Material Safety Data Sheet

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Version 1.6
According to 91/155/EEC

1 - Product and Company Information

Product Name	DICHLOROMETHANE, 99.9%, A.C.S. HPLC GRAD E
Product Number	270563
Company	Sigma-Aldrich Pte Ltd #08-01 Citilink Warehouse Singapore 118529 Singapore
Technical Phone #	65 271 1089
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2 - Composition/Information on Ingredients

Product Name	CAS #	EC no	Annex I Index Number
DICHLOROMETHANE, STABILIZED WITH HYDROCARBON	75-09-2	200-838-9	602-004-00-3

Formula	CH2Cl2
Molecular Weight	84.93 AMU
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

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Limited evidence of a carcinogenic effect.
Carc. Cat.3

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.

5 - Fire Fighting Measures

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

SPECIAL RISKS
Specific Hazard(s): 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.

6 - Accidental Release Measures

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. 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.

7 - Handling and Storage

HANDLING
Directions for Safe Handling: 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
Conditions of Storage: Keep tightly closed. Store under inert gas.

SPECIAL REQUIREMENTS: Heat sensitive.

8 - Exposure Controls / Personal Protection

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 - DENMARK

Source	Type	Value
OEL	TWA	122 mg/m3 35 ppm

Remarks: HK

EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	350 mg/m3
		100 ppm

Remarks: 4

EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	50 mg/m3
		15 ppm

Remarks: HK

EXPOSURE LIMITS - SWEDEN

Source	Type	Value
	LLV (Level	120 mg/m3
		35 ppm

Remarks: H, K

EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	360 mg/m3
		100 ppm

Remarks: D M

EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	350 mg/m3
		100 ppm
OEL	STEL	1,060 mg/m3
		300 ppm

Remarks: Biological Monitoring Guidance value

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.

9 - Physical and Chemical Properties

Appearance: Color: Colorless
Form: Clear liquid

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	40 °C	
MP/MP Range	-97 °C	
Flash Point	N/A	
Flammability	N/A	
Autoignition Temp	662 °C	
Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 14 % Upper: 22 %	
Vapor Pressure	353.111 mmHg	20 °C
SG/Density	1.325 g/cm3	
Partition Coefficient	N/A	
Viscosity	N/A	
Vapor Density	2.9 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	Solubility in Water:Slightly. Solvent: 0.1 g/ml diethyl ether 0.1 g/ml EtOH 0.1 g/ml acetone

10 - Stability and Reactivity

STABILITY
Stable: Stable.
Conditions to Avoid: Heat.
Materials to Avoid: Alkali metals, Aluminum.

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

STABILIZERS PRESENT
Contains 50-150 ppm hydrocarbon.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: PA8050000

ACUTE TOXICITY

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

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

LC50
Inhalation
Rat
52,000 mg/m3

LD50
Intraperitoneal
Rat
916 MG/KG

LD50
Oral
Mouse
873 mg/kg

LC50
Inhalation
Mouse
14,400 ppm
7H

LD50
Intraperitoneal
Mouse
437 MG/KG

LD50
Subcutaneous
Mouse
6460 MG/KG

LD50
Intraperitoneal
Dog
1274 MG/KG

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

SIGNS AND SYMPTOMS OF EXPOSURE

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. 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 eye irritation.
Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: Harmful if swallowed.

TARGET ORGAN INFORMATION

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.

CONDITIONS AGGRAVATED BY EXPOSURE

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

CHRONIC EXPOSURE - CARCINOGEN

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

Rat
Route of Application: Inhalation
Exposure Time: 6H/2Y
Result: Tumorigenic:Carcinogenic by RTECS criteria.
Endocrine:Tumors.

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

IARC CARCINOGEN LIST

Rating: Group 2B

CHRONIC EXPOSURE - MUTAGEN

Human
5000 PPM
1H
Cell Type: fibroblast
DNA inhibition

Rat
160 UMOL/L
Cell Type: Embryo
Morphological transformation.

Rat
1275 MG/KG
Oral
DNA damage

Rat
30 UMOL/L
Cell Type: liver
DNA damage

Mouse
27760 MG/M3/6H/2W-I
Inhalation
Micronucleus test

Mouse
400 UMOL/L
Cell Type: liver
DNA damage

Mouse
4000 PPM
Inhalation
6H
DNA damage

Mouse
1720 MG/KG
Oral
DNA damage

Mouse
27760 MG/M3/6H/2W-I
Inhalation
Cytogenetic analysis

Mouse
13880 MG/M3/6H/2W-I
Inhalation
Sister chromatid exchange

Hamster
1300 UL/PLATE
Cell Type: Embryo
Morphological transformation.

Hamster
3000 PPM
Cell Type: ovary
DNA damage

Hamster
5000 PPM
1H
Cell Type: lung
DNA inhibition

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

Hamster
1 UMOL/L
Cell Type: lung
Cytogenetic analysis

Hamster
6628 MG/L
Cell Type: ovary
Cytogenetic analysis

Hamster
5000 PPM
1H
Cell Type: lung
Sister chromatid exchange

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

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: Musculoskeletal system. Specific Developmental Abnormalities: Urogenital system.

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

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 4500 PPM/24H
Route of Application: Inhalation
Exposure Time: (1-17D PREG)
Result: Effects on Newborn: Behavioral.
CMR CAT.: Carc. Cat.3

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR
UN#: 1593
Class: 6.1
PG: III
Proper Shipping Name: Dichloromethane

IMDG
UN#: 1593
Class: 6.1
PG: III
Proper Shipping Name: Dichloromethane
Marine Pollutant: No
Severe Marine Pollutant: No

IATA
UN#: 1593
Class: 6.1
PG: III
Proper Shipping Name: Dichloromethane
Inhalation Packing Group I: No

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES
ANNEX I INDEX NUMBER: 602-004-00-3
INDICATION OF DANGER: Xn
Harmful.
R-PHRASES: 40
Limited evidence of a carcinogenic effect.
S-PHRASES: 23 24/25 36/37
Do not breathe vapor. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

COUNTRY SPECIFIC INFORMATION

Germany
WGK: 2

SWITZERLAND
SWISS POISON CLASS: 4

NORWAY

Labelling for organic solvents where the package is 1liter or more.
YL-tall m3/l: 21120
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.

16 - Other Information

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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