SAFETY DATA SHEET

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

1.1 Product identifiers

Product name: Cadmium chloride hemi(pentahydrate)

Product Number: C3141
Brand: Sigma-Aldrich
Index-No.: 048-008-00-3
CAS-No.: 7790-78-5

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 1), H330
Germ cell mutagenicity (Category 1B), H340
Carcinogenicity (Category 1B), H350
Reproductive toxicity (Category 1B), H360
Specific target organ toxicity - repeated exposure (Category 1), H372
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410

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 Toxic if swallowed.
- H330 Fatal if inhaled.
- H340 May cause genetic defects.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.
- H372 Causes damage to organs through prolonged or repeated exposure.
- H410 Very toxic to aquatic life with long lasting effects.

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/ vapors/ spray.
- 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.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P284 Wear respiratory protection.
- P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
- P308 + P313 IF exposed or concerned: Get medical advice/ attention.
- P391 Collect spillage.
- 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

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cadmium chloride hemipentahydrate</td>
<td>Acute Tox. 3; Acute Tox. 1; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1;</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

Sigma-Aldrich - C3141
Aquatic Acute 1; Aquatic Chronic 1; H301, H330, H340, H350, H360, H372, H400, H410 Concentration limits: 
>= 0.01 %: Carc. 1B, H350; >= 7 %: STOT RE 1, H372; 0.1 - < 7 %: STOT RE 2, H373; M-Factor - Aquatic Acute: 10 
M-Factor - Aquatic Chronic: 10

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

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. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

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

SECTION 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
Hydrogen chloride gas
Cadmium/cadmium oxides
Not combustible.

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

5.4 Further information
No data available

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas.
Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
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.
Dispose into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in
suitable, closed containers for disposal.

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
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing
of solid materials may result in the formation of combustible dusts. The potential for
combustible dust formation should be taken into consideration before additional processing
occurs.

Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately
after handling the product.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place.

Hygroscopic. Handle under inert gas. Protect from moisture. Air sensitive.

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

<table>
<thead>
<tr>
<th>Ingredients with workplace control parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>Cadmium chloride hemipentahydrate</td>
</tr>
<tr>
<td>CAS-No. 7790-78-5</td>
</tr>
<tr>
<td>Value TWA 0.01 mg/m³</td>
</tr>
<tr>
<td>Control parameters</td>
</tr>
<tr>
<td>Basis USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks Suspected human carcinogen</td>
</tr>
<tr>
<td>TWA 0.002 mg/m³</td>
</tr>
<tr>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Suspected human carcinogen</td>
</tr>
<tr>
<td>PEL 0.005 mg/m³</td>
</tr>
<tr>
<td>OSHA Specifically Regulated Chemicals/Carcinogens</td>
</tr>
<tr>
<td>OSHA specifically regulated carcinogen</td>
</tr>
<tr>
<td>Potential Occupational Carcinogen</td>
</tr>
<tr>
<td>PEL 0.005 mg/m³</td>
</tr>
<tr>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biological occupational exposure limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>Cadmium chloride hemipentahydrate</td>
</tr>
<tr>
<td>CAS-No. 7790-78-5</td>
</tr>
<tr>
<td>Parameters cadmium</td>
</tr>
<tr>
<td>Value 5 µg/l</td>
</tr>
<tr>
<td>Biological specimen</td>
</tr>
<tr>
<td>In blood</td>
</tr>
<tr>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>Remarks Not critical</td>
</tr>
<tr>
<td>cadmium 5 µg/g creatinine</td>
</tr>
<tr>
<td>Urine</td>
</tr>
<tr>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
<tr>
<td>Not critical</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

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.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, 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 EC 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 particle respirator type N100 (US) or type P3 (EN 143) 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. Discharge into the environment must be avoided.

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**SECTION 9: Physical and chemical properties**

9.1 Information on basic physical and chemical properties

- **a) Appearance**
  Form: crystalline
  Color: white

- **b) Odor**
  No data available

- **c) Odor Threshold**
  No data available

- **d) pH**
  No data available

- **e) Melting point/freezing point**
  No data available
f) Initial boiling point and boiling range  
   No data available

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  
   13 hPa at 656 °C (1213 °F)

l) Vapor density  
   No data available

m) Density  
   3.327 g/cm³  
   Relative density  
   No data available

n) Water solubility  
   No data available

o) Partition coefficient: n-octanol/water  
   No data available

p) Autoignition temperature  
   No data available

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  
   No data available

SECTION 10: Stability and reactivity

10.1 Reactivity  
   No data available

10.2 Chemical stability  
   Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions  
   No data available

10.4 Conditions to avoid  
   Air  Avoid moisture.

10.5 Incompatible materials  
   Oxidizing agents

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 - 665 mg/kg
LC50 Inhalation - 4 h - 0.005 mg/l - dust/mist

Dermal: No data available
No data available

Skin corrosion/irritation
Remarks: No data available

Serious eye damage/eye irritation
Remarks: No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
May alter genetic material.
In vivo tests showed mutagenic effects

Carcinogenicity
This is or contains a component that has been reported to be carcinogenic based on its
IARC, OSHA, ACGIH, NTP, or EPA classification. Chronic exposure to cadmium may cause
lung and prostate cancer.
Possible human carcinogen

IARC: 1 - Group 1: Carcinogenic to humans (Cadmium chloride hemipentahydrate)
NTP: Known - Known to be human carcinogen
      The reference note has been added by TD based on the background information of the NTP.
      (Cadmium chloride hemipentahydrate)
OSHA: OSHA specifically regulated carcinogen (Cadmium chloride hemipentahydrate)

Reproductive toxicity
May cause congenital malformation in the fetus.
Presumed human reproductive toxicant
May cause reproductive disorders.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
No data available

11.2 Additional Information

RTECS: EV0178000
To the best of our knowledge, the chemical, physical, and toxicological properties have not
been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence
SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

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
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

DOT (US)
UN number: 2570   Class: 6.1   Packing group: III
Proper shipping name: Cadmium compounds (Cadmium chloride hemipentahydrate)
Reportable Quantity (RQ): 10 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 2570   Class: 6.1   Packing group: III   EMS-No: F-A, S-A
Proper shipping name: CADMIUM COMPOUND (Cadmium chloride hemipentahydrate)

IATA
UN number: 2570   Class: 6.1   Packing group: III
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>
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<td>7790-78-5</td>
<td>1989-08-11</td>
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SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

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Pennsylvania Right To Know Components

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California Prop. 65 Components
, which is/are known to the State of California to cause cancer. For more information go to
www.P65Warnings.ca.gov.Cadmium chloride hemipentahydrate

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<td>Cadmium chloride hemipentahydrate</td>
<td>7790-78-5</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Further information
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