

# SAFETY DATA SHEET

Version 6.5  
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## SECTION 1: Identification of the hazardous chemical and of the supplier

### 1.1 Product identifiers

Product name : Ethyl Alcohol, pure

Product Number : 459836  
Brand : Sigma-Aldrich  
CAS-No. : 64-17-5

### 1.2 Other means of identification

Absolute alcohol

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

Identified uses : For R&D use only. Not for pharmaceutical, household or other uses.

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

Company : SIGMA-ALDRICH (M) SDN BHD  
Level 3, Menara Sunway Annexe,  
Jalan Lagoon Timur, Bandar Sunway,  
46150 PETALING JAYA, SELANGOR  
MALAYSIA

Telephone : +60 (603)03-563-53321  
Fax : +60 (603)03-563-54116

### 1.5 Emergency telephone

Emergency Phone # : 1-800-815-308 (CHEMTREC) \* + 62 0800  
140 1253 (Customer Call Centre)

## Section 2: Hazard identification

### 2.1 GHS Classification

Classification according to CLASS regulations 2013  
Flammable liquids (Category 2), H225

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

### 2.2 GHS Label elements, including precautionary statements

Labelling according to CLASS regulations 2013

Pictogram



Signal word : Danger

Hazard statement(s)  
H225 : Highly flammable liquid and vapor.

## Precautionary statement(s)

### Prevention

- P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- P233 Keep container tightly closed.

### Response

- P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

### Storage

- P403 + P235 Store in a well-ventilated place. Keep cool.

### Disposal

- P501 Dispose of contents/ container to an approved waste disposal plant.

## 2.3 Other hazards - none

## SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Substance

### 3.1 Substances

Synonyms : Absolute alcohol

Formula : C<sub>2</sub>H<sub>6</sub>O

Molecular weight : 46.07 g/mol

CAS-No. : 64-17-5

EC-No. : 200-578-6

Index-No. : 603-002-00-5

#### Hazardous ingredients

Component	Classification	Concentration
<b>ethanol</b>		
	Flam. Liq. 2; H225 Concentration limits: >= 50 %: Eye Irrit. 2A, H319;	<= 100 %

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.

#### 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. Call in ophthalmologist. 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

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**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing media**

Water 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**

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.

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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 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.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### 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. Wash hands after working with substance.  
For precautions see section 2.2.

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

#### Storage conditions

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

Hygroscopic.

### 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 and personal protection

### 8.1 Control parameters

#### Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
ethanol	64-17-5	TWA	1,000 ppm 1,880 mg/m <sup>3</sup>	Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

### 8.2 Exposure controls

#### Appropriate engineering controls

Change contaminated clothing. 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)).

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Butoject® (KCL 898)

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: Nitrile rubber

Minimum layer thickness: 0.4 mm

Break through time: 120 min

Material tested: Camatril® (KCL 730 / Aldrich Z677442, 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.

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

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

- |   |   |
|---|---|
| a) Appearance                                   | Form: liquid<br>Color: colorless                                    |
| b) Odor   | pungent   |
| c) Odor Threshold                               | 0.1 ppm   |
| d) pH   | 7.0 at 10 g/l at 20 °C  |
| e) Melting point/freezing point                 | Melting point/range: -114 °C  |
| f) Initial boiling point and boiling range      | 78 °C   |
| g) Flash point                                  | 13 °C - closed cup  |
| h) Evaporation rate                             | No data available   |
| i) Flammability (solid, gas)                    | No data available   |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 13.5 %(V)<br>Lower explosion limit: 2.5 %(V) |
| k) Vapor pressure                               | 0.57 hPa at 19.6 °C   |
| l) Vapor density                                | 1.6   |
| m) Relative density                             | No data available   |
| n) Water solubility                             | 1,000 g/l at 20 °C - completely miscible                            |
| o) Partition coefficient:                       | log Pow: -0.35 at 24 °C - Bioaccumulation is not expected.          |

n-octanol/water

- p) Autoignition temperature 455 °C  
at 1,013 hPa - DIN 51794
- q) Decomposition temperature Distillable in an undecomposed state at normal pressure.
- r) Viscosity Viscosity, kinematic: No data available  
Viscosity, dynamic: 1.2 mPa.s at 20 °C 0.54 - 0.59 mPa.s at 25 °C
- s) Explosive properties No data available
- t) Oxidizing properties No data available

## 9.2 Other safety information

Conductivity	< 1 µS/cm
Surface tension	72.75 mN/m at 20 °C
Relative vapor density	1.6

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapors may form explosive mixture with air.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

