

SAFETY DATA SHEET

Version 4.5
Revision Date 06/28/2014
Print Date 09/15/2014

1. PRODUCT AND COMPANY IDENTIFICATION**1.1 Product identifiers**

Product name : Cadmium nitrate tetrahydrate
Product Number : 642045
Brand : Aldrich
Index-No. : 048-001-00-5
CAS-No. : 10022-68-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture 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)**

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, Oral (Category 1), Kidney, Lungs, Bone, H372
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (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 (Kidney, Lungs, Bone) through prolonged or repeated exposure if swallowed.

| | |
|----------------------------|--|
| 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/ vapours/ 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. |
| P281 | Use personal protective equipment as required. |
| P284 | Wear respiratory protection. |
| P301 + P310 | IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. |
| P304 + P340 | IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. |
| P310 | Immediately call a POISON CENTER or doctor/ physician. |
| P320 | Specific treatment is urgent (see supplemental first aid instructions on this label). |
| P330 | Rinse mouth. |
| 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

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

| | |
|------------------|---|
| Formula | : CdN ₂ O ₆ · 4H ₂ O |
| Molecular Weight | : 308.48 g/mol |
| CAS-No. | : 10022-68-1 |
| EC-No. | : 233-710-6 |
| Index-No. | : 048-001-00-5 |

Hazardous components

| Component | Classification | Concentration |
|------------------------|---|---------------|
| Cadmium nitrate | | |
| | Ox. Sol. 2; Acute Tox. 3; Acute Tox. 2; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H272, H301, H330, H340, H350, H360, H372, H410 | 90 - 100 % |

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

Consult a physician. Show this 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

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

nitrogen oxides (NOx), Cadmium/cadmium oxides

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

no data available

6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, 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. Discharge 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.

7. HANDLING AND STORAGE**7.1 Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. 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.

hygroscopic

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**

| Component | CAS-No. | Value | Control parameters | Basis |
|-----------------|------------|----------------------------|--------------------|---|
| Cadmium nitrate | 10022-68-1 | TWA | 0.0020 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | Remarks | Suspected human carcinogen | | |

| | | | | |
|--|--|---|-------------|---|
| | | TWA | 0.01 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Kidney damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Suspected human carcinogen varies | | |
| | | TWA | 0.002 mg/m3 | USA. ACGIH Threshold Limit Values (TLV) |
| | | Kidney damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Suspected human carcinogen varies | | |
| | | Potential Occupational Carcinogen See Appendix A | | |
| | | Potential Occupational Carcinogen See Appendix A | | |
| | | PEL | 0.005 mg/m3 | OSHA Specifically Regulated Chemicals/Carcinogens |
| | | 1910.1027 This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63. OSHA specifically regulated carcinogen | | |

Biological occupational exposure limits

| Component | CAS-No. | Parameters | Value | Biological specimen | Basis |
|-----------------|------------|--------------|------------|---------------------|---|
| Cadmium nitrate | 10022-68-1 | cadmium | 5 µg/l | In blood | ACGIH - Biological Exposure Indices (BEI) |
| | Remarks | Not critical | | | |
| | | cadmium | 0.005 mg/g | Urine | ACGIH - Biological Exposure Indices (BEI) |
| | | Not critical | | | |

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: Dermatrill® (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 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 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---|--|
| a) Appearance | Form: solid Colour: white |
| b) Odour | no data available |
| c) Odour Threshold | no data available |
| d) pH | no data available |
| e) Melting point/freezing point | Melting point/range: 59.5 °C (139.1 °F) - lit. |
| f) Initial boiling point and boiling range | no data available |
| g) Flash point | not applicable |
| h) Evaporation rate | no data available |
| i) Flammability (solid, gas) | no data available |
| j) Upper/lower flammability or explosive limits | no data available |
| k) Vapour pressure | no data available |
| l) Vapour density | no data available |
| m) Relative density | no data available |
| n) Water solubility | no data available |
| o) Partition coefficient: n-octanol/water | no data available |
| p) Auto-ignition temperature | no data available |
| q) Decomposition temperature | no data available |
| r) Viscosity | no data available |

- s) Explosive properties no data available
t) Oxidizing properties The substance or mixture is not classified as oxidizing.

