

## MATERIAL SAFETY DATA SHEET

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Version 1.28

## Section 1 - Product and Company Information

Product Name DICHLOROMETHANE, ANHYDROUS, 99.8%  
Product Number 270997  
Brand ALDRICH

Company Sigma-Aldrich  
Address 3050 Spruce Street  
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832  
Fax: 800-325-5052  
Emergency Phone: 314-776-6555

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
DICHLOROMETHANE	75-09-2	Yes

Formula CH<sub>2</sub>Cl<sub>2</sub>  
Synonyms Aerothene MM \* Chlorure de methylene (French) \*  
Dichloromethane (DOT:OSHA) \* F 30 (chlorocarbon)  
\* Freon 30 \* HCC 30 \* Khladon 30 \* Methane  
dichloride \* Methylene bichloride \* Methylene  
chloride (ACGIH:OSHA) \* Methylene dichloride \*  
Metylenu chlorek (Polish) \* Narkotil \* NCI-C50102  
\* R30 (refrigerant) \* RCRA waste number U080 \*  
Solaesthin \* Soleana VDA \* Solmethine

RTECS Number: PA8050000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Harmful.

Irritating to eyes, respiratory system and skin. Harmful if  
swallowed. Limited evidence of a carcinogenic effect.Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target  
organ(s): Heart. Central nervous system. Confirmed Carcinogen (US).

## HMIS RATING

HEALTH: 2\*

FLAMMABILITY: 1

REACTIVITY: 1

## NFPA RATING

HEALTH: 2

FLAMMABILITY: 1

REACTIVITY: 1

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

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#### ORAL EXPOSURE

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

#### INHALATION EXPOSURE

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

#### DERMAL EXPOSURE

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

#### EYE EXPOSURE

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.

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### Section 5 - Fire Fighting Measures

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#### FLASH POINT

212 °F 100 °C

#### EXPLOSION LIMITS

Lower: 12 % Upper: 19 %

#### AUTOIGNITION TEMP

662 °C

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

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

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE 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. Wear disposable coveralls and discard them after use.

#### 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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### Section 7 - Handling and Storage

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#### HANDLING

User Exposure: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. For protection and handling requirements consult CFR title 29 part

1910.1052.

STORAGE

Suitable: Store under inert gas. Keep tightly closed. Store in a cool dry place.

SPECIAL REQUIREMENTS

Store under inert gas. Heat sensitive.

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Section 8 - Exposure Controls / PPE

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ENGINEERING CONTROLS

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

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.  
Hand: Compatible chemical-resistant gloves.  
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	174 MG/M3 (50 PPM)
USA	MSHA Standard-air	TWA	500 PPM (1750 MG/M3)
USA	OSHA.	PEL	8H TWA 25 PPM;
		STEL	15MIN 125PPM

New Zealand OEL  
Remarks: check ACGIH TLV  
USA NIOSH LOWEST FEASIBLE CONCENTRATION

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	20 MG/M3
Poland		NDSch	50 MG/M3
Poland		NDSP	-

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Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Liquid	
	Color: Colorless	
Property	Value	At Temperature or Pressure
Molecular Weight	84.93 AMU	
pH	N/A	
BP/BP Range	40 °C	
MP/MP Range	- 97.0 °C	
Freezing Point	N/A	
Vapor Pressure	353.111 mmHg	20 °C
Vapor Density	2.9 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.325 g/cm3	
Bulk Density	N/A	

Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	< 0.001 Pas	20 °C
Surface Tension	N/A	
Partition Coefficient	Log Kow: 1.25	
Decomposition Temp.	N/A	
Flash Point	212 °F	100 °C
Explosion Limits	Lower: 12 %	
	Upper: 19 %	
Flammability	N/A	
Autoignition Temp	662 °C	
Refractive Index	1.424	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Slightly. Solvent: 0.1 g/ml acetone 0.1 g/ml diethyl ether 0.1 g/ml EtOH	

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Conditions to Avoid: Heat.

