SAFETY DATA SHEET

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

1.1 Product identifiers

Product name : Cadmium sulfate
Product Number : 481882
Brand : Aldrich
Index-No. : 048-009-00-9
CAS-No. : 10124-36-4

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 2), H330
Germ cell mutagenicity (Category 1B), H340
Carcinogenicity (Category 1B), H350
Reproductive toxicity (Category 1B), H360
Specific target organ toxicity - repeated exposure (Category 1), Bone, Kidney, Respiratory system, 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 (Bone, Kidney, Respiratory system) 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>Formula</th>
<th>CdO₄S</th>
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<tbody>
<tr>
<td>Molecular weight</td>
<td>208.47 g/mol</td>
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<tr>
<td>CAS-No.</td>
<td>10124-36-4</td>
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<tr>
<td>EC-No.</td>
<td>233-331-6</td>
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<td>Index-No.</td>
<td>048-009-00-9</td>
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Aldrich - 481882
<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>cadmium sulphate</td>
<td>Acute Tox. 3; Acute Tox. 2; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H301, H330, H340, H350, H360, H372, H400, H410</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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
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. Consult a physician.

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
Sulfur oxides
Cadmium/cadmium oxides
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: Avoid generation and inhalation of dusts in all circumstances. 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. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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.
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. Dry. 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): 6.1A: 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 sulphate</td>
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<tr>
<td>Remarks</td>
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<table>
<thead>
<tr>
<th>Biological occupational exposure limits</th>
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<tr>
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<tr>
<td>cadmium sulphate</td>
</tr>
<tr>
<td>Remarks</td>
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</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

Body Protection
protective clothing

Respiratory protection
Recommended Filter type: Filter type P3
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts 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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance
   Form: solid
   Color: colorless

b) Odor
   odorless

c) Odor Threshold
   Not applicable

d) pH
   No data available

e) Melting point/freezing point
   Melting point/range: 1,000 °C (1,832 °F)

f) Initial boiling point and boiling range
   No data available

g) Flash point
   ()Not applicable

h) Evaporation rate
   No data available

i) Flammability (solid, liquid, gas)
   No data available
j) Upper/lower flammability or explosive limits
   No data available
k) Vapor pressure
   No data available
l) Vapor density
   No data available
m) Density
   4.69 g/cm³ at 25 °C (77 °F)
   Relative density
   No data available
n) Water solubility
   767 g/l at 25 °C (77 °F) soluble
o) Partition coefficient: n-octanol/water
   Not applicable for inorganic substances
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
   none

9.2 Other safety information
No data available

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
No data available

10.4 Conditions to avoid
No information available

10.5 Incompatible materials
Strong 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 - male - 107 mg/kg
Remarks: (in analogy to similar compounds)
(ECHA)
The value is given in analogy to the following substances: Cadmium chloride
Acute toxicity estimate Inhalation - 4 h - 0.051 mg/l - dust/mist
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Dermal: No data available
No data available

Skin corrosion/irritation
Skin - reconstructed human epidermis (RhE)
Result: No skin irritation - 15 min
(OECD Test Guideline 439)
Skin - reconstructed human epidermis (RhE)
Result: No skin irritation - 4 h
(OECD Test Guideline 431)

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
KeratinoSens assay
Result: negative
(OECD Test Guideline 442D)

Germ cell mutagenicity
May cause genetic defects.

Carcinogenicity
Presumed to have carcinogenic potential for humans Chronic exposure to cadmium may cause lung and prostate cancer.
IARC: 1 - Group 1: Carcinogenic to humans (cadmium sulphate)
NTP: Known - Known to be human carcinogen
The reference note has been added by TD based on the background information of the NTP. (cadmium sulphate)
OSHA: OSHA specifically regulated carcinogen (cadmium sulphate)

Reproductive toxicity
May damage the unborn child.
May damage fertility.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure.
- Bone, Kidney, Respiratory system
11.2 Additional Information

RTECS: EV2700000
Acute inhalation exposure to cadmium fumes may cause "metal fume fever" with flu-like symptoms of weakness, fever, headache, chills, nausea, vomiting, dizziness, sweating, muscular pain, cough and difficulty breathing. Acute pulmonary edema may develop within 24 hours and reaches a maximum by three days. The first chronic effect of exposure to cadmium is generally kidney damage, manifested by excretion of excessive protein in the urine, followed by anemia, teeth discoloration and loss of smell. Cadmium also is believed to cause pulmonary emphysema and bone disease. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

Systemic effects:

Headache
Diarrhea
muscular weakness
Changes in the blood count
Convulsions

pain in:

Gastrointestinal tract

Damage to:

Lungs
Bone
Liver
Kidney

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

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

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish flow-through test LC50 - Carassius auratus (goldfish) - 0.75 mg/l - 96 h

Aldrich - 481882
Toxicity to daphnia and other aquatic invertebrates static test LC50 - Daphnia magna (Water flea) - 0.036 mg/l - 48 h Remarks: (in analogy to similar products) (ECHA)

Toxicity to bacteria static test NOEC - activated sludge - 0.2 mg/l - 3 h (OECD Test Guideline 209) Remarks: (in analogy to similar products)

Toxicity to fish (Chronic toxicity) NOEC - Salvelinus fontinalis (Brook trout) - 0.008 mg/l - 10 d Remarks: (in analogy to similar products) (ECHA)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) - Daphnia magna (Water flea) - 0.0003 mg/l - 21 d Remarks: (ECOTOX Database)

12.2 Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

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
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: 2570  Class: 6.1  Packing group: III
Proper shipping name: Cadmium compounds (cadmium sulphate)
Reportable Quantity (RQ):
  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 sulphate)

**IATA**
UN number: 2570  Class: 6.1  Packing group: III
Proper shipping name: Cadmium compound (cadmium sulphate)

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>
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<tr>
<td>cadmium sulphate</td>
<td>10124-36-4</td>
<td>1993-04-24</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 sulphate

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<th>Revision Date</th>
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<tr>
<td>cadmium sulphate</td>
<td>10124-36-4</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>
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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Version: 6.8             Revision Date: 10/27/2023        Print Date: 12/23/2023