Section 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: Carbon tetrachloride
Product Number: 319961
Brand: SIGALD
Index-No.: 602-008-00-5
CAS-No.: 56-23-5

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 Inc.
3050 SPRUCE ST
ST. LOUIS MO  63103
UNITED STATES

Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

Section 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

- Acute toxicity, Oral (Category 3), H301
- Acute toxicity, Inhalation (Category 3), H331
- Acute toxicity, Dermal (Category 3), H311
- Skin sensitization (Sub-category 1B), H317
- Carcinogenicity (Category 2), H351
- Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Liver, Kidney, H372
- Short-term (acute) aquatic hazard (Category 3), H402
- Long-term (chronic) aquatic hazard (Category 3), H412
- Hazardous to the ozone layer (Category 1), H420
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  Danger

Hazard statement(s)
H301 + H311 + H331  Toxic if swallowed, in contact with skin or if inhaled.
H317  May cause an allergic skin reaction.
H351  Suspected of causing cancer.
H372  Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if inhaled.
H412  Harmful to aquatic life with long lasting effects.
H420  Harms public health and the environment by destroying ozone in the upper atmosphere.

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 mist or vapors.
P264  Wash skin thoroughly after handling.
P270  Do not eat, drink or smoke when using this product.
P271  Use only outdoors or in a well-ventilated area.
P272  Contaminated work clothing must not be allowed out of the workplace.
P273  Avoid release to the environment.
P280  Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330  IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P302 + P352 + P312  IF ON SKIN: Wash with plenty of water.Call a POISON CENTER/ doctor if you feel unwell.
P304 + P340 + P311  IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
P308 + P313  IF exposed or concerned: Get medical advice/ attention.
P333 + P313  If skin irritation or rash occurs: 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.
P502  Refer to manufacturer/ supplier for information on recovery/ recycling.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Rapidly absorbed through skin.
SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms: Tetrachloromethane

Formula: \( \text{CCl}_4 \)
Molecular weight: 153.82 g/mol
CAS-No.: 56-23-5
EC-No.: 200-262-8
Index-No.: 602-008-00-5

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon tetrachloride</td>
<td>Acute Tox. 3; Skin Sens. 1B; Carc. 2; STOT RE 1; Aquatic Acute 3; Aquatic Chronic 3; Ozone 1; H301, H331, H311, H317, H351, H372, H402, H412, H420 Concentration limits: ≥ 1 %: STOT RE 1, H372; 0.2 &lt; 1 %: STOT RE 2, H373;</td>
<td>≤ 100 %</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
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

SECTION 5: Firefighting measures

5.1 **Extinguishing media**

*Suitable extinguishing media*
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

*Unsuitable extinguishing media*
For this substance/mixture no limitations of extinguishing agents are given.

5.2 **Special hazards arising from the substance or mixture**
Carbon oxides
Hydrogen chloride gas
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 **Advice for firefighters**
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 **Further information**
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 **Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 **Environmental precautions**
Do not let product enter drains.

6.3 **Methods and materials for containment and cleaning up**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 **Reference to other sections**
For disposal see section 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients 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>Carbon tetrachloride</td>
<td>56-23-5</td>
<td>TWA</td>
<td>5 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Suspected human carcinogen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>10 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks: Suspected human carcinogen</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>2 ppm</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12.6 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Potential Occupational Carcinogen</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

**Appropriate engineering controls**
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

**Personal protective equipment**

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

**Skin protection**
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 240 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

**Body Protection**
protective clothing

**Respiratory protection**
required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.

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**SECTION 9: Physical and chemical properties**

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

- **a)** Appearance  
  Form: liquid  
  Color: colorless
- **b)** Odor  
  sweet
- **c)** Odor Threshold  
  No data available
- **d)** pH  
  No data available
- **e)** Melting point/freezing point  
  Melting point/range: -23 °C (-9 °F) - lit.
- **f)** Initial boiling point and boiling range  
  76 - 77 °C  169 - 171 °F - lit.
- **g)** Flash point  
  () No data available
- **h)** Evaporation rate  
  No data available
- **i)** Flammability (solid, gas)  
  No data available
- **j)** Upper/lower flammability or explosive limits  
  No data available
- **k)** Vapor pressure  
  45 hPa at 0.3 °C (32.5 °F)  
  120 hPa at 19.8 °C (67.6 °F)  
  14,549 hPa at 24 °C (75 °F)
- **l)** Vapor density  
  No data available
- **m)** Density  
  1.594 g/cm3 at 25 °C (77 °F) - lit.  
  Relative density  
  No data available
- **n)** Water solubility  
  0.8461 g/l at 20 °C (68 °F)
- **o)** Partition coefficient: n-octanol/water  
  log Pow: 2.83 at 25 °C (77 °F)
- **p)** Autoignition temperature  
  No data available
- **q)** Decomposition  
  No data available
9.2 Other safety information