Materials to Avoid: Alkali metals, Aluminum, Strong oxidizing agents, Bases.

### HAZARDOUS DECOMPOSITION PRODUCTS

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

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Target organ: heart because methylene chloride is converted to carbon monoxide in the body. Target organ: central nervous system because of possible dizziness, headache, loss of consciousness and death at high concentrations. Liver. Pancreas. Blood.

### SIGNS AND SYMPTOMS OF EXPOSURE

Somnolence. Convulsions. Conjunctivitis. Paresthesia. CNS depression. 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. A simple asphyxiant, exposure can

cause anesthetic action, difficulty in breathing, headache, and dizziness. Pulmonary edema. Effects may be delayed. Abdominal pain, nausea, vomiting. Heavy or prolonged skin exposure may result in the absorption of harmful amounts of material. Drowsiness. Weakness. Increased liver enzymes. Ingestion can cause gastrointestinal disorders, nausea, and vomiting. Irregular breathing. Dichloromethane is metabolized in the body producing carbon monoxide which increases and sustains carboxyhemoglobin levels in the blood, reducing the oxygen-carrying capacity of the blood.

#### CONDITIONS AGGRAVATED BY EXPOSURE

Existing data suggests that methylene chloride may be a weak mutagen in mammalian systems.

#### TOXICITY DATA

Oral  
Human  
357 mg/kg  
LDLO  
Remarks: Behavioral:Somnolence (general depressed activity).  
Peripheral Nerve and Sensation:Paresthesis.  
Behavioral:Convulsions or effect on seizure threshold.

Oral  
Rat  
1600 mg/kg  
LD50  
Remarks: Behavioral:Ataxia.

Inhalation  
Rat  
52,000 mg/m<sup>3</sup>  
LC50

Intraperitoneal  
Rat  
916 MG/KG  
LD50

Oral  
Mouse  
873 mg/kg  
LD50

Inhalation  
Mouse  
14,400 ppm  
LC50

Intraperitoneal  
Mouse  
437 MG/KG  
LD50

Subcutaneous  
Mouse  
6460 MG/KG  
LD50

Intraperitoneal

Dog  
1274 MG/KG  
LD50

#### IRRITATION DATA

Skin  
Rabbit  
810 mg  
24H  
Remarks: Severe irritation effect

Skin  
Rabbit  
100 mg  
24H  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
162 mg  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
10 mg  
Remarks: Mild irritation effect

Eyes  
Rabbit  
500 mg  
24H  
Remarks: Mild irritation effect

#### 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.

Species: Rat  
Route of Application: Inhalation  
Dose: 3500 PPM  
Exposure Time: 6H/2Y  
Frequency: I  
Result: Tumorigenic: Carcinogenic by RTECS criteria.  
Endocrine: Tumors.

Species: Mouse  
Route of Application: Inhalation  
Dose: 2000 PPM  
Exposure Time: 5H/2Y  
Frequency: C  
Result: Lungs, Thorax, or Respiration: Tumors.  
Tumorigenic: Carcinogenic by RTECS criteria.

#### IARC CARCINOGEN LIST

Rating: Group 2B

#### NTP CARCINOGEN LIST

Rating: Clear evidence.

Species: Mouse/rat  
Route: Inhalation

IRIS/EPA CARCINOGEN LIST  
Rating: Group B2

CHRONIC EXPOSURE - TERATOGEN

Result: Laboratory experiments have shown teratogenic effects.

Species: Rat  
Dose: 1250 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Urogenital system.  
Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 1250 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

CHRONIC EXPOSURE - MUTAGEN

Species: Human  
Dose: 5000 PPM  
Exposure Time: 1H  
Cell Type: fibroblast  
Mutation test: DNA inhibition

Species: Rat  
Dose: 160 UMOL/L  
Cell Type: Embryo  
Mutation test: Morphological transformation.

