

## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 5.1 Revision Date 06.12.2013

Print Date 28.04.2014

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

## 1.1 Product identifiers

Product name : Diethyl ether

Product Number : 676845

Brand : Sigma-Aldrich

Index-No. : 603-022-00-4

REACH No. : 01-2119535785-29-XXXX

CAS-No. : 60-29-7

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

Identified uses : Laboratory chemicals, Manufacture of substances

## 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Company Ltd.  
The Old Brickyard  
NEW ROAD, GILLINGHAM  
Dorset  
SP8 4XT  
UNITED KINGDOM

Telephone : +44 (0)1747 833000

Fax : +44 (0)1747 833313

E-mail address : eurtechserv@sial.com

## 1.4 Emergency telephone number

Emergency Phone # : +44 (0)1747 833100

## SECTION 2: Hazards identification

## 2.1 Classification of the substance or mixture

## Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 1), H224

Acute toxicity, Oral (Category 4), H302

Specific target organ toxicity - single exposure (Category 3), H336

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

## Classification according to EU Directives 67/548/EEC or 1999/45/EC

F+	Extremely flammable	R12
Xn	Harmful	R22
		R19, R66, R67

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

## 2.2 Label elements

## Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word : Danger

Hazard statement(s)

H224

Extremely flammable liquid and vapour.

H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.
Precautionary statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Supplemental Hazard information (EU)	
EUH019	May form explosive peroxides.
EUH066	Repeated exposure may cause skin dryness or cracking.

### 2.3 Other hazards - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Synonyms	:	Ether Ethyl ether
Formula	:	C <sub>4</sub> H <sub>10</sub> O
Molecular Weight	:	74.12 g/mol
CAS-No.	:	60-29-7
EC-No.	:	200-467-2
Index-No.	:	603-022-00-4
Registration number	:	01-2119535785-29-XXXX

#### Hazardous ingredients according to Regulation (EC) No 1272/2008

Component		Classification	Concentration
<b>Diethyl ether</b>			
CAS-No.	60-29-7	Flam. Liq. 1; Acute Tox. 4; STOT SE 3; H224, H302, H336, EUH019, EUH066	<= 100 %
EC-No.	200-467-2		
Index-No.	603-022-00-4		

#### Hazardous ingredients according to Directive 1999/45/EC

Component		Classification	Concentration
<b>Diethyl ether</b>			
CAS-No.	60-29-7	F+, Xn, R12 - R19 - R22 - R66 - R67	<= 100 %
EC-No.	200-467-2		
Index-No.	603-022-00-4		

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

no data available

---

### **SECTION 5: Firefighting measures**

#### **5.1 Extinguishing media**

##### **Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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

Carbon oxides

#### **5.3 Advice for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

#### **5.4 Further information**

Use water spray to cool unopened containers.

---

### **SECTION 6: Accidental release measures**

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

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

#### **6.2 Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

#### **6.3 Methods and materials for containment and cleaning up**

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

#### **6.4 Reference to other sections**

For disposal see section 13.

---

### **SECTION 7: Handling and storage**

#### **7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

#### **7.2 Conditions for safe storage, including any incompatibilities**

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

#### **7.3 Specific end use(s)**

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

---

### **SECTION 8: Exposure controls/personal protection**

#### **8.1 Control parameters**

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Diethyl ether	60-29-7	STEL	200 ppm 620 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
		TWA	100 ppm 310 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
		TWA	100 ppm 308 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
	Remarks	Indicative		
		STEL	200 ppm 616 mg/m3	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
		Indicative		
Ethanol	64-17-5	TWA	1,000 ppm 1,920 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
		Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used		

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Splash contact

Material: Fluorinated rubber

Minimum layer thickness: 0.7 mm

Break through time: 30 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup

to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### **Control of environmental exposure**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

