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**** MATERIAL SAFETY DATA SHEET ****

Cadmium Nitrate Tetrahydrate
03780

*** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ***

MSDS Name: Cadmium Nitrate Tetrahydrate
Catalog Number: S79937, S79937-1, S79937-1, C13-100, C13-500
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	%	EINECS#
10022-66-1	Cadmium nitrate, tetrahydrate	100	unlisted
10325-94-7	Cadmium nitrate	-	233-710-6

Hazard Symbols: XN O
Risk Phrases: 20/21/22 8

*** SECTION 3 - HAZARDS IDENTIFICATION ***

EMERGENCY OVERVIEW

Appearance: white solid.
Danger: Strong oxidizer. Contact with other material may cause a fire. Harmful if swallowed. May cause methemoglobinemia. May cause respiratory irritation. Effects based upon animal studies. May cause eye and skin irritation. May cause severe respiratory tract irritation. May cause kidney damage. Causes severe respiratory tract irritation. Cancer hazard. Contains cadmium. Avoid creating dust.
Target Organs: Kidneys, liver, lungs, skeletal structures.

Potential Health Effects

Eye: Causes eye irritation.

Skin: Causes severe skin irritation. Chronic inhalation may cause pulmonary emphysema.

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, 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, chest pain, fever, muscular cramps, and headache.

Chronic: May cause respiratory tract cancer. Prolonged or repeated exposure may cause methemoglobinemia, cyanosis, convulsions, tachycardia, and kidney damage. May cause anemia and other blood cell abnormalities. Chronic inhalation may cause pulmonary emphysema.

*** SECTION 4 - FIRST AID MEASURES ***

Eyes: Flush eyes with plenty of water for at least 15 minutes.

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. If breathing is difficult, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physicians:

Treat symptomatically and

Antidote:

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

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*** 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 combustible materials may cause a 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.

Autoignition Temperature:

Not applicable.
Flash Point: Not applicable.
Explosion Limits: Lower: Not available.
Explosion Limits: Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 1; Special

*** 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 Safety section. Do not use vacuum or air to clean up. 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 and accumulations. Do not reuse. Do not empty into drains. Do not use in confined spaces. Do not use in poorly ventilated areas. Do not use in areas where 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.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cadmium nitrate, tetrahydrate	0.002 mg/m ³ TWA (respirable as Cd) (listed under **)	9 mg/m ³ IDLH (respirable as Cd) (listed under **)	2.5 ug/m ³ action level (as Cd); 5 ug/m ³ TWA (as Cd) (do not eat, drink or chew to bacco or gum or apply cosmetics in regulated areas; carcinogen; dust can cause lung disease; See 29 CFR 1910.1027)
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[Release: See 29
CFR 1910.1027]

OSHA Vacated PELs:

Cadmium nitrate, tetrahydrate;
Cadmium nitrate
Cadmium nitrate
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. Always use respirator when necessary.

*** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Physical State:

Solid

Color:

White

Odor:

Odorless

PH:

Not available.

Vapor Pressure:

Not available.

Vapor Density:

Not available.

Evaporation Rate:

Not available.

Viscosity:

Not available.

Boiling Point:

132 deg C

Freezing/Melting Point:

59.5 deg C

Decomposition Temperature:

Not available.

Solubility in water:

2.15% (20 C)

Specific Gravity/Density:

2.45 @ 17C

Molecular Formula:

Cd(NO3)2.4H2O

Molecular Weight:

308.47

*** SECTION 10 - STABILITY AND REACTIVITY ***

Chemical Stability:

Stable.
Conditions to Avoid:
Incompatible materials, combustible materials, organic materials, reducing agents.

Incompatibilities with Other Materials:
Reducing agents, phosphorus, copper, copper alloys, and organic materials.

Hazardous Decomposition Products:
Nitrogen dioxide, toxic fumes.

Hazardous Polymerization: Has not been reported.

*** SECTION 11 - TOXICOLOGICAL INFORMATION ***

RTCSH:

CAS# 10022-68-1: EV1850000
CAS# 10325-94-7: EV1750000

LD50/CD50: 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

Carcinogenicity:

Cadmium nitrate, tetrahydrate
ACGIH: A2 - Suspected Human Carcinogen (as Cd) (listed as ** unde

California: carcinogen; Initial date 10/1/87 (listed as ** unde

NIOSH: potential occupational carcinogen (dust and fume, as Cd) (

OSHA: known carcinogen (listed as ** unde

IARC: Group 1 carcinogen (listed as ** unde

ACGIH: A2 - Suspected Human Carcinogen (as Cd) (listed as ** unde

California: carcinogen; Initial date 10/1/87 (listed as ** unde

NIOSH: potential occupational carcinogen (dust and fume, as Cd) (

OSHA: possible select carcinogen (listed as ** unde

IARC: Group 1 carcinogen (listed as ** unde

Epidemiology: cited recent epidemiological evidence of a significant excess

NIOSH: cited recent epidemiological evidence of a significant excess

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CFR 1910.1027]

OSHA Vacated PELs:

Cadmium nitrate, tetrahydrate;
Cadmium nitrate
Cadmium nitrate
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

*** SECTION 12 - ECOLOGICAL INFORMATION ***

Ecotoxicity:
Fish: Rainbow trout: 55ug/L; 48H; Fathead Minnow: 820ug/L; 48H

*** 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 U-series: None listed.

RCRA U-series: None listed.

