10 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (splash contact). The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

#### *Other protective equipment*

Flame retardant antistatic protective clothing

#### *Respiratory protection*

required when vapours/aerosols are generated.

Empfohlener Filtertyp: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

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**Environmental exposure controls**

Do not let product enter drains.

Risk of explosion.

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**SECTION 9. Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Form	liquid
Colour	colourless
Odour	ether-like
Odour Threshold	No information available.
pH	No information available.
Melting point	-108 °C
Boiling point/boiling range	64 °C at 1.013 hPa
Flash point	-17,5 °C
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	No information available.
Relative vapour density	No information available.
Relative density	0,99 g/cm <sup>3</sup> at 20 °C
Water solubility	at 20 °C soluble
Partition coefficient: n-octanol/water	log Pow: 0,45 (25 °C) OECD Test Guideline 107 (Lit.) Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.

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Explosive properties	Not classified as explosive.
Oxidizing properties	none
Peroxides	May form explosive peroxides.

## 9.2 Other data

Ignition temperature	215 °C Method: DIN 51794
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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Vapours may form explosive mixture with air.  
Formation of peroxides possible.

### 10.2 Chemical stability

Sensitivity to light  
Sensitive to air.

### 10.3 Possibility of hazardous reactions

A risk of explosion and/or of toxic gas formation exists with the following substances:  
alkali hydroxides, hydrides, Oxygen, Oxidizing agents, Bromine

### 10.4 Conditions to avoid

Warming.

### 10.5 Incompatible materials

rubber, various plastics, Tin

### 10.6 Hazardous decomposition products

Peroxides

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

LD50 rat: 1.650 mg/kg (RTECS)

Symptoms: Irritation of mucous membranes

#### *Acute inhalation toxicity*

LC50 rat: 53,9 mg/l; 4 h (IUCLID)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages: damage of respiratory tract

#### *Acute dermal toxicity*

absorption

#### *Skin irritation*

rabbit

Result: Irritations  
(IUCLID)

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Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

*Eye irritation*

rabbit

Result: Eye irritation

(IUCLID)

Causes serious eye irritation.

*Sensitisation*

Sensitisation test: guinea pig

Result: negative

(IUCLID)

Human experience

Result: negative

(IUCLID)

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Ames test

Result: negative

(IUCLID)

*Carcinogenicity*

This information is not available.

*Reproductive toxicity*

No impairment of reproductive performance suspected. (Lit.)

*Teratogenicity*

This information is not available.

*CMR effects*

Carcinogenicity:

Suspected of causing cancer.

*Specific target organ toxicity - single exposure*

Target Organs: Respiratory system

May cause respiratory irritation.

*Specific target organ toxicity - repeated exposure*

This information is not available.

*Aspiration hazard*

This information is not available.

## 11.2 Further information

After uptake:

Headache, drowsiness, narcosis

Handle in accordance with good industrial hygiene and safety practice.

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## SECTION 12. Ecological information

### 12.1 Toxicity

*Toxicity to fish*

LC50 Pimephales promelas (fathead minnow): 2.160 mg/l; 96 h (in soft water) (IUCLID)

*Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 382 mg/l; 24 h (IUCLID)



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*Toxicity to algae*

IC50 Scenedesmus quadricauda (Green algae): 3.700 mg/l; 8 d (maximum permissible toxic concentration) (IUCLID)

*Toxicity to bacteria*

EC50 Pseudomonas putida: 580 mg/l; 16 h (maximum permissible toxic concentration) (IUCLID)

**12.2 Persistence and degradability**

*Biodegradability*

39 %; 28 d

OECD Test Guideline 301D

Not readily biodegradable.

**12.3 Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: 0,45 (25 °C)

OECD Test Guideline 107

(Lit.) Bioaccumulation is not expected.

**12.4 Mobility in soil**

No information available.

**12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

**12.6 Other adverse effects**

*Additional ecological information*

Biological effects:

No interference with wastewater treatment plants are to be expected when used properly.

Further information on ecology

Discharge into the environment must be avoided.

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**SECTION 13. Disposal considerations**

*Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

14.1 UN number	UN 2056
14.2 Proper shipping name	TETRAHYDROFURAN
14.3 Class	3
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

**Inland waterway transport (ADN)**

Not relevant

**Air transport (IATA)**

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14.1 UN number	UN 2056
14.2 Proper shipping name	TETRAHYDROFURAN
14.3 Class	3
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

**Sea transport (IMDG)**

14.1 UN number	UN 2056
14.2 Proper shipping name	TETRAHYDROFURAN
14.3 Class	3
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
EmS	F-E S-D

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  
Not relevant

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**SECTION 15. Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

*EU regulations*

Major Accident Hazard	96/82/EC
Legislation	Highly flammable 7b Quantity 1: 5.000 t Quantity 2: 50.000 t

Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.
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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
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Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated
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Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals	not regulated
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Substances of very high concern (SVHC)	This product does not contain substances of very high concern above the respective regulatory limit (> 0.1 % (w/w) Regulation (EC) No 1907/2006 (REACH), Article 57).
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*National legislation*

Storage class 3

**15.2 Chemical Safety Assessment**

For this product a chemical safety assessment was not carried out.

**SECTION 16. Other information**

Details in analogy to the undeuterated compound.

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

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.



**Full text of R-phrases referred to under sections 2 and 3**

R11	Highly flammable.
R19	May form explosive peroxides.
R36/37	Irritating to eyes and respiratory system.
R40	Limited evidence of a carcinogenic effect.

**Training advice**



Provide adequate information, instruction and training for operators.

**Labelling (67/548/EEC or 1999/45/EC)**

<i>Symbol(s)</i>	 F	Highly flammable
	 Xi	Irritant
<i>R-phrases(s)</i>	11-19-40-36/37	Highly flammable. May form explosive peroxides. Limited evidence of a carcinogenic effect. Irritating to eyes and respiratory system.
<i>S-phrases(s)</i>	16-29-33-36/37	Keep away from sources of ignition - No smoking. Do not empty into drains. Take precautionary measures against static discharges. Wear suitable protective clothing and gloves.

EC-No. 216-898-4

**Reduced labelling (≤125 ml)**

<i>Symbol(s)</i>	 F	Highly flammable
	 Xi	Irritant
<i>R-phrases(s)</i>	40	Limited evidence of a carcinogenic effect.
<i>S-phrases(s)</i>	36/37	Wear suitable protective clothing and gloves.

**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](http://www.wikipedia.org).

**Regional representation**

This information is given on the authorised Safety Data Sheet for your country.

*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*