---

### **SECTION 9: Physical and chemical properties**

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

a) Appearance	Form: liquid Colour: colourless
b) Odour	no data available
c) Odour Threshold	no data available
d) pH	no data available
e) Melting point/freezing point	Melting point/range: -116 °C
f) Initial boiling point and boiling range	34.6 °C at 1,013 hPa
g) Flash point	-40 °C - closed cup - DIN 51755 Part 1
h) Evaporation rate	no data available
i) Flammability (solid, gas)	no data available
j) Upper/lower flammability or explosive limits	Upper explosion limit: 48 %(V) Lower explosion limit: 1.8 %(V)
k) Vapour pressure	189 hPa at 0 °C 389 hPa at 10 °C 563 hPa at 20 °C 863 hPa at 30 °C 1,228 hPa at 40 °C 2,311 hPa at 60 °C
l) Vapour density	2.56 - (Air = 1.0)
m) Relative density	0.71 g/cm <sup>3</sup> at 20 °C
n) Water solubility	65 g/l at 20 °C
o) Partition coefficient: n-octanol/water	no data available
p) Auto-ignition temperature	no data available
q) Decomposition temperature	no data available
r) Viscosity	no data available
s) Explosive properties	no data available
t) Oxidizing properties	no data available

#### **9.2 Other safety information**

Relative vapour density 2.56 - (Air = 1.0)

---

### **SECTION 10: Stability and reactivity**

#### **10.1 Reactivity**

no data available

## 10.2 Chemical stability

Stable under recommended storage conditions.

Contains the following stabiliser(s):

Ethanol (2 %)

BHT (10 ppm)

## 10.3 Possibility of hazardous reactions

no data available

## 10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

## 10.5 Incompatible materials

Oxidizing agents, Strong acids

## 10.6 Hazardous decomposition products

Other decomposition products - no data available

In the event of fire: see section 5

---

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - rat - 1,215 mg/kg

LC50 Inhalation - mouse - 30 min - 31000 ppm

Remarks: Behavioral:Convulsions or effect on seizure threshold.

LD50 Dermal - rabbit - > 14.2 g/kg

#### Skin corrosion/irritation

no data available

#### Serious eye damage/eye irritation

Eyes - rabbit

Result: Mild eye irritation

#### Respiratory or skin sensitisation

no data available

#### Germ cell mutagenicity

mouse

Embryo

DNA inhibition

Hamster

fibroblast

Other mutation test systems

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

#### Reproductive toxicity

no data available

#### Specific target organ toxicity - single exposure

May cause drowsiness or dizziness.

#### Specific target organ toxicity - repeated exposure

no data available

#### Aspiration hazard

no data available

#### Additional Information

RTECS: KI5775000

Cough, chest pain, Difficulty in breathing, Dizziness, Drowsiness, Contact with eyes can cause:, Redness, Provokes tears., Blurred vision, Prolonged or repeated exposure to skin causes defatting and dermatitis., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

---

## SECTION 12: Ecological information

### 12.1 Toxicity

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 2,560 mg/l - 96 h

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

no data available

### 12.4 Mobility in soil

no data 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

no data available

---

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

#### Contaminated packaging

Dispose of as unused product.

---

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: 1155

IMDG: 1155

IATA: 1155

### 14.2 UN proper shipping name

ADR/RID: DIETHYL ETHER

IMDG: DIETHYL ETHER

IATA: Diethyl ether

### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

### 14.4 Packaging group

ADR/RID: I

IMDG: I

IATA: I

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

### 14.6 Special precautions for user

no data available

---

## SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

no data available

## 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

---

## SECTION 16: Other information

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

Acute Tox.	Acute toxicity
EUH019	May form explosive peroxides.
EUH066	Repeated exposure may cause skin dryness or cracking.
Flam. Liq.	Flammable liquids
H224	Extremely flammable liquid and vapour.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.
STOT SE	Specific target organ toxicity - single exposure

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

F+	Extremely flammable
Xn	Harmful
R12	Extremely flammable.
R19	May form explosive peroxides.
R22	Harmful if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapours may cause drowsiness and dizziness.

### Further information

Copyright 2013 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

---