

Material Safety Data Sheet

Cadmium nitrate tetrahydrate

ACC# 03780

Section 1 - Chemical Product and Company Identification

MSDS Name: Cadmium nitrate tetrahydrate

Catalog Numbers: AC212340000, AC212342500, AC315060000, AC315065000, AC403750000, AC403755000, S75064, S79937, S799371, C13-100, C13-500, C13-9

Synonyms: Nitric acid, cadmium salt, tetrahydrate.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|------------|------------------------------|---------|---------------|
| 10022-68-1 | Cadmium nitrate tetrahydrate | >98 | unlisted |

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid.

Danger! Can cause lung and kidney disease. Strong oxidizer. Contact with other material may cause a fire. Cancer hazard. Harmful if swallowed. Causes eye, skin, and respiratory tract irritation. Contains cadmium. Avoid creating dust. May cause methemoglobinemia.

Target Organs: Blood, kidneys, lungs, skeletal structures.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes severe skin irritation.

Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause unconsciousness.

Inhalation: Effects may be delayed. Causes respiratory tract irritation. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause dyspnea (difficult or labored breathing). May cause anemia. May cause cough, chest pain, fever, muscular cramps, and headache.

Chronic: May cause respiratory tract cancer. Prolonged or repeated exposure may cause permanent bone structure abnormalities. May cause anemia and other blood cell abnormalities. Chronic inhalation may cause pulmonary emphysema. The primary target organ for chronic cadmium disease is clearly the kidney.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

Ingestion: Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.

Antidote: The use of Calcium disodium EDTA as a chelating agent should be determined by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with other material may cause fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Extinguishing Media: Do NOT get water inside containers. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.

Flash Point: Not applicable.

Autoignition Temperature: Not applicable.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 1; Special Hazard: OX

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Use with adequate ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Do not store near combustible materials. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. See 29CFR 1910.1027 for regulations applying to all occupational exposures to cadmium and cadmium compounds, in all forms.

Exposure Limits

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|------------------------------|--|-------------|---|
| Cadmium nitrate tetrahydrate | 0.01 mg/m3 TWA (as Cd); 0.002 mg/m3 TWA (respirable fraction, as Cd) (listed under Cadmium compounds). | none listed | 2.5 æg/m3 Action Level (as Cd); 5 æg/m3 PEL (as Cd. Do not eat, drink or chew tobacco or gum or apply cosmetics in regulated areas. Carcinogen: dust can cause lung and kidney disease. See 29 CFR 1910.1027) (listed under Cadmium compounds). |
| Cadmium nitrate anhydrous | 0.01 mg/m3 TWA (as Cd); 0.002 mg/m3 TWA (respirable fraction, as Cd) (listed under Cadmium compounds). | none listed | 2.5 æg/m3 Action Level (as Cd); 5 æg/m3 PEL (as Cd. Do not eat, drink or chew tobacco or gum or apply cosmetics in regulated areas. Carcinogen: dust can cause lung and kidney disease. See 29 CFR 1910.1027) (listed under Cadmium compounds). |

OSHA Vacated PELs: Cadmium nitrate tetrahydrate: No OSHA Vacated PELs are listed for this chemical. Cadmium nitrate anhydrous: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: white

Odor: odorless

pH: Not available.

Vapor Pressure: Negligible.

Vapor Density: Not available.

Evaporation Rate: Negligible.

Viscosity: Not available.

Boiling Point: 132 deg C

Freezing/Melting Point: 59 deg C

Decomposition Temperature: Not available.

Solubility: 215% (20 C)

Specific Gravity/Density: 2.455 @ 17C

Molecular Formula: Cd(NO3)2.4H2O

Molecular Weight: 308.47

Section 10 - Stability and Reactivity

Chemical Stability: Stable.

