MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	**CADMIUM, 99.95%, SHOT**
Catalog #	866
Version #	02
Revision date	14-Oct-2009
CAS #	7440-43-9
Manufacturer information	GFS Chemicals, Inc. P.O. Box 245 Powell, OH 43065 US www.gfschemicals.com Fax 740-881-5989 Phone 740-881-5501 Toll Free 800-858-9682 Emergency Assistance Chemtrec 800-424-8300

2. Hazards Identification

Emergency overview	DANGER Toxic if swallowed. Cancer hazard. Prolonged exposure may cause chronic effects.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Ingestion.
Eyes	Contact with eyes may cause irritation. Avoid contact with eyes.
Skin	May cause skin irritation. Avoid contact with the skin.
Inhalation	Toxic by inhalation. May cause irritation of respiratory tract. May cause cancer by inhalation. Do not breathe dust/fume/gas/mist/vapors/spray.
Ingestion	Toxic if swallowed. Irritating. May cause nausea, stomach pain and vomiting. Do not ingest.
Target organs	Blood. Kidneys.
Chronic effects	Unconsciousness. Edema. Cyanosis (blue tissue condition, nails, lips, and/or skin). Kidney injury may occur.
Signs and symptoms	Unconsciousness. Cyanosis (blue tissue condition, nails, lips, and/or skin). Edema. Proteinuria.
Potential environmental effects	Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
CADMIUM	7440-43-9	90 - 100

Composition comments

US OSHA Table Z-2: Ceiling Limit Value

CADMIUM	7440-43-9	0.3 MGM3 Fume.
CADMIUM	7440-43-9	0.6 MGM3 Dust.

US OSHA Table Z-2: Time Weighted Average (TWA)

CADMIUM	7440-43-9	Dust. MGM3 - 0.2
CADMIUM	7440-43-9	Fume. MGM3 - 0.1

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention if irritation develops and persists.

Skin contact	Remove and isolate contaminated clothing and shoes. Before washing use a dry brush to remove dust from skin. Immediately flush skin with plenty of water. Get medical attention if irritation develops and persists. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse. Call a physician or Poison Control Center immediately.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician if symptoms develop or persist.
Ingestion	Rinse mouth. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth thoroughly. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General advice	IF exposed or concerned: Get medical advice/attention. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties	No unusual fire or explosion hazards noted. The product is not flammable.
Extinguishing media	
Suitable extinguishing media	Water. Dry powder.
Protection of firefighters	
Protective equipment and precautions for firefighters	In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.
Specific methods	In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep upwind. Keep out of low areas. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering them. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
Methods for containment	This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Sweep up or gather material and place in appropriate container for disposal. Avoid dust formation. Following product recovery, flush area with water.

7. Handling and Storage

Handling	Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin. Avoid contact with eyes. Do not use in areas without adequate ventilation. Wear personal protective equipment. Avoid prolonged exposure. Wash thoroughly after handling. Avoid release to the environment. Handle and open container with care.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Material	CAS #	Type	Value	Form
CADMIUM	7440-43-9	TWA	0.002 mg/m3	Respirable fraction.
			0.01 mg/m3	

U.S. - OSHA

Material	CAS #	Type	Value	Form
CADMIUM	7440-43-9	Ceiling	0.6 mg/m3	Dust.
			0.3 mg/m3	Fume.
		TWA	0.005 mg/m3	
			0.1 mg/m3	Fume.
			0.2 mg/m3	Dust.

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Respiratory protection Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection Rubber gloves.

Eye / face protection Wear chemical goggles.

Skin protection Wear chemical protective equipment that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Wear protective gloves.

General hygeine considerations Wash hands after handling and before eating. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance Shot.

Color silver and metallic.

Odor Odorless.

Odor threshold Not available.

Physical state Solid.

Form Solid.

pH Not available.

Melting point 609.8 °F (321 °C)

Freezing point 609.8 °F (321 °C)

Boiling point 1412.6 °F (767 °C)

Flash point Not available.

Evaporation rate Not available.

Flammability Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Vapor pressure Not available.

Vapor density Not available.