Risk of explosion/exothermic reaction with:

hydrogen peroxide  
perchlorates  
perchloric acid  
Nitric acid  
mercury(II) nitrate  
permanganic acid  
Nitriles  
peroxi compounds  
Strong oxidizing agents  
nitrosyl compounds  
Peroxides  
sodium  
Potassium  
halogen oxides  
calcium hypochlorite  
nitrogen dioxide  
metallic oxides  
uranium hexafluoride  
iodides  
Chlorine  
Alkali metals  
Alkaline earth metals  
alkali oxides  
Ethylene oxide  
silver

with  
Nitric acid  
silver compounds  
with  
Ammonia  
potassium permanganate  
with  
conc. sulfuric acid  
Risk of ignition or formation of inflammable gases or vapours with:  
halogen-halogen compounds  
chromium(VI) oxide  
chromyl chloride  
Fluorine  
hydrides  
Oxides of phosphorus  
platinum  
Nitric acid  
with  
potassium permanganate

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

Warming.  
Warming.

#### **10.5 Incompatible materials**

rubber, various plastics

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

In the event of fire: see section 5

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

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

##### **Acute toxicity**

LD50 Oral - Rat - male and female - 10,470 mg/kg  
(OECD Test Guideline 401)  
LC50 Inhalation - Rat - male and female - 4 h - 124.7 mg/l  
(OECD Test Guideline 403)  
Dermal: No data available

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

Skin - Rabbit  
Result: No skin irritation - 24 h  
(OECD Test Guideline 404)

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

Eyes - Rabbit  
Result: Causes serious eye irritation.  
(OECD Test Guideline 405)

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

Maximization Test - Guinea pig  
Result: negative  
(OECD Test Guideline 406)  
Remarks: (in analogy to similar products)  
The value is given in analogy to the following substances: Methanol

**Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: dominant lethal test

Species: Mouse

Application Route: Oral

Method: OECD Test Guideline 478

Result: Positive results were obtained in some in vivo tests.

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

Repeated dose toxicity - Rat - male - Oral - NOAEL (No observed adverse effect level) - 1,730 mg/kg - LOAEL (Lowest observed adverse effect level) - 3,200 mg/kg

RTECS: KQ6300000

irritant effects, respiratory paralysis, Dizziness, narcosis, inebriation, euphoria, Nausea, Vomiting

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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**SECTION 12: Ecological information****12.1 Toxicity**

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 15,300 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Ceriodaphnia dubia (water flea) - 5,012 mg/l - 48 h Remarks: (ECHA)
Toxicity to algae	static test ErC50 - Chlorella vulgaris (Fresh water algae) - 275 mg/l

Sigma-Aldrich- 459836

Page 8 of 10

The life science business of Merck operates as MilliporeSigma in the US and Canada





- 72 h  
(OECD Test Guideline 201)

Toxicity to bacteria      static test IC50 - activated sludge - > 1,000 mg/l - 3 h  
(OECD Test Guideline 209)

## 12.2 Persistence and degradability

Biodegradability      aerobic - Exposure time 15 d  
Result: ca.95 % - Readily biodegradable.  
(OECD Test Guideline 301E)

Biochemical Oxygen Demand (BOD)      930 - 1,670 mg/g  
Remarks: (Lit.)

Theoretical oxygen demand      2,100 mg/g  
Remarks: (Lit.)

## 12.3 Bioaccumulative potential

Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

## 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

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## SECTION 13: Disposal information

### 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. According to Quality Environment Regulation (Scheduled Waste) 2005, waste need to be sent to designated premise for recycle, treatment or disposal. Please contact Kualiti Alam for waste classification and correct disposal method.

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## SECTION 14: Transportation information

### 14.1 UN number

ADR/RID: 1170      IMDG: 1170      IATA-DGR: 1170

### 14.2 UN proper shipping name

ADR/RID:      ETHANOL  
IMDG:      ETHANOL  
IATA-DGR:      Ethanol

### 14.3 Transport hazard class(es)

ADR/RID: 3      IMDG: 3      IATA-DGR: 3

### 14.4 Packaging group

ADR/RID: II      IMDG: II      IATA-DGR: II

#### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA-DGR: no

#### 14.6 Special precautions for user

None

#### 14.7 Incompatible materials

rubber, various plastics

#### Other regulations

Hazchem Code : •2YE

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### SECTION 15: Regulatory information

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

##### Notification status

**DSL:** All components of this product are on the Canadian DSL

**ENCS:** On the inventory, or in compliance with the inventory

**ISHL:** On the inventory, or in compliance with the inventory

**KECI:** On the inventory, or in compliance with the inventory

**NZIoC:** On the inventory, or in compliance with the inventory

**PICCS:** On the inventory, or in compliance with the inventory

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### SECTION 16: Other information

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

H225 Highly flammable liquid and vapor.

H319 Causes serious eye irritation.

#### 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.

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