

## Material Safety Data Sheet

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Version 2.2

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

## 1 - Product and Company Information

Product Name	2-CHLOROETHYL ETHER, 99%
Product Number	C41134
Company	Sigma-Aldrich Pty. Ltd. 12 Anella Avenue Castle Hill NSW 2154 Australia
Technical Phone #	+61 2 9841 0555 (1800 800 097)
Fax	+61 2 9841 0500 (1800 800 096)
Emergency Phone #	+44 8701906777 (1800 448 465)

## 2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
2-CHLOROETHYL ETHER	111-44-4	203-870-1	603-029-00-2

Formula	C4H8Cl2O
Molecular Weight	143.01 AMU
Synonyms	Bis(beta-chloroethyl) ether * Bis(2-chloroethyl) ether * Chlorex * 1-Chloro-2-(beta-chloroethoxy)ethane * Chloroethyl ether * Clorex * DCEE * 2,2'-Dichloorethylether (Dutch) * 2,2'-Dichlor-diaethylaether (German) * 2,2'-Dichlorethyl ether * beta,beta-Dichlorodiethyl ether * Dichloroether * Dichloroethyl ether * Di(beta-chloroethyl)ether * Di(2-chloroethyl) ether * beta,beta'-Dichloroethyl ether * sym-Dichloroethyl ether * 2,2'-Dichloroethyl ether * Dichloroethyl ether (ACGIH:OSHA) * Dichloroethyl oxide * 2,2'-Dicloroetiletere (Italian) * Dwuchlorodwuetylowy eter (Polish) * ENT 4,504 * Ethane, 1,1'-oxybis(2-chloro- * Ether dichlore (French) * 1,1'-Oxybis(2-chloro)ethane * Oxyde de chlorethyle (French) * RCRA waste number U025

## 3 - Hazards Identification

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Flammable. Very toxic by inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect.  
Carc. Cat.3

## 4 - First Aid Measures

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#### AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

#### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

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### 5 - Fire Fighting Measures

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#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### SPECIAL RISKS

Specific Hazard(s): Combustible. Emits toxic fumes under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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### 6 - Accidental Release Measures

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PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL  
Evacuate area.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

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### 7 - Handling and Storage

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#### HANDLING

Directions for Safe Handling: Do not breathe vapor. Avoid prolonged or repeated exposure. Do not get in eyes, on skin, on clothing.

#### STORAGE

Conditions of Storage: Keep tightly closed.

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### 8 - Exposure Controls / Personal Protection

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#### ENGINEERING CONTROLS

Use only in a chemical fume hood. Safety shower and eye bath.

## GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

## EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	10 MG/M3
Poland		NDSCh	30 MG/M3
Poland		NDSP	-

## EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	30 mg/m3 5 ppm

Remarks: HK

## EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	60 mg/m3 10 ppm

Remarks: 4

Remarks: H

## EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	30 mg/m3 5 ppm

Remarks: HK

## EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	30 mg/m3 5 ppm

Remarks: H

## PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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## 9 - Physical and Chemical Properties

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Appearance	Color: Colorless Form: Clear liquid	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	60.0 - 62.0 °C	11 mmHg
MP/MP Range	- 47.0 °C	
Flash Point	55 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	N/A	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	N/A	
Vapor Pressure	N/A	
SG/Density	1.219 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	

Evaporation Rate	N/A
Bulk Density	N/A
Decomposition Temp.	N/A
Solvent Content	N/A
Water Content	N/A
Surface Tension	N/A
Conductivity	N/A
Miscellaneous Data	N/A
Solubility	N/A

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## 10 - Stability and Reactivity

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### STABILITY

Materials to Avoid: Oxidizing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Hydrogen chloride gas.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: KN0875000

### ACUTE TOXICITY

LD50  
Oral  
Rat  
75 mg/kg

LC50  
Inhalation  
Rat  
330 mg/m3  
4H

LD50  
Oral  
Mouse  
209 mg/kg  
Remarks: Gastrointestinal:Changes in structure or function of salivary glands. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Etosis. Gastrointestinal:Hypermotility, diarrhea.

LC50  
Inhalation  
Mouse  
650 mg/m3  
2H

LD50  
Oral  
Rabbit  
126 mg/kg

LD50  
Skin  
Rabbit

90 mg/kg

LC50  
Inhalation  
Guinea pig  
500 ppm  
1H

LD50  
Skin  
Guinea pig  
300 mg/kg

LD50  
Oral  
Mammal  
112 mg/kg

#### IRRITATION DATA

Skin  
Rabbit  
10 mg  
24H  
Remarks: Open irritation test

Skin  
Rabbit  
500 mg  
Remarks: Open irritation test

Eyes  
Rabbit  
100 mg  
Remarks: Severe irritation effect

#### SIGNS AND SYMPTOMS OF EXPOSURE

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

#### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.  
Skin Absorption: Readily absorbed through skin. Toxic if absorbed through skin.  
Eye Contact: Lachrymator. May cause eye irritation.  
Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. Toxic if inhaled.  
Ingestion: Toxic if swallowed.

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Mouse  
Route of Application: Oral  
Exposure Time: 79W  
Result: Liver:Tumors. Blood:Lymphomas including Hodgkin's disease. Tumorigenic:Carcinogenic by RTECS criteria.

Mouse

Route of Application: Subcutaneous  
Exposure Time: 60W  
Result: Tumorigenic:Tumors at site or application.  
Tumorigenic:Equivocal tumorigenic agent by RTECS criteria.

#### IARC CARCINOGEN LIST

Rating: Group 3  
CMR CAT.: Carc. Cat.3  
SWEDISH OE CARCINOGEN: Substances which according to 23§, AFS 2000:3, is allowed to use only after authorization from The Swedish Work Environment Authority.

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#### 12 - Ecological Information

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##### ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 48 h  
Value: 240 mg/l

Test Type: LC50 Fish  
Species: Lepomis macrochirus (Bluegill)  
Time: 96 h  
Value: 600 mg/l

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#### 13 - Disposal Considerations

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##### SUBSTANCE DISPOSAL

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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#### 14 - Transport Information

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##### RID/ADR

UN#: 1916  
Class: 6.1  
PG: II  
Subrisk: 3  
Proper Shipping Name: 2,2'-Dichlorodiethyl ether

##### IMDG

UN#: 1916  
Class: 6.1  
PG: II  
Subrisk: 3  
Proper Shipping Name: 2,2'-Dichlorodiethyl ether  
Marine Pollutant: No  
Severe Marine Pollutant: No

##### IATA

UN#: 1916  
Class: 6.1  
PG: II  
Subrisk: 3  
Proper Shipping Name: 2,2'-Dichlorodiethyl ether  
Inhalation Packing Group I: No

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#### 15 - Regulatory Information

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CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 603-029-00-2

INDICATION OF DANGER: T+

Very toxic.

R-PHRASES: 10-26/27/28-40

Flammable. Very toxic by inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect.

S-PHRASES: 7/9-27-28-36/37-45

Keep container tightly closed and in well-ventilated place. Take off immediately all contaminated clothing. After contact with skin, wash immediately with plenty of soap-suds. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 2

SWITZERLAND

SWISS POISON CLASS: 2

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16 - Other Information

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WARRANTY

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 Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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