

MSDS Number: **C0121** \* \* \* \* \* *Effective Date: 02/10/09* \* \* \* \* \*

*Supersedes: 05/23/06*



## Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151

CHEMTREC: 1-800-424-9300

National Response in Canada

CANUTEC: 613-996-6666

Outside U.S. And Canada

Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# CADMIUM NITRATE

## 1. Product Identification

**Synonyms:** Cadmium (II) nitrate, tetrahydrate (1:2:4); nitric acid, cadmium salt, tetrahydrate; Cadmium Nitrate, 4-Hydrate; Cadmium dinitrate, 4-hydrate

**CAS No.:** 10325-94-7 (Anhydrous); 10022-68-1 (Tetrahydrate)

**Molecular Weight:** 308.48

**Chemical Formula:** Cd(NO<sub>3</sub>)<sub>2</sub>·4H<sub>2</sub>O

**Product Codes:** 1226

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent
Hazardous		
-----	-----	-----
-----		
Cadmium Nitrate	10325-94-7	99 - 100%
Yes		

### 3. Hazards Identification

#### Emergency Overview

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**DANGER! CONTAINS CADMIUM. CANCER HAZARD. AVOID CREATING DUST. CAN CAUSE LUNG AND KIDNEY DISEASE. CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure. MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND EYES. AFFECTS BLOOD AND PROSTATE. MAY AFFECT THE REPRODUCTIVE SYSTEM. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

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Health Rating: 3 - Severe (Cancer Causing)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Yellow Stripe (Store Separately)

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#### Potential Health Effects

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##### **Inhalation:**

Cadmium absorption is most efficient via respiratory tract. Inhalation of dust may produce irritation, headache, metallic taste and/or cough. Severe exposures may produce shortness of breath, chest pain, and flu-like symptoms with weakness, fever, headache, chills, sweating, nausea and muscular pain. Can cause pulmonary edema, liver and kidney damage and death. Symptoms from inhalation may be delayed for as much as 24 hours.

##### **Ingestion:**

Toxic. Ingested cadmium salts may cause severe and sometimes fatal poisonings. Symptoms can include severe nausea, vomiting, diarrhea, abdominal pains, choking, dizziness, and salivation. Kidney and liver dysfunction may occur. Although as little as 10 - 20 mg of soluble cadmium salts have produced severe toxic symptoms when ingested, death probably requires several hundred mg by oral route.

##### **Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

**Eye Contact:**

Causes irritation, redness, and pain.

**Chronic Exposure:**

Chronic exposure to cadmium, even at relatively low concentrations, may result in kidney damage, anemia, pulmonary fibrosis, emphysema, perforation of the nasal septum, loss of smell, male reproductive effects, and an increased risk of cancer of the lung and of the prostate. Decrease in bone density, renal stones, and other evidence of disturbed calcium metabolism may be observed.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders, eye problems, blood disorders, prostate problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

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## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Note to Physician:**

See 29 CFR 1910.1027, Appendix A for additional treatment information.

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## 5. Fire Fighting Measures

**Fire:**

This material is a noncombustible solid, but the dust can be a moderate fire hazard when exposed to heat or flame, or when reacted with oxidizing agents, hydrogen

azide, zinc, selenium, or tellurium. Substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

**Explosion:**

Strong oxidants may explode when shocked, or if exposed to heat, flame, or friction. Also may act as initiation source for dust or vapor explosions. Sensitive to mechanical impact.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. If involved in a fire, this material can emit very toxic fumes of cadmium.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Do not flush to the sewer. Keep combustibles (wood, paper, oil, etc.) away from spilled material. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from combustibles, organic or other readily oxidizable materials. Avoid storage on wood floors. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Threshold Limit Value (PEL):

5 ug/m<sup>3</sup> of Cadmium (TWA), 2.5 ug/m<sup>3</sup> (Action Level)

-ACGIH Threshold Limit Value (TLV) :

0.01 mg/m<sup>3</sup> total dust, 0.002 mg/m<sup>3</sup> respirable fraction for cadmium and compounds, as Cd;

listed as A2, suspected human carcinogen.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half-face high efficiency particulate respirator (NIOSH type N100 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high efficiency particulate respirator (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. See OSHA 1910.1027 for additional respirator information.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

### **Other Control Measures:**

Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing cadmium compounds are handled, processed, or stored. See OSHA

substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1027).