*** SECTION 14 - TRANSPORT INFORMATION ***

US DOT
Shipping Name: THIS PACKAGE CONFORMS TO 49CFR 173.4

Canadian TDG
No information available.

*** 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

Chemical Test Rules

None of the chemicals are 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.

SARA

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 TPO.

SARA Codes

CAS # 10022-68-1: acute, chronic, flammable.

CAS # 10325-94-7: acute, chronic, flammable.

Section 113

This material contains Cadmium nitrate, tetrahydrate (listed as ** unde

reporting requirements of Section 313 of SARA Title III and 40 CFR

Part 372.

This chemical is not at a high enough concentration to be reportable

under Section 313.

Clean Air Act:

Cadmium nitrate, tetrahydrate (HAP) listed as ** no name ** is listed as a hazardous air

pollutant (HAP).

CAS# 10325-94-7 listed as ** no name ** is listed as a hazardous air

pollutant (HAP).

This material does not contain any Class 1 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

CWA 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

Cadmium nitrate, tetrahydrate can be found on the following state

2,556

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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 a chemical known to the state of California to cause cancer. This product contains Cadmium nitrate, listed as a chemical known to the state of California to cause cancer. This product contains Cadmium nitrate, listed as 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

Risk Phrases: R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed
R 8 Contact with combustible material may cause fire.

Safety Phrases: S 22 Do not breathe dust.
S 23 Do not get on clothing.
S 24 Wear protective clothing.
S 25 Avoid contact with skin and eyes.
S 26 In case of contact with skin, wash immediately with plenty of water.
S 27 In case of contact with eyes, rinse immediately with plenty of water.
S 37 Wear protective gloves.
S 38 Wear eye protection.
S 39 Wear protective footwear.

WGK (Water Danger/Protection)
CAS# 10022-68-1: No information available.

United Kingdom Occupational Exposure Limits

United Kingdom Maximum Exposure Limits
CAS# 10022-68-1: MEL-United Kingdom, TWA (listed as ** undefined **): 0.025 mg/m³ TWA (as Cd, except cadmium oxide fume, cadmium sulphide and cadmium

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

This product has a WHMIS classification of C, D1A, D2A.
CAS# 10325-94-7 is not listed on Canada's Ingredient Disclosure List.
CAS# 10325-94-7 is listed on Canada's Ingredient Disclosure List.

Exposure Limits
CAS# 10022-68-1: OEL-ARAB Republic of Egypt: TWA 0.05 mg(Cd)/m³

OEL-AUSTRIA: TWA 0.05 mg(Cd)/m³

OEL-BELGIUM: TWA 0.05 mg(Cd)/m³

OEL-CZECHOSLOVAKIA: TWA 0.05 mg(Cd)/m³

OEL-DENMARK: TWA 0.01 mg(Cd)/m³

OEL-FINLAND: TWA 0.02 mg(Cd)/m³

OEL-GERMANY: TWA 0.05 mg(Cd)/m³

OEL-INDIA: TWA 0.05 mg(Cd)/m³

OEL-JAPAN: TWA 0.05 mg(Cd)/m³

OEL-NETHERLANDS: TWA 0.02 mg(Cd)/m³

OEL-PHILIPPINES: TWA 0.02 mg(Cd)/m³

OEL-RUSSIA: TWA 0.01 mg(Cd)/m³

OEL-SWEDEN: TWA 0.02 mg(Cd)/m³

OEL-SWITZERLAND: TWA 0.05 mg(Cd)/m³

OEL-THAILAND: TWA 0.2 mg(Cd)/m³

OEL-TURKEY: TWA 0.2 mg(Cd)/m³

OEL-UNITED KINGDOM: TWA 0.01 mg(Cd)/m³

OEL-IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV

OEL-IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV

OEL-IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV

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Information for their particular purposes. In no way shall the company 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, however arising, even if the company has been advised of the possibility of such damages.

MSDS Creation Date: 3/24/1999 Revision #3 Date: 12/03/2002

*** SECTION 16 - ADDITIONAL INFORMATION ***

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