

## SAFETY DATA SHEET

Version 8.5  
Revision Date 21.03.2023  
Print Date 22.03.2023

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : Diethyl ether for analysis EMSURE®  
ACS,ISO,Reag. Ph Eur

Product Number : 1.00921  
Catalogue No. : 100921  
Brand : Millipore  
Index-No. : 603-022-00-4  
CAS-No. : 60-29-7

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

Identified uses : Reagent for analysis, Chemical production

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

Company : SIGMA-ALDRICH CANADA LTD.  
2149 WINSTON PARK DRIVE  
OAKVILLE ON L6H 6J8  
CANADA

Telephone : +1 905 829-9500  
Fax : +1 905 829-9292

**1.4 Emergency telephone**

Emergency Phone # : 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC  
(International)  
24 Hours/day; 7 Days/week

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with Hazardous Products Regulations (HPR)  
(SOR/2015-17)**

Flammable liquids (Category 1), H224  
Acute toxicity, Oral (Category 4), H302  
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336

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

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal Word	Danger
Hazard statement(s)	
H224	Extremely flammable liquid and vapor.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing mist or vapors.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

May form explosive peroxides.  
Repeated exposure may cause skin dryness or cracking.

- none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

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

Component	Classification	Concentration *
<b>Diethyl ether</b>	Flam. Liq. 1; Acute Tox. 4; STOT SE 3; H224, H302,	<= 100 %

Millipore - 1.00921

Page 2 of 11

	H336 Concentration limits: >= 20 %: STOT SE 3, H336;	
* Weight %		

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

---

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Remove contact lenses.

#### If swallowed

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

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

Carbon dioxide (CO<sub>2</sub>) Foam 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

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors 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

In the event of fire, wear self-contained breathing apparatus.

#### 5.4 Further information

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

---

### SECTION 6: Accidental release measures

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

Advice for non-emergency personnel: Do not breathe vapors, 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. For personal protection 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 with liquid-absorbent material (e.g. Chemisorb® ). Dispose of properly. Clean up affected area.

#### 6.4 Reference to other sections

For disposal see section 13.

---

### 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.

##### 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

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

For precautions see section 2.2.

#### 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.

##### Storage class

Storage class (TRGS 510): 3: Flammable liquids

#### 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

#### Ingredients with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Diethyl ether	60-29-7	TWA	400 ppm 1,210 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		STEL	500 ppm 1,520 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	400 ppm	Canada. British Columbia OEL
		STEL	500 ppm	Canada. British Columbia OEL
		TWAEV	400 ppm 1,210 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		STEV	500 ppm 1,520 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	400 ppm	USA. ACGIH Threshold Limit Values (TLV)
		STEL	500 ppm	USA. ACGIH Threshold Limit Values (TLV)

### 8.2 Exposure controls

#### Appropriate engineering controls

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

#### Personal protective equipment

##### Eye/face protection

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

##### Skin protection

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)).

Splash contact

Material: Viton®

Minimum layer thickness: 0.7 mm  
Break through time: 30 min  
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

### Body Protection

Flame retardant antistatic protective clothing.

### Respiratory protection

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### Control of environmental exposure

Do not let product enter drains. Risk of explosion.

---

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- |                                                 |                                                                                                                                                                      |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) Appearance                                   | Form: liquid<br>Color: colorless                                                                                                                                     |
| b) Odor                                         | sweet, ether-like                                                                                                                                                    |
| c) Odor Threshold                               | No data available                                                                                                                                                    |
| d) pH                                           | No data available                                                                                                                                                    |
| e) Melting point/freezing point                 | Melting point: -116 °C (-177 °F)                                                                                                                                     |
| f) Initial boiling point and boiling range      | 34.6 °C 94.3 °F at 1,013 hPa                                                                                                                                         |
| g) Flash point                                  | -40 °C (-40 °F) - 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: 36 %(V)<br>Lower explosion limit: 1.7 %(V)                                                                                                    |
| k) Vapor pressure                               | 189 hPa at 0 °C (32 °F)<br>389 hPa at 10 °C(50 °F)<br>563 hPa at 20 °C(68 °F)<br>863 hPa at 30 °C(86 °F)<br>1,228 hPa at 40 °C(104 °F)<br>2,311 hPa at 60 °C(140 °F) |
| l) Vapor density                                | 2.56 - (Air = 1.0)                                                                                                                                                   |
| m) Density                                      | 0.71 g/cm <sup>3</sup> at 20 °C (68 °F)                                                                                                                              |
| Relative density                                | No data available                                                                                                                                                    |
| n) Water solubility                             | 65 g/l at 20 °C (68 °F) - completely soluble                                                                                                                         |
| o) Partition coefficient: n-octanol/water       | log Pow: 1.1 - Bioaccumulation is not expected.                                                                                                                      |