Species: Rat  
Route: Oral  
Dose: 1275 MG/KG  
Mutation test: DNA damage

Species: Rat  
Dose: 30 UMOL/L  
Cell Type: liver  
Mutation test: DNA damage

Species: Mouse  
Route: Inhalation  
Dose: 27760 MG/M3/6H/2W-I  
Mutation test: Micronucleus test

Species: Mouse  
Dose: 400 UMOL/L  
Cell Type: liver  
Mutation test: DNA damage

Species: Mouse  
Route: Inhalation  
Dose: 4000 PPM  
Exposure Time: 6H  
Mutation test: DNA damage

Species: Mouse  
Route: Oral  
Dose: 1720 MG/KG  
Mutation test: DNA damage

Species: Mouse  
Route: Inhalation  
Dose: 27760 MG/M3/6H/2W-I  
Mutation test: Cytogenetic analysis

Species: Mouse  
Route: Inhalation  
Dose: 13880 MG/M3/6H/2W-I  
Mutation test: Sister chromatid exchange

Species: Hamster  
Dose: 1300 UL/PLATE  
Cell Type: Embryo  
Mutation test: Morphological transformation.

Species: Hamster  
Dose: 3000 PPM  
Cell Type: ovary  
Mutation test: DNA damage

Species: Hamster  
Dose: 5000 PPM  
Exposure Time: 1H  
Cell Type: lung  
Mutation test: DNA inhibition

Species: Hamster  
Dose: 6628 MG/L  
Cell Type: ovary  
Mutation test: Other mutation test systems

Species: Hamster  
Dose: 1 UMOL/L  
Cell Type: lung  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 6628 MG/L  
Cell Type: ovary  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 5000 PPM  
Exposure Time: 1H  
Cell Type: lung  
Mutation test: Sister chromatid exchange

Species: Hamster  
Dose: 3000 PPM  
Cell Type: ovary  
Mutation test: Mutation in mammalian somatic cells.

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat  
Dose: 4500 PPM/24H  
Route of Application: Inhalation

Exposure Time: (1-17D PREG)  
Result: Effects on Newborn: Behavioral.

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## Section 12 - Ecological Information

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### ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish  
Species: Pimephales promelas (Fathead minnow)  
Time: 96 h  
Value: 193 mg/l

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 48 h  
Value: 1,682 mg/l

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## Section 13 - Disposal Considerations

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### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations. (DN)Requires special label: "Contains a substance which is regulated by Dannish work environmental law due to the risk of carcinogenic properties."

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## Section 14 - Transport Information

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### DOT

Proper Shipping Name: Dichloromethane  
UN#: 1593  
Class: 6.1  
Packing Group: Packing Group III  
Hazard Label: Toxic Substance  
PIH: Not PIH

### IATA

Proper Shipping Name: Dichloromethane  
IATA UN Number: 1593  
Hazard Class: 6.1  
Packing Group: III

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## Section 15 - Regulatory Information

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### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: Xn  
Indication of Danger: Harmful.  
R: 40  
Risk Statements: Limited evidence of a carcinogenic effect.  
S: 23-24/25-36/37  
Safety Statements: Do not breathe vapor. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Harmful.  
Risk Statements: Irritating to eyes, respiratory system and skin. Harmful if swallowed. Limited evidence of a carcinogenic effect.  
Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Do not breathe vapor. Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and

seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.

US Statements: Calif. Prop. 65 carcinogen. Readily absorbed through skin. Target organ(s): Heart. Central nervous system. Confirmed Carcinogen (US).

#### UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes

DEMINIMIS: 0.1 %

NOTES: This product is subject to SARA section 313 reporting requirements.

TSCA INVENTORY ITEM: Yes

#### UNITED STATES - STATE REGULATORY INFORMATION

OSHA Remarks: OSHA-regulated carcinogen. See CFR title 29 part 1910.1052.

#### CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause cancer.

#### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

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#### Section 16 - Other Information

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#### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

#### 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 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.