

## Material Safety Data Sheet

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Version 1.5

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	1,2-DICHLOROETHANE, REAGENTPLUS(TM), 99%
Product Number	D61563
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
1,2-DICHLOROETHANE	107-06-2	203-458-1	602-012-00-7

Formula	C2H4Cl2
Molecular Weight	98.96 AMU
Synonyms	Aethylenchlorid (German) * 1,2-Bichloroethane * Bichlorure d'ethylene (French) * Borer sol * Brocide * Chlorure d'ethylene (French) * Cloruro di ethene (Italian) * 1,2-DCE * Destruxol borer-sol * 1,2-Dichloorethaan (Dutch) * 1,2-Dichlor-aethan (German) * Dichloremulsion * 1,2-Dichlorethane * Di-chlor-mulsion * Dichloro-1,2-ethane (French) * alpha,beta-Dichloroethane * sym-Dichloroethane * 1,2-Dichloroethane (OSHA) * 1,2-Dicloroetano (Italian) * Dutch liquid * Dutch oil * EDC * ENT 1,656 * Ethane dichloride * Ethyleendichloride (Dutch) * Ethylene chloride * Ethylene dichloride (ACGIH:OSHA) * 1,2-Ethylene dichloride * Glycol dichloride * NCI-C00511 * RCRA waste number U077

## 3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT  
May cause cancer. Highly flammable. Also harmful if swallowed.  
Irritating to eyes, respiratory system and skin.  
Carc. Cat.2

## 4 - First Aid Measures

AFTER INHALATION

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

#### AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

#### 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.

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### 5 - Fire Fighting Measures

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#### EXTINGUISHING MEDIA

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

Unsuitable: Carbon Dioxide, dry chemical powder, or appropriate foam. Water can be applied as a spray or fog and if properly applied is capable of extinguishing the fire by sweeping the flames off the surface of the burning liquid.

#### SPECIAL RISKS

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

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur 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. Shut off all sources of ignition. Use nonsparking tools.

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

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Wear disposable coveralls and discard them after use.

#### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. 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. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Conditions of Storage: Keep tightly closed. Keep away from heat, sparks, and open flame. Store under nitrogen.

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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	50 mg/m3
Poland		NDSch	-
Poland		NDSP	

### EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	4 mg/m3
		1 ppm

Remarks: HK

### EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	20 mg/m3
		5 ppm

Remarks: 4

Remarks: TRK, TRGS 901-43

### EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	4 mg/m3
		1 ppm

Remarks: HK

### EXPOSURE LIMITS - SWEDEN

Source	Type	Value
	LLV (Level)	4 mg/m3
		1 ppm

Remarks: H, K

### EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	20 mg/m3
		5 ppm

Remarks: K

### EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	21 mg/m3
		5 ppm

### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator in nonventilated areas and/or for exposure above the TLV or PEL.

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	Physical State: Clear liquid Color: Colorless	
Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	82 - 84 °C	
MP/MP Range	-35 °C	
Flash Point	13 °C	Method: closed cup
Flammability	N/A	
Autoignition Temp	413 °C	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 6.2 % Upper: 15.6 %	
Vapor Pressure	87 mmHg	25 °C
SG/Density	1.253 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	3.4 g/l	
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

Stable: Stable.

Materials to Avoid: Strong 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: KI0525000

### ACUTE TOXICITY

LDLO

Oral

Human

286 mg/kg

Remarks: Gastrointestinal:Ulceration or bleeding from stomach.  
Gastrointestinal:Nausea or vomiting. Liver:Fatty liver degeneration.

LDLO

Oral

Man

714 mg/kg

Remarks: Behavioral:Somnolence (general depressed activity).  
Cardiac: Change in rate. Lungs, Thorax, or Respiration:Cyanosis.

LD50  
Oral  
Rat  
670 mg/kg

LC50  
Inhalation  
Rat  
1,000 ppm  
7H

Remarks: Behavioral:Coma. Lungs, Thorax, or  
Respiration:Cyanosis. Nutritional and Gross Metabolic:Changes  
in:Body temperature decrease.

LD50  
Intraperitoneal  
Rat  
807 MG/KG

LD50  
Subcutaneous  
Rat

1 GM/KG

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and  
Taste):Eye:Lacrimation. Behavioral:General anesthetic.  
Behavioral:Ataxia.

LD50  
Oral  
Mouse  
413 mg/kg

Remarks: Lungs, Thorax, or Respiration:Other changes.  
Liver:Other changes.

LD50  
Intraperitoneal  
Mouse  
470 MG/KG

LD50  
Oral  
Dog  
5700 mg/kg

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and  
Taste):Eye:Lacrimation. Behavioral:General anesthetic.  
Behavioral:Ataxia.

LC50  
Inhalation  
Monkey  
3,000 ppm  
7H

LD50  
Oral  
Rabbit  
860 mg/kg

LD50

Skin  
Rabbit  
2800 mg/kg  
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:General anesthetic.  
Behavioral:Ataxia.

#### IRRITATION DATA

Skin  
Rabbit  
625 mg  
Remarks: Open irritation test

Skin  
Rabbit  
500 mg  
24H  
Remarks: Mild irritation effect

Eyes  
Rabbit  
63 mg  
Remarks: Severe irritation effect

Eyes  
Rabbit  
500 mg  
24H  
Remarks: Mild irritation effect

#### SIGNS AND SYMPTOMS OF EXPOSURE

A simple asphyxiant, exposure can cause anesthetic action, difficulty in breathing, headache, and dizziness. Prolonged or repeated contact with skin can cause defatting and dermatitis. Contact with eyes can cause redness, tearing, and blurred vision. Ingestion may cause gastrointestinal irritation. CNS depression. Paresthesia. Somnolence. Convulsions. Conjunctivitis. Pulmonary edema. Effects may be delayed. Irregular breathing. Ingestion can cause gastrointestinal disorders, nausea, and vomiting. Increased liver enzymes. Weakness. Heavy or prolonged skin exposure may result in the absorption of harmful amounts of material. Drowsiness.