- |                              |                                 |
|------------------------------|---------------------------------|
| p) Autoignition temperature  | 175 °C (347 °F) at 1,013.25 hPa |
| q) Decomposition temperature | No data available               |
| r) Viscosity                 | No data available               |
| s) Explosive properties      | No data available               |
| t) Oxidizing properties      | none                            |

## 9.2 Other safety information

Relative vapor density	2.56 - (Air = 1.0)
------------------------	--------------------

---

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

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

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .  
Contains the following stabilizer(s):  
butyl hydroxytoluene (BHT) (<0.0010.0009 %)

### 10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with:  
chromyl chloride  
Peroxides  
Risk of explosion with:  
azides  
halogens  
halogen-halogen compounds  
nonmetallic oxyhalides  
Strong oxidizing agents  
chromium(VI) oxide  
halogen oxides  
peroxi compounds  
perchloric acid  
perchlorates  
Nitric acid  
nitrating acid  
Oxygen  
Ozone  
turpentine oils and/or turpentine substitutes  
nitrates  
metallic chlorides  
salts of oxyhalogenic acids  
nitrogen oxides  
nonmetallic oxides  
chromosulfuric acid  
chlorates  
hydrogen peroxide

permanganic acid  
sulfuric acid  
with  
Nitric acid  
sulfur  
Risk of explosion during distillation.  
Exothermic reaction with:  
acid halides

#### **10.4 Conditions to avoid**

Light. Heat. Air  
Warming.  
Moisture.

#### **10.5 Incompatible materials**

rubber, various plastics

#### **10.6 Hazardous decomposition products**

Peroxides  
Peroxides  
In the event of fire: see section 5

---

### **SECTION 11: Toxicological information**

#### **11.1 Information on toxicological effects**

##### **Acute toxicity**

Acute toxicity estimate Oral - 1,212 mg/kg

(Calculation method)

LD50 Oral - Rat - 1,211 mg/kg

Remarks: (RTECS)

Symptoms: Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

LC50 Inhalation - Mouse - 4 h - 97.5 mg/l - vapor

Remarks: (RTECS)

Symptoms: mucosal irritations

LD50 Dermal - Rabbit - male - > 20,000 mg/kg

(OECD Test Guideline 402)

Remarks: (ECHA)

No data available

##### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Remarks: Dermatitis

##### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

##### **Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse



Result: negative  
(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Micronucleus test  
Test system: Human lymphocytes  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 487  
Result: negative  
Test Type: In vitro mammalian cell gene mutation test  
Test system: Mouse lymphoma test  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 476  
Result: negative

Test Type: Micronucleus test  
Species: Mouse

Application Route: Intraperitoneal  
Method: OECD Test Guideline 474  
Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness. - Central nervous system

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - NOAEL (No observed adverse effect level) - 500 mg/kg - LOAEL (Lowest observed adverse effect level) - 2,000 mg/kg

Remarks: (ECHA)

Inhalation may provoke the following symptoms:

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 - Ingestion may provoke the following symptoms:, Irregularities - Based on Human Evidence

---

## SECTION 12: Ecological information

### 12.1 Toxicity

Toxicity to fish	LC50 - Leuciscus idus (Golden orfe) - 2,840 mg/l - 48 h Remarks: (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1,380 mg/l - 48 h Remarks: (IUCLID)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - > 100 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - 21,000 mg/l - 3 h (OECD Test Guideline 209)  static test NOEC - activated sludge - 42 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	semi-static test NOEC - Daphnia magna (Water flea) - > 100 mg/l - 21 d (OECD Test Guideline 211)

### 12.2 Persistence and degradability

Not readily biodegradable.

### 12.3 Bioaccumulative potential

No bioaccumulation is to be expected (log Pow <= 4).

### 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 Endocrine disrupting properties

No data available

### 12.7 Other adverse effects

No data available

---

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. 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.

---

**SECTION 14: Transport information****TDG**

UN number: 1155 Class: 3 Packing group: I  
Proper shipping name: DIETHYL ETHER  
Labels: 3  
ERG Code: 127  
Marine pollutant: no

**IMDG**

UN number: 1155 Class: 3 Packing group: I EMS-No: F-E, S-D  
Proper shipping name: DIETHYL ETHER

**IATA**

UN number: 1155 Class: 3 Packing group: I  
Proper shipping name: Diethyl ether

---

**SECTION 15: Regulatory information**

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

---

**SECTION 16: Other information****Further information**

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.

Copyright 2020 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact [mlsbranding@sial.com](mailto:mlsbranding@sial.com).

Version: 8.5

Revision Date: 21.03.2023

Print Date: 22.03.2023