1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
Product name: Dichloromethane
Product Number: 270997
Brand: Sigma-Aldrich
Index-No.: 602-004-00-3
CAS-No.: 75-09-2

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet
Company: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone: +1 800-325-5832
Fax: +1 800-325-5052

1.4 Emergency telephone number
Emergency Phone #: (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Carcinogenicity (Category 2), H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system, Central nervous system, H335, H336
Specific target organ toxicity - repeated exposure, Oral (Category 2), Liver, Blood, H373
Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Central nervous system, H373

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

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word: Warning

Hazard statement(s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Liver, Blood) through prolonged or repeated exposure if swallowed.
H373 May cause damage to organs (Central nervous system) through
prolonged or repeated exposure if inhaled.

Precautionary statement(s)

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear eye protection/ face protection.
P280 Wear protective gloves.
P281 Use personal protective equipment as required.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P332 + P313 If skin irritation occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonyms: Methylene chloride

DCM

Formula : CH₂Cl₂
Molecular weight : 84.93 g/mol
CAS-No. : 75-09-2
EC-No. : 200-838-9
Index-No. : 602-004-00-3
Registration number : 01-2119480404-41-XXXX

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; STOT SE 3; STOT RE 2; H315, H319, H335, H336, H351, H373, H373</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.
In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. 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

5. FIREFIGHTING MEASURES
5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Hydrogen chloride gas

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE
7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Heat sensitive. Store under inert gas.
Storage class (TRGS 510): Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
8.1 Control parameters
Components with workplace control parameters
<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>TWA 50.000000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td>Central Nervous System impairment Carboxyhemoglobinemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 50 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td>Substance listed; for more information see OSHA document 1910.1052</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL 25.000000 ppm</td>
<td>OSHA Specifically Regulated Chemicals/Carcinogens</td>
<td>Substance listed; for more information see OSHA document 1910.1052</td>
</tr>
</tbody>
</table>

### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>Dichloromethane</td>
<td>0.3000 mg/l</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
</tbody>
</table>

### Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>706 mg/m3</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>353 mg/m3</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>4750mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects</td>
<td>0.06mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Long-term systemic effects</td>
<td>88.3 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>2395 mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute systemic effects</td>
<td>353 mg/m³</td>
</tr>
</tbody>
</table>

**Predicted No Effect Concentration (PNEC)**

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>0.583 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>0.194 mg/l</td>
</tr>
<tr>
<td>Fresh water</td>
<td>0.54 mg/l</td>
</tr>
<tr>
<td>Marine sediment</td>
<td>1.61 mg/kg</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>4.47 mg/kg</td>
</tr>
<tr>
<td>Onsite sewage treatment plant</td>
<td>26 mg/l</td>
</tr>
<tr>
<td>Aquatic intermittent release</td>
<td>0.27 mg/l</td>
</tr>
</tbody>
</table>

### 8.2 Exposure controls

**Appropriate engineering controls**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

**Personal protective equipment**

**Eye/face protection**
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**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.

**Splash contact**
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 148 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, 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 CE 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**
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type AXBEK (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. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on basic physical and chemical properties**

a) **Appearance**
   - Form: liquid
   - Colour: colourless

b) **Odour**
   - No data available
c) Odour Threshold No data available
d) pH No data available
e) Melting point/freezing point Melting point/range: -97 °C (-143 °F)
f) Initial boiling point and boiling range 39.8 - 40 °C (103.6 - 104 °F)
g) Flash point No data available
h) Evaporation rate 0.71
i) Flammability (solid, gas) No data available
j) Upper/lower flammability or explosive limits
  Upper explosion limit: 19 % (V)
  Lower explosion limit: 12 % (V)
k) Vapour pressure 470.9 hPa (353.2 mmHg) at 20.0 °C (68.0 °F)
l) Vapour density 2.93 - (Air = 1.0)
m) Relative density 1.325 g/mL at 25 °C (77 °F)
n) Water solubility slightly soluble
o) Partition coefficient: n-octanol/water log Pow: 1.25
p) Auto-ignition temperature
   556.1 °C (1,033.0 °F)
   662.0 °C (1,223.6 °F)
q) Decomposition temperature No data available
r) Viscosity No data available
s) Explosive properties No data available
t) Oxidizing properties No data available

