

Cadmium
03720

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

MSDS Name: Cadmium

Catalog Numbers:

S79935, C3 500, C3-500, C3500

Synonyms:

Colloidal cadmium

Company Identification: Fisher Scientific

1 Reagent Lane

Fairlawn, 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#-
7440-43-9	Cadmium	ca.100	231-152-8

Hazard Symbols: T+ F
Risk Phrases: 11 25 26 45

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: silver white.

Danger! Flammable solid. Air sensitive. Cancer suspect agent.

Harmful if swallowed. May cause lung damage. May cause liver and kidney damage. Causes eye and skin irritation. Causes digestive and respiratory tract irritation. Inhalation of fumes may cause metal-fume fever. May cause reproductive and fetal effects. May be fatal if inhaled.

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

Potential Health Effects

Eye:

Causes eye irritation.

Skin:

Causes skin irritation.

Ingestion:

Harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion may produce fluid loss, acute renal failure, and cardiopulmonary depression.

Inhalation:

May be fatal if inhaled. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. Damage may be delayed. May cause nausea, vomiting, abdominal pain, diarrhea, chest tightness, weakness, and delayed pulmonary edema. In humans inhalation causes

proteinuria, an excess of protein in the urine.

Chronic:

May cause respiratory tract cancer. Repeated inhalation may cause chronic bronchitis. Chronic inhalation may cause nasal septum ulceration and perforation. Cadmium and compounds may cause lung, liver and kidney damage and lung and prostate cancer in humans. May cause loss of smell, emphysema, anemia, bone demineralization, and lung fibrosis.

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

Eyes:

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

Skin:

Get medical aid. Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion:

Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation:

Get medical aid immediately. Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. DO NOT use mouth-to-mouth respiration. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician:

Blood cadmium levels are not indicative of exposure. Administration of Calcium Disodium EDTA may be useful in acute poisoning with its use at the discretion of qualified medical personnel. Persons with kidney disease, chronic respiratory disease, liver disease, or skin disease may be at increased risk from exposure to this substance.

**** 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. Dust can be an explosion hazard when exposed to heat or flame. Flammable solid. May burn rapidly with flare burning effect. May re-ignite after fire is extinguished. Dangerous fire hazard in the form of dust when exposed to heat or flame.

Extinguishing Media:

Do NOT use water directly on fire. Use dry chemical to fight fire. Cool containers with flooding quantities of water until well after fire is out.

**** 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. Avoid generating dusty conditions. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Place under an inert atmosphere.

**** 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. Use spark-proof tools and explosion proof equipment. Avoid contact with skin and eyes. Do not breathe dust, vapor, mist, or gas. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Avoid contact with heat, sparks and flame. Do not ingest or inhale. Handle under an inert atmosphere. Store protected from air. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage:

Keep away from heat and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air. Store under an inert atmosphere.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use only under a chemical fume hood.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA-FinalPELs
Cadmium	elemental, as Cd: 0.01 mg/m3	NIOSH Potential Occupational Carcinogen - see Appendix A Potential NIOSH carcinogen.	dust: 0.2 mg/m3 TWA; C 0.6 mg/m3; apply only to exempt operations; C 0.6 mg/m3; apply only to exempt operations; 2.5 ug/m3 TWA action level; 5 ug/m3 TWA; do not eat, drink or chew tobacco or gum or

OSHA Vacated PELs:
Cadmium:
see 1910.1027

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 prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR §1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

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

Physical State: Powder
Appearance: silver white
Odor: odorless
pH: Not available.
Vapor Pressure: 1 mm Hg @ 394 deg C
Vapor Density: Not available.
Evaporation Rate: Not applicable.
Viscosity: Not applicable.
Boiling Point: 765 deg C
Freezing/Melting Point: 321 deg C
Autoignition Temperature: Not available.
Flash Point: Not available.
NFPA Rating: (est.) Health: 2; Flammability: 2; Reactivity: 0
Explosion Limits, Lower: Not available.
Upper: Not available.
Decomposition Temperature: Not available.
Solubility: Insoluble.
Specific Gravity/Density: 8.65 @ 25°C
Molecular Formula: Cd
Molecular Weight: 112.41

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

Chemical Stability:
Oxidizes when exposed to air. Easily tarnishes in moist air. Powder or liquid is pyrophoric.

Conditions to Avoid:
Incompatible materials, ignition sources, dust generation, exposure to air, excess heat.

Incompatibilities with Other Materials:
Air, nitric acid, hydrochloric acid, hydrazoic acid, nitryl fluoride,
ammonium nitrate, zinc, oxidizing agents, acids, hydrogen azide, potassium, sulfur, selenium, tellurium, metals, carbonates, cyanides (e.g. potassium cyanide, sodium cyanide), hydroxides, reducing agents
(strong, e.g. aluminum carbide, chlorosilane, hydrogen phosphide, lithium hydride).

Hazardous Decomposition Products:

Nitrogen oxides, toxic cadmium oxide fumes.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:

CAS# 7440-43-9: EU9800000

LD50/LC50:

CAS# 7440-43-9: Inhalation, rat: LC50 =25 mg/m³/30M; Oral, mouse:
LD50 = 890 mg/kg.

