

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Version 8.1

Revision Date 18.07.2024

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GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

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

Product name : Ethanol

Product Number : 02870

Brand : SIGALD

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

REACH No. : 01-2119457610-43-XXXX

CAS-No. : 64-17-5

**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 :

**1.4 Emergency telephone**

Emergency Phone # : +(44)-870-8200418 (CHEMTREC (GB))  
+(353)-19014670 (CHEMTREC Ireland)  
001-803-017-9114 (CHEMTREC India)

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Flammable liquids, (Category 2) H225: Highly flammable liquid and vapor.

Eye irritation, (Category 2) H319: Causes serious eye irritation.

**2.2 Label elements****Labelling according Regulation (EC) No 1272/2008**

Pictogram



Signal Word

Danger



|                                |                                                                                                                                  |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Hazard Statements              |                                                                                                                                  |
| H225                           | Highly flammable liquid and vapor.                                                                                               |
| H319                           | Causes serious eye irritation.                                                                                                   |
| Precautionary Statements       |                                                                                                                                  |
| 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.                                                                                                          |
| P305 + P351 + P338             | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| Supplemental Hazard Statements | none                                                                                                                             |

### Reduced Labeling (<= 125 ml)

Pictogram



|                                |        |
|--------------------------------|--------|
| Signal Word                    | Danger |
| Hazard Statements              | none   |
| Precautionary Statements       | none   |
| Supplemental Hazard Statements | none   |

## 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

|                  |                                   |
|------------------|-----------------------------------|
| Synonyms         | : Ethyl 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

| Component      |              | Classification                                                                                         | Concentration |
|----------------|--------------|--------------------------------------------------------------------------------------------------------|---------------|
| <b>ethanol</b> |              |                                                                                                        |               |
| CAS-No.        | 64-17-5      | Flam. Liq. 2; Eye Irrit. 2;<br>H225, H319<br>Concentration limits:<br>>= 50 %: Eye Irrit. 2A,<br>H319; | <= 100 %      |
| EC-No.         | 200-578-6    |                                                                                                        |               |
| Index-No.      | 603-002-00-5 |                                                                                                        |               |

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

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## 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

#### 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. Chemizorb® ). 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

#### **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

##### Derived No Effect Level (DNEL)

| Application Area | Routes of exposure | Health effect              | Value                  |
|------------------|--------------------|----------------------------|------------------------|
| Workers          | Inhalation         | Long-term systemic effects | 950 mg/m <sup>3</sup>  |
| Workers          | Skin contact       | Long-term systemic effects | 343mg/kg BW/d          |
| Workers          | Ingestion          | Long-term systemic effects | 343mg/kg BW/d          |
| Workers          | Inhalation         | Acute local effects        | 1900 mg/m <sup>3</sup> |

##### Predicted No Effect Concentration (PNEC)

| Compartment            | Value      |
|------------------------|------------|
| Soil                   | 0.63 mg/kg |
| Sea water              | 0.79 mg/l  |
| Fresh water            | 0.96 mg/l  |
| Fresh water sediment   | 3.6 mg/l   |
| Sewage treatment plant | 580 mg/l   |

### 8.2 Exposure controls

#### 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

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 Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.2 mm

Break through time: 38 min

Material tested: Dermatrill® P (KCL 743 / Aldrich Z677388, 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 EC 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**

Flame retardant antistatic protective clothing.

### **Respiratory protection**

Recommended Filter type: 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.

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.

Recommended Filter type: Filter type ABEK

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.

### **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) Physical state                               | liquid                                                              |
| b) Color                                        | colorless                                                           |
| c) Odor                                         | alcohol-like                                                        |
| d) Melting point/freezing point                 | Melting point/ range: -114 °C                                       |
| e) Initial boiling point and boiling range      | 78 °C                                                               |
| f) Flammability (solid, gas)                    | No data available                                                   |
| g) Upper/lower flammability or explosive limits | Upper explosion limit: 27.7 %(V)<br>Lower explosion limit: 3.1 %(V) |
| h) Flash point                                  | 13 °C - closed cup - closed cup                                     |
| i) Autoignition temperature                     | 363 - 425 °C<br>at 1,013 hPa                                        |



|                                           |                                                                                   |
|-------------------------------------------|-----------------------------------------------------------------------------------|
| j) Decomposition temperature              | Distillable in an undecomposed state at normal pressure.                          |
| k) pH                                     | 7.0 at 10 g/l at 20 °C                                                            |
| l) Viscosity                              | Viscosity, kinematic: No data available<br>Viscosity, dynamic: 1.2 mPa.s at 20 °C |
| m) Water solubility                       | 1,000 g/l at 20 °C - completely miscible                                          |
| n) Partition coefficient: n-octanol/water | log Pow: -0.35 at 24 °C - Bioaccumulation is not expected.                        |
| o) Vapor pressure                         | 57.26 hPa at 19.6 °C                                                              |
| p) Density                                | 0.789 g/mL at 25 °C                                                               |
| Relative density                          | No data available                                                                 |
| q) Relative vapor density                 | No data available                                                                 |
| r) Particle characteristics               | No data available                                                                 |
| s) Explosive properties                   | Not classified as explosive.                                                      |
| t) Oxidizing properties                   | none                                                                              |

## 9.2 Other safety information

|                        |                                           |
|------------------------|-------------------------------------------|
| Conductivity           | < 1 µS/cm                                 |
| Surface tension        | 22.31 mN/m at 20 °C<br>- similar to water |
| 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**

No data available

#### **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 - vapor

(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****Endocrine disrupting properties****Product:**

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

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<br>Remarks: (ECHA)              |
| Toxicity to algae                                                     | static test ErC50 - Chlorella vulgaris (Fresh water algae) - 275 mg/l - 72 h (OECD Test Guideline 201) |
| Toxicity to bacteria                                                  | static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)                     |
| Toxicity to fish(Chronic toxicity)                                    | semi-static test NOEC - Danio rerio (zebra fish) - 250 mg/l - 120 h<br>Remarks: (ECHA)                 |
| Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity) | semi-static test NOEC - Daphnia magna (Water flea) - 9.6 mg/l - 9 d<br>Remarks: (ECHA)                 |



## 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

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## 12.6 Endocrine disrupting properties

### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

No data available

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## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: 1170

IMDG: 1170

IATA: 1170

### 14.2 UN proper shipping name

ADR/RID: ETHANOL

IMDG: ETHANOL

IATA: Ethanol



### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

### 14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

### 14.6 Special precautions for user

Further information : No data available

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## SECTION 15: Regulatory information

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

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

#### National legislation

Seveso III: Directive 2012/18/EU of the P5c FLAMMABLE LIQUIDS  
European Parliament and of the Council  
on the control of major-accident hazards  
involving dangerous substances.

#### Other regulations

Take note of Dir 94/33/EC on the protection of young people at work.

### 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

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## SECTION 16: Other information

### Full text of H-Statements

|      |                                    |
|------|------------------------------------|
| H225 | Highly flammable liquid and vapor. |
| H319 | Causes serious eye irritation.     |



## Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

## Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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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