9.2 Other safety information
   Relative vapour density 2.93 - (Air = 1.0)

10. STABILITY AND REACTIVITY
10.1 Reactivity
   No data available

10.2 Chemical stability
   Stable under recommended storage conditions.
   Contains the following stabiliser(s):
   2-Methyl-2-butenone (>0.005 - <0.015 %)

10.3 Possibility of hazardous reactions
   No data available

10.4 Conditions to avoid
   Heat, flames and sparks. Exposure to sunlight.

10.5 Incompatible materials
   Alkali metals, Aluminum, Strong oxidizing agents, Bases, Amines, Magnesium, Strong acids and strong bases, Vinyl compounds

10.6 Hazardous decomposition products
   Other decomposition products - No data available
   In the event of fire: see section 5
11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - > 2,000 mg/kg
LC50 Inhalation - Rat - 52,000 mg/m3
LD50 Dermal - Rat - > 2,000 mg/kg
(OECD Test Guideline 402)
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Irritating to skin. - 24 h
(Draize Test)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Irritating to eyes. - 24 h
(Draize Test)

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity

Rat
DNA damage

Carcinogenicity
Carcinogenicity - Rat - Inhalation
Tumorigenic: Carcinogenic by RTECS criteria. Endocrine: Tumors.
Limited evidence of carcinogenicity in animal studies
Suspected human carcinogens
IARC: 2B - Group 2B: Possibly carcinogenic to humans (Methylene chloride)
NTP: Reasonably anticipated to be a human carcinogen (Methylene chloride)
OSHA: OSHA specifically regulated carcinogen (Methylene chloride)

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
May cause respiratory irritation.
May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure
Inhalation - May cause damage to organs through prolonged or repeated exposure. - Central nervous system
Oral - May cause damage to organs through prolonged or repeated exposure. - Liver, Blood

Aspiration hazard
No data available

Additional Information
RTECS: PA8050000
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., Acts as a simple asphyxiant by displacing air., anesthetic effects, Difficulty in breathing, Headache, Dizziness, Prolonged or repeated contact with skin may cause:, defatting, Dermatitis, Contact with eyes can cause:, Redness, Blurred vision, Provokes tears., Effects due to ingestion may include:, Gastrointestinal discomfort, Central nervous system depression, Paresthesia., Drowsiness, Convulsions, Conjunctivitis., Pulmonary edema. Effects may be delayed., Irregular
breathing., Stomach/intestinal disorders, Nausea, Vomiting, Increased liver enzymes., Weakness, Heavy or prolonged skin exposure may result in the absorption of harmful amounts of material., Abdominal pain

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish
LC50 - Pimephales promelas (fathead minnow) - 193.00 mg/l - 96 h
NOEC - Cyprinodon variegatus (sheepshead minnow) - 130 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 1,682.00 mg/l - 48 h

12.2 Persistence and degradability
Biodegradability Result: < 26 % - Not readily biodegradable.
(OECD Test Guideline 301C)

12.3 Bioaccumulative potential
Does not bioaccumulate.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1593 Class: 6.1 Packing group: III
Proper shipping name: Dichloromethane
Reportable Quantity (RQ): 1000 lbs

Poison Inhalation Hazard: No

IMDG
UN number: 1593 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: DICHLOROMETHANE

IATA
UN number: 1593 Class: 6.1 Packing group: III
Proper shipping name: Dichloromethane

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

**SARA 311/312 Hazards**
Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

**Pennsylvania Right To Know Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

**New Jersey Right To Know Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

**California Prop. 65 Components**
WARNING! This product contains a chemical known to the State of California to cause cancer.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methylene chloride</td>
<td>75-09-2</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

**Full text of H-Statements referred to under sections 2 and 3.**

- Carc. Carcinogenicity
- Eye Irrit. Eye irritation
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- H351 Suspected of causing cancer.
- H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
- Skin Irrit. Skin irritation
- STOT RE Specific target organ toxicity - repeated exposure
- STOT SE Specific target organ toxicity - single exposure

**HMIS Rating**

- Health hazard: 2
- Chronic Health Hazard: *
- Flammability: 0
- Physical Hazard: 0

**NFPA Rating**

- Health hazard: 2
- Fire Hazard: 0
- Reactivity Hazard: 0

**Further information**

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