Specific gravity 8.64

Relative density 8.642 g/cm3

Solubility (water) Insoluble

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature	482 °F (250 °C) estimated
Decomposition temperature	Not available.
Percent volatile	0 %
Molecular weight	112.4100 g/mol
Molecular formula	Cd

10. Chemical Stability & Reactivity Information

Chemical stability	Material is stable under normal conditions.
Conditions to avoid	Moisture.
Incompatible materials	Acids.
Hazardous decomposition products	Hydrogen gas.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Acute effects

Acute Inhalation: LC 50

CADMIUM	7440-43-9	Rat 0.025 mg/l 900 d

Acute Oral: LD 50

CADMIUM	7440-43-9	Mouse 890 mg/kg
CADMIUM	7440-43-9	Rat 225 mg/kg

Acute Toxicity other routes: LD 50

CADMIUM	7440-43-9	Mouse 5.7 mg/kg Intraperitoneal

Toxicology data for the preparation

Acute LD50: 5.7 mg/kg, Mouse, Other
Acute LC50: 0.03 mg/l, Rat, Inhalation
Acute LD50: 890 mg/kg, Mouse, Oral
Acute LD50: 225 mg/kg, Rat, Oral

Local effects	Blood disorder may occur after ingestion.
Chronic effects	Hazardous by OSHA criteria. Repeated absorption may cause disorder of central nervous system, liver, kidneys and blood. Prolonged exposure may cause chronic effects.
Subchronic effects	Blood disorder may occur after prolonged inhalation. Blood disorder may occur after ingestion. Blood disorder may occur after prolonged skin contact. Kidney injury may occur.
Carcinogenicity	Hazardous by OSHA criteria. Cancer hazard. Risk of cancer cannot be excluded with prolonged exposure.

IARC Monographs: Evidence of carcinogenicity in humans

CADMIUM	7440-43-9	Sufficient data.

US ACGIH Threshold Limit Values: A2 carcinogen

CADMIUM	7440-43-9	Group A2 Suspected human carcinogen.

US NTP Report on Carcinogens: Known carcinogen

CADMIUM	7440-43-9	Known carcinogen.

US OSHA Specifically Regulated Substances: Cancer hazard

CADMIUM	7440-43-9	Cancer hazard.

Further information	Symptoms may be delayed.

12. Ecological Information

Ecotoxicity Components of this product are hazardous to aquatic life. Contains a substance which causes risk of hazardous effects to the environment.

Aquatic plant toxicity: LC 50

CADMIUM	7440-43-9	Red algae (Gracilaria tenuistipitata) 300 mg/l 18 d Renewal Mortality

Fish Toxicity: EC 50

CADMIUM	7440-43-9	Killifish (Nothobranchius guentheri) 0.64 - 0.84 mg/l 24 h Static Mortality

Invertebrate Toxicity: EC 50

CADMIUM	7440-43-9	Blue crab (Callinectes sapidus) 0.00025 mg/l Not reported Mortality
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.1399 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.0254 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.0491 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Fleshy prawn (Penaeus chinensis) 0.072 mg/l 30 h Not reported Mortality
CADMIUM	7440-43-9	Water flea (Daphnia obtusa) 0.54 - 0.62 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.0244 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.1467 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.2288 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.2501 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.3193 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.3263 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.3553 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.1294 mg/l 48 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia obtusa) 0.57 - 0.67 mg/l 24 h Static Intoxication
CADMIUM	7440-43-9	Water flea (Daphnia magna) 0.1312 mg/l 48 h Static Intoxication

Invertebrate Toxicity: LD 50

CADMIUM	7440-43-9	Cockle (Cerastoderma edule) 10 mg/l 96 h Not reported Mortality

Micro-organisms Toxicity: LC 50

CADMIUM	7440-43-9	Turbellarian, flatworm (Dugesia tigrina) 2.25 mg/l 96 h Static Mortality
CADMIUM	7440-43-9	Green flagellate (Tetraselmis gracilis) 3.2 mg/l 48 h Not reported Mortality
CADMIUM	7440-43-9	Green flagellate (Tetraselmis gracilis) 1.8 mg/l 96 h Not reported Mortality

Environmental effects An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic organisms.

Persistence and degradability Not available.

13. Disposal Considerations

Waste codes D006: Waste Cadmium

Disposal instructions Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products Not applicable.

14. Transport Information

DOT

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

CADMIUM	7440-43-9	0.1 % N078

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

CADMIUM	7440-43-9	N078 Listed.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of New and Existing Chemicals (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

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

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

CADMIUM 7440-43-9 Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

CADMIUM 7440-43-9 Listed: October 1, 1987 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

CADMIUM 7440-43-9 Listed: May 1, 1997 Developmental toxin.

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

CADMIUM 7440-43-9 Listed: May 1, 1997 Male reproductive toxin.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

CADMIUM 7440-43-9 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

CADMIUM 7440-43-9 Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard

CADMIUM 7440-43-9 Special hazard.

16. Other Information

Further information	HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings	Health: 2* Flammability: 0 Physical hazard: 0
NFPA ratings	Health: 2 Flammability: 0 Instability: 0
Disclaimer	The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
Issue date	14-Oct-2009

This data sheet contains changes from the previous version in section(s):	This document has undergone significant changes and should be reviewed in its entirety.