Conditions to Avoid: Dust generation, confined spaces.
Incompatibilities with Other Materials: Strong reducing agents, combustible materials.
Hazardous Decomposition Products: Nitrogen oxides, toxic cadmium oxide fumes.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 10022-68-1: EV1850000

CAS# 10325-94-7: EV1750000

LD50/LC50:

CAS# 10022-68-1:

Draize test, rabbit, eye: 20 mg/24H Moderate;

Draize test, rabbit, skin: 500 mg/24H Severe;

Oral, rat: LD50 = 300 mg/kg;

CAS# 10325-94-7:

Oral, mouse: LD50 = 47 mg/kg;

Oral, rat: LD50 = 300 mg/kg;

Carcinogenicity:

CAS# 10022-68-1:

- **ACGIH:** A2 - Suspected Human Carcinogen (listed as 'Cadmium compounds').
- **California:** carcinogen, initial date 10/1/87 (listed as Cadmium compounds).
- **NTP:** Known carcinogen (listed as Cadmium compounds).
- **IARC:** Group 1 carcinogen (listed as Cadmium compounds).

CAS# 10325-94-7:

- **ACGIH:** A2 - Suspected Human Carcinogen (listed as 'Cadmium compounds').
- **California:** carcinogen, initial date 10/1/87 (listed as Cadmium compounds).
- **NTP:** Known carcinogen (listed as Cadmium compounds).
- **IARC:** Group 1 carcinogen (listed as Cadmium compounds).

Epidemiology: NIOSH cited recent epidemiological evidence of a significant excess of respiratory cancer deaths among a cohort of cadmium production workers, and concluded that cadmium and its compounds are potential carcinogens.

Teratogenicity: No data available.

Reproductive Effects: No data available.

Mutagenicity: No data available.

Neurotoxicity: No data available.

Other Studies:

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: 55ug/L; 48H; Fish: Fathead Minnow: 820ug/L; 48H; No data available.

Environmental: Terrestrial: May migrate in the environment in the form of nitrate, chloride, carbonate complexes, hydroxide complexes, ammonia complexes, and as chelated and other organo-metallic complexes resulting from decay of plant and animal matter. Aquatic: Relatively mobile and may be transported in solution as either hydrated cations or as organic or inorganic complexes. Not expected to biodegrade but will bioconcentrate.

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

| | US DOT | Canada TDG |
|-----------------------|-----------------------------|-------------------------|
| Shipping Name: | NITRATES, INORGANIC, N.O.S. | NITRATES, INORGANIC NOS |
| Hazard Class: | 5.1 | 5.1 |
| UN Number: | UN1477 | UN1477 |
| Packing Group: | II | II |

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 10022-68-1 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 10325-94-7 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 10022-68-1: immediate, delayed, fire.

CAS # 10325-94-7: immediate, delayed, fire.

Section 313

This material contains Cadmium nitrate tetrahydrate (listed as Cadmium compounds), >98%, (CAS# 10022-68-1) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

This material contains Cadmium nitrate anhydrous (listed as Cadmium compounds), -, (CAS# 10325-94-7) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act:

CAS# 10022-68-1 (listed as Cadmium compounds) is listed as a hazardous air pollutant (HAP).

CAS# 10325-94-7 (listed as Cadmium compounds) is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA. CAS# 10022-68-1 is listed as a Toxic Pollutant under the Clean Water Act. CAS# 10325-94-7 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 10022-68-1 can be found on the following state right to know lists: California, (listed as Cadmium compounds), Pennsylvania, (listed as Cadmium compounds), Minnesota, (listed as Cadmium compounds).

CAS# 10325-94-7 can be found on the following state right to know lists: California, (listed as Cadmium compounds), Pennsylvania, (listed as Cadmium compounds), Minnesota, (listed as Cadmium compounds).

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Cadmium nitrate tetrahydrate, listed as 'Cadmium compounds', a chemical known to the state of California to cause cancer. WARNING: This product contains Cadmium nitrate anhydrous, listed as 'Cadmium compounds', a chemical known to the state of California to cause cancer.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

XN O N

Risk Phrases:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 40 Limited evidence of a carcinogenic effect.

R 8 Contact with combustible material may cause fire.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 17 Keep away from combustible material.

S 22 Do not breathe dust.

S 36/37 Wear suitable protective clothing and gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

WGK (Water Danger/Protection)

CAS# 10022-68-1: No information available.

CAS# 10325-94-7: 3

Canada - DSL/NDSL

CAS# 10325-94-7 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of C, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 10022-68-1 (listed as Cadmium compounds) is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 3/24/1999

Revision #4 Date: 2/17/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.