#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes severe eye irritation.  
Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.  
Ingestion: Harmful if swallowed.

#### TARGET ORGAN INFORMATION

Heart. Central nervous system. Liver. Kidneys. Pancreas.

#### CHRONIC EXPOSURE - CARCINOGEN

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

Rat  
Route of Application: Oral

Exposure Time: 69W  
Result: Tumorigenic: Carcinogenic by RTECS criteria.  
Gastrointestinal: Tumors. Skin and Appendages: Other: Tumors.

Rat

Route of Application: Inhalation  
Exposure Time: 7H/78W  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Blood: Leukemia Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Oral  
Exposure Time: 78W  
Result: Tumorigenic: Carcinogenic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Inhalation  
Exposure Time: 7H/78W  
Result: Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Skin and Appendages: Other: Tumors.

Mouse

Route of Application: Skin  
Exposure Time: 74W  
Result: Tumorigenic: Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration: Tumors. Skin and Appendages: Other: Tumors.

Rat

Route of Application: Oral  
Exposure Time: 78W  
Result: Tumorigenic: Carcinogenic by RTECS criteria.  
Vascular: Tumors. Gastrointestinal: Tumors.

Mouse

Route of Application: Oral  
Exposure Time: 78W  
Result: Tumorigenic: Carcinogenic by RTECS criteria. Skin and Appendages: Other: Tumors. Tumorigenic Effects: Uterine tumors

Rat

Route of Application: Oral  
Exposure Time: 78W  
Result: Tumorigenic: Carcinogenic by RTECS criteria.  
Vascular: Tumors. Gastrointestinal: Tumors.

Mouse

Route of Application: Oral  
Exposure Time: 78W  
Result: Tumorigenic: Carcinogenic by RTECS criteria. Skin and Appendages: Other: Tumors. Tumorigenic Effects: Uterine tumors

#### IIARC CARCINOGEN LIST

Rating: Group 2B

#### CHRONIC EXPOSURE - MUTAGEN

Result: Laboratory experiments have shown mutagenic effects.

Human

5 ML/L  
Cell Type: lymphocyte  
DNA inhibition

Human  
100 MG/L  
Cell Type: lymphocyte  
Mutation in mammalian somatic cells.

Rat  
150 MG/KG  
Oral  
DNA damage

Rat  
150 PPM  
Inhalation  
6H  
DNA damage

Rat  
130 UMOL/L  
Cell Type: liver  
Unscheduled DNA synthesis

Mouse  
300 MG/KG  
Intraperitoneal  
specific locus test

Mouse  
2 MMOL/KG  
Intraperitoneal  
DNA damage

Mouse  
100 MG/KG  
Oral  
DNA damage

Mouse  
29 MG/KG  
Intraperitoneal  
DNA inhibition

Mouse  
80 MG/KG  
Cell Type: S. typhimurium  
Body fluid assay

Hamster  
2 MMOL/L (+S9)  
Cell Type: ovary  
Mutation in microorganisms

Hamster  
200 UL/PLATE  
Cell Type: Embryo  
Morphological transformation.

Hamster  
1 GM/L



Cell Type: lung  
Cytogenetic analysis

Hamster  
40 MMOL/L  
Cell Type: ovary  
Mutation in mammalian somatic cells.

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 300 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 208 MG/M3/6H  
Route of Application: Inhalation  
Exposure Time: (2W PRE/1-21D PREG)  
Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea).

CMR CAT.: Carc. Cat.2

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#### 12 - Ecological Information

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##### ECOTOXICOLOGICAL EFFECTS

Test Type: LC50 Fish  
Species: Onchorhynchus mykiss (Rainbow trout)  
Time: 96 h  
Value: 225 mg/l

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 24 h  
Value: 540 mg/l

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#### 13 - Disposal Considerations

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##### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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#### 14 - Transport Information

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##### RID/ADR

UN#: 1184  
Class: 3  
PG: II  
Proper Shipping Name: 1,2-Dichloroethane

##### IMDG

UN#: 1184  
Class: 3  
PG: II  
Subrisk: 6.1

Proper Shipping Name: Ethylene dichloride  
Marine Pollutant: No  
Severe Marine Pollutant: No

#### IATA

UN#: 1184  
Class: 3  
PG: II  
Subrisk: 6.1  
Proper Shipping Name: Ethylene dichloride  
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: 602-012-00-7  
NOTA: E  
INDICATION OF DANGER: F T  
Highly Flammable. Toxic.  
R-PHRASES: 45 11 22 36/37/38  
May cause cancer. Highly flammable. Also harmful if swallowed.  
Irritating to eyes, respiratory system and skin.  
S-PHRASES: 53 45  
Restricted to professional users. Attention - Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

##### COUNTRY SPECIFIC INFORMATION

###### Germany

WGK: 3

###### SWITZERLAND

SWISS POISON CLASS: 1\*

###### NORWAY

Labelling for organic solvents where the package is 1liter or more.  
YL-tall m3/l: 437500  
YL-group: 5  
Risk phrases: 20  
Harmful by inhalation.  
Safety phrases: 38 42 210  
In case of insufficient ventilation, wear suitable respiratory equipment. During fumigation/spraying wear suitable respiratory equipment. Use compressed air- or fresh air line breathing apparatus in confined spaces.

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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.

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