Carcinogenicity:

Cadmium -

ACGIH: elemental, as Cd: A2-suspected human carcinogen

California: carcinogen; initial date 10/1/87

NIOSH: occupational carcinogen

NTP: Suspect carcinogen

OSHA: Possible Select carcinogen

IARC: Group 1 carcinogen

Epidemiology:

Occupational exposure to cadmium has been implicated in a significant increase in prostate and respiratory tract cancer. There is 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:

Oral, rat: TDLo = 155 mg/kg (male 13 week(s) pre-mating and female 13 week(s) pre-mating - 3 week(s) after conception) Effects on Newborn - growth statistics (e.g.%, reduced weight gain) and Effects on Newborn - behavioral.; Oral, rat: TDLo = 23 mg/kg (female 1-22 day(s) after conception) Specific Developmental Abnormalities - blood and lymphatic systems (including spleen and marrow).; Oral, mouse: TDLo = 1700 mg/kg (female 8-12 day(s) after conception) Effects on Newborn - viability index (e.g., # alive at day 4 per # born alive) and Effects on Newborn - growth statis

Reproductive Effects:

Oral, rat: TDLo = 21500 ug/kg (multigenerations) Fertility - pre-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea).; Intraperitoneal, rat: TDLo = 1124 ug/kg (male 1 day(s) pre-mating) Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count).

Neurotoxicity:

No information available.

Mutagenicity:

Micronucleus Test: Mouse, Embryo = 6 umol/L.; Cytogenetic Analysis: Hamster, Ovary = 1 umol/L.

Other Studies:

The long-term ingestion of water, beans and rice contaminated with cadmium has been proposed as the probable cause of crippling condition (itai-itai disease) among Japanese women who have had multiple pregnancies. Characteristics of the disorder are: pain in the back and joints, a waddly gait, osteomalacia, bone fractures, and occasional fatal renal failure.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:

Fish: Rainbow trout: TLm = 30 ppm; 24 Hr; Hard water
Fish: Striped bass: LC50 = 0.001 ppm; 24-48 Hr; Static bioassay
Fish: Fathead Minnow: TL50 = 7.2 ppm; 96 Hr; Unspecified
Fish: Bluegill/Sunfish: LCO = 0.08 ppm; 96 Hr; Static bioassay (Hard water)

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Chemical waste generators must determine whether a discarded chemical is class if as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Part Additionally, waste generators must consult state and local hazardous waste regu ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT

Shipping Name: FLAMMABLE SOLID, INORGANIC, N.O.S.
(CADMIUM)

Hazard Class: 4.1

UN Number: UN3178

Packing Group: III

Canadian TDG

Shipping Name: FLAMMABLE SOLID NOS (CADMIUM METAL)

Hazard Class: 4.1

UN Number: UN1325

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL

TSCA

CAS# 7440-43-9 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.

SARA

Section 302 (RQ)

CAS# 7440-43-9: final RQ = 10 pounds (4.54 kg) (no reporting of releas

Section 302 (TPQ)

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 7440-43-9: acute, chronic, flammable.

Section 313

This material contains Cadmium (CAS# 7440-43-9, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:

CAS# 7440-43-9 listed as ** no name ** is listed as a hazardous air

pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

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

CAS# 7440-43-9 is listed as a Priority Pollutant under the Clean Water Act.

CAS# 7440-43-9 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 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

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

WARNING: This product contains Cadmium, a chemical known to the state of California to cause cancer.

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

California No Significant Risk Level:

CAS# 7440-43-9: inhalation: no significant risk level = 0.05 ug/day

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: T+ F

Risk Phrases:

R 11 Highly flammable.

R 25 Toxic if swallowed.

R 26 Very toxic by inhalation.

R 45 May cause cancer.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

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

WGK (Water Danger/Protection)

CAS# 7440-43-9: No information available.

United Kingdom Occupational Exposure Limits

Canada

CAS# 7440-43-9 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of B4, D1A, D2A.

CAS# 7440-43-9 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 7440-43-9: OEL-ARAB Republic of Egypt:TWA 0.05 mg/m3

OEL-AUSTRALIA:TWA 0.05 mg/m3

OEL-BELGIUM:TWA 0.05 mg/m3

OEL-CZECHOSLOVAKIA:TWA 0.05 mg/m3;STEL 0.1 mg/m3

OEL-DENMARK:TWA 0.01 mg/m3

OEL-FINLAND:TWA 0.02 mg/m3;Carcinogen
OEL-GERMANY;Carcinogen
OEL-INDIA:TWA 0.05 mg/m3
OEL-JAPAN:TWA 0.05 mg/m3
OEL-THE NETHERLANDS:TWA 0.02 mg/m3;STEL 0.1 mg/m3
OEL-THE PHILIPPINES:TWA 0.2 mg/m3
OEL-RUSSIA:TWA 0.01 mg/m3;STEL 0.05 mg/m3
OEL-SWEDEN:TWA 0.02 mg/m3;Carcinogen
OEL-SWITZERLAND:TWA 0.05 mg/m3
OEL-THAILAND:TWA 0.2 mg/m3;STEL 0.5 mg/m3
OEL-TURKEY:TWA 0.2 mg/m3
OEL-UNITED KINGDOM:TWA 0.01 mg/m3
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 6/28/1999 Revision #2 Date: 8/02/2000

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 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, howsoever arising, even if the company has been advised of the possibility of such damages.