9.2 Other safety information
no data available

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**
no data available
- 10.5 Incompatible materials**
Reducing agents, Phosphorus, Copper, Organic materials
- 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
no data available

Dermal: no data available

no data available

no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitisation
no data available

Germ cell mutagenicity
In vivo tests showed mutagenic effects

rat

Liver

Unscheduled DNA synthesis

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. Presumed to have carcinogenic potential for humans

IARC: 1 - Group 1: Carcinogenic to humans (Cadmium nitrate)

NTP: Known to be human carcinogenThe reference note has been added by TD based on the background information of the NTP. (Cadmium nitrate)

OSHA: 1910.1027 (Cadmium nitrate)
OSHA specifically regulated carcinogen (Cadmium nitrate)

Reproductive toxicity

Presumed human reproductive toxicant May damage the unborn child.

May cause reproductive disorders. May damage fertility.

Specific target organ toxicity - single exposure

no data available

Specific target organ toxicity - repeated exposure

Oral - Causes damage to organs through prolonged or repeated exposure. - Kidney, Lungs, Bone

Aspiration hazard

no data available

Additional Information

RTECS: Not available

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.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

Toxicity to fish LC50 - *Ictalurus punctatus* - 4.48 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates static test EC50 - *Daphnia pulex* (Water flea) - 0.048 mg/l - 48 h

12.2 Persistence and degradability

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

12.3 Bioaccumulative potential

Bioaccumulation - 21 d

Bioconcentration factor (BCF): 960

Remarks: Can accumulate in aquatic organisms.

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

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

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.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 3087 Class: 5.1 (6.1) Packing group: II
Proper shipping name: Oxidizing solid, toxic, n.o.s. (Cadmium nitrate)
Reportable Quantity (RQ):
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 3087 Class: 5.1 (6.1) Packing group: II EMS-No: F-A, S-Q
Proper shipping name: OXIDIZING SOLID, TOXIC, N.O.S. (Cadmium nitrate)
Marine pollutant: No

IATA

UN number: 3087 Class: 5.1 (6.1) Packing group: II
Proper shipping name: Oxidizing solid, toxic, n.o.s. (Cadmium nitrate)

15. REGULATORY INFORMATION

SARA 302 Components

SARA 302: 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:

| | CAS-No. | Revision Date |
|-----------------|------------|---------------|
| Cadmium nitrate | 10022-68-1 | 1987-01-01 |

SARA 311/312 Hazards

Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

| | CAS-No. | Revision Date |
|-----------------|------------|---------------|
| Cadmium nitrate | 10022-68-1 | 1987-01-01 |

New Jersey Right To Know Components

| | CAS-No. | Revision Date |
|-----------------|------------|---------------|
| Cadmium nitrate | 10022-68-1 | 1987-01-01 |

California Prop. 65 Components

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

| | CAS-No. | Revision Date |
|-----------------|------------|---------------|
| Cadmium nitrate | 10022-68-1 | 1987-10-01 |

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

| | CAS-No. | Revision Date |
|-----------------|------------|---------------|
| Cadmium nitrate | 10022-68-1 | 1987-10-01 |

16. OTHER INFORMATION

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

| | |
|-----------------|--------------------------|
| Acute Tox. | Acute toxicity |
| Aquatic Acute | Acute aquatic toxicity |
| Aquatic Chronic | Chronic aquatic toxicity |
| Carc. | Carcinogenicity |

| | |
|-------|--|
| H272 | May intensify fire; oxidiser. |
| 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 if swallowed. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| Muta. | Germ cell mutagenicity |

HMIS Rating

| | |
|------------------------|---|
| Health hazard: | 4 |
| Chronic Health Hazard: | * |
| Flammability: | 0 |
| Physical Hazard | 2 |

NFPA Rating

| | |
|--------------------|----|
| Health hazard: | 4 |
| Fire Hazard: | 0 |
| Reactivity Hazard: | 2 |
| Special hazard.I: | OX |

Further information

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Preparation Information

Sigma-Aldrich Corporation
 Product Safety – Americas Region
 1-800-521-8956

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