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## 9. Physical and Chemical Properties

**Appearance:**

White crystals.

**Odor:**

Odorless.

**Solubility:**

1 g /0.6 cc in water

**Density:**

2.455

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

132C (270F)

**Melting Point:**

59.5C (140F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Oxides of nitrogen, Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Reducing agents, hydrides, halogens, combustible material, zinc, selenium, tellurium and hydrogen azide.

**Conditions to Avoid:**

Heat, dusting, contact with combustibles and incompatibles.

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## 11. Toxicological Information

**Toxicological Data:**

Anhydrous: Oral rat LD50: 300 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector. Hydrate: Oral rat LD50: 300 mg/kg. Investigated as a tumorigen and mutagen.

**Reproductive Toxicity:**

Other cadmium compounds are related to teratogenic and reproductive system effects.

-----\Cancer Lists\-----			
-			
Ingredient	---NTP Carcinogen---		IARC
Category	Known	Anticipated	
-----			
-			
Cadmium Nitrate (10325-94-7)	No	Yes	1

## 12. Ecological Information

**Environmental Fate:**

This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. This material is expected to significantly bioaccumulate.

**Environmental Toxicity:**

This material is expected to be very toxic to aquatic life.

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## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## 14. Transport Information

### Domestic (Land, D.O.T.)

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**Proper Shipping Name:** OXIDIZING SOLID, TOXIC, N.O.S. (CADMIUM NITRATE)

**Hazard Class:** 5.1, 6.1

**UN/NA:** UN3087

**Packing Group:** II

**Information reported for product/size:** 125G

### International (Water, I.M.O.)

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**Proper Shipping Name:** OXIDIZING SOLID, TOXIC, N.O.S. (CADMIUM NITRATE, 4-HYDRATE)

**Hazard Class:** 5.1, 6.1

**UN/NA:** UN3087

**Packing Group:** II

**Information reported for product/size:** 125G

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## 15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
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Ingredient                                     TSCA   EC     Japan
Australia
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-
Cadmium Nitrate (10325-94-7)                 Yes    Yes    Yes     Yes

-----\Chemical Inventory Status - Part 2\-----
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Ingredient                                     Korea  --Canada--
                                   DSL    NDSL   Phil.
-----
Cadmium Nitrate (10325-94-7)                 Yes    Yes    No      No

-----\Federal, State & International Regulations - Part 1\-----
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                                   -SARA 302-   -----SARA 313-----
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Ingredient                                     RQ      TPQ      List   Chemical
Catg.
-----
--
Cadmium Nitrate (10325-94-7)                 No      No       No     Cadmium comp
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-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Cadmium Nitrate (10325-94-7)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: Yes      Pressure: No  
Reactivity: No      (Pure / Solid)

### **WARNING:**

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

**Australian Hazchem Code:** 1[T]

**Poison Schedule:** None allocated.

### **WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## **16. Other Information**

**NFPA Ratings:** Health: **3** Flammability: **0** Reactivity: **1** Other: **Oxidizer**

### **Label Hazard Warning:**

DANGER! CONTAINS CADMIUM. CANCER HAZARD. AVOID CREATING DUST. CAN CAUSE LUNG AND KIDNEY DISEASE. CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure. MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND EYES. AFFECTS BLOOD AND PROSTATE. MAY AFFECT THE REPRODUCTIVE SYSTEM. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

### **Label Precautions:**

Do not breathe dust.

Do not get in eyes, on skin, or on clothing.

Store in a tightly closed container.

Do not enter storage areas unless adequately ventilated.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep from contact with clothing and other combustible materials.

### **Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

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