Surface tension
26.7 mN/m at 20 °C (68 °F)
19.5 mN/m at 80 °C (176 °F)

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Risk of explosion with:
Alkali metals
powdered aluminium
Barium
Boranes
calcium silicide
halogen-halogen compounds
peroxi compounds
Fluorine
powdered magnesium
Powdered metals
sodium amide
silanes
silver perchlorate
nitrogen dioxide
alkenes
Oxygen
(as liquefied gas)
Oxygen
with
alkali hydroxides
calcium hypochlorite
with
heat
Violent reactions possible with:
Alkaline earth metals
Dimethylformamide
aluminium chloride
with
triethylaluminium
10.4 **Conditions to avoid**
no information available

10.5 **Incompatible materials**
various plastics, Light metals, metal alloys, Metals

10.6 **Hazardous decomposition products**
In the event of fire: see section 5

---

**SECTION 11: Toxicological information**

11.1 **Information on toxicological effects**

**Acute toxicity**
LD50 Oral - Rat - 2,350 mg/kg
Remarks: (RTECS)
LC50 Inhalation - Rat - 4 h - 8000 ppm - vapor

LD50 Dermal - Rabbit - > 20,000 mg/kg
No data available

**Skin corrosion/irritation**
Skin - Rabbit
Result: Mild skin irritation - 24 h
(Draize Test)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: Mild eye irritation - 24 h
(Draize Test)

**Respiratory or skin sensitization**
- Mouse
Result: The product is a skin sensitizer, sub-category 1B.
(OECD Test Guideline 429)

**Germ cell mutagenicity**
No data available

**Carcinogenicity**
Suspected of causing cancer.
IARC: 2B - Group 2B: Possibly carcinogenic to humans (Carbon tetrachloride)
NTP: RAHC - Reasonably anticipated to be a human carcinogen (Carbon tetrachloride)
OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
Inhalation - Causes damage to organs through prolonged or repeated exposure.
- Liver, Kidney
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the US and Canada

Aspiration hazard
No data available

11.2 Additional Information

RTECS: FG4900000
Vomiting, Diarrhea, Abdominal pain, Nausea, Dizziness, Headache, Damage to the eyes., Liver injury may occur., Kidney injury may occur., Exposure to and/or consumption of alcohol may increase toxic effects., Contact with skin can cause:, Pain, Erythema, hyperemia
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish  
mortality LC50 - Danio rerio (zebra fish) - 24.3 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates  
Immobilization EC50 - Daphnia magna (Water flea) - 35 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae  
Growth inhibition EC50 - Algae - 20 mg/l - 72 h (OECD Test Guideline 201)

Toxicity to fish (Chronic toxicity)  
NOEC - Danio rerio (zebra fish) - 2.5 mg/l - 14 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)  
NOEC - Daphnia magna (Water flea) - 3.1 mg/l - 21 d

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential

Bioaccumulation  
Lepomis macrochirus (Bluegill) - 21 d - 52.3 µg/l (Carbon tetrachloride)

Bioconcentration factor (BCF): 30

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 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available
SECTION 13: Disposal considerations

13.1 Waste treatment methods

**Product**
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

**DOT (US)**
- UN number: 1846
- Class: 6.1
- Packing group: II
- Proper shipping name: Carbon tetrachloride
- Reportable Quantity (RQ): 10 lbs
- Marine pollutant: yes
- Poison Inhalation Hazard: No

**IMDG**
- UN number: 1846
- Class: 6.1
- Packing group: II
- Proper shipping name: CARBON TETRACHLORIDE
- Marine pollutant: yes
- Marine pollutant: yes

**IATA**
- UN number: 1846
- Class: 6.1
- Packing group: II
- Proper shipping name: Carbon tetrachloride

SECTION 15: Regulatory information

**SARA 302 Components**
This material does not contain any components with a section 302 EHS TPQ.

**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>Carbon tetrachloride</td>
<td>56-23-5</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

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

- **Reportable Quantity**
  - D019 lbs
  - F001 lbs
Massachusetts Right To Know Components
Carbon tetrachloride

Pennsylvania Right To Know Components
Carbon tetrachloride

California Prop. 65 Components
Carbon tetrachloride

SECTION 16: Other information

Further information
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 Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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