

## 1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	<b>Cadmium Oxide, Enriched Cadmium Oxide</b>
Form	Fine, brown crystals or powder
CAS No.	1306-19-0
Chemical Formula	CdO
Molecular Weight	128.41 amu
Synonyms	Cadmium(II) oxide, cadmium monoxide
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053  *May include subsidiaries or affiliate companies/divisions
Email	<a href="mailto:iusa@isoflex.com">iusa@isoflex.com</a>
Website	<a href="http://www.isoflex.com">www.isoflex.com</a>
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

## 2. HAZARDS IDENTIFICATION

**Emergency Overview** 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. MAY CAUSE IRRITATION TO SKIN AND EYES. AFFECTS BLOOD AND PROSTATE. MAY AFFECT THE REPRODUCTIVE SYSTEM.

<b>Hazard Class:</b>	6.1 - Poison
<b>Health Rating</b>	3 - Severe (Cancer Causing)
<b>Flammability Rating</b>	0 - None
<b>Reactivity Rating</b>	0 - None
<b>Contact Rating</b>	3 - Severe (Life)
<b>Lab Protective Equip:</b>	GOGGLES, LAB COAT, PROPER GLOVES
<b>Storage Color Code:</b>	Blue (Health)

**NFPA Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 4    Flammability = 0    Reactivity = 0**



**HMIS Ratings:** (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

**Health Hazard = 3    Flammability = 0    Physical Hazard = 0**

<b>HEALTH HAZARD</b>	<b>3</b>
<b>FLAMMABILITY</b>	<b>0</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>
<b>PERSONAL PROTECTION</b>	

### Potential Health Effects

#### *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: weakness, fever, headache, chills, sweating, nausea and muscular pain. Can cause pulmonary edema, liver and kidney damage, death. Symptoms from inhalation may be delayed for as long as 24 hours.

#### *Ingestion*

**Toxic.** Ingested cadmium salts may cause severe and sometimes fatal poisonings. Symptoms can include severe nausea, vomiting, diarrhea, abdominal pain, 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*

May cause irritation, redness and pain

#### *Eye Contact*

May cause 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.

#### *Note to Physician*

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

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name:	Cadmium Oxide
CAS No.:	1306-19-0
Chemical Formula:	CdO
Molecular Weight:	128.41 amu

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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.

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#### 5. FIREFIGHTING MEASURES

*Flammability*

Not considered a fire hazard

*Explosion Hazard*

Not considered an explosion hazard

*Suitable Extinguishing Media*

Use any means suitable for extinguishing surrounding fire.

*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

*Personal Precautions*

Wear appropriate personal protective equipment as specified in Section 8. 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. Do not eat, drink, or smoke in the workplace.

*Methods for Containment*

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Isolate personnel from spills at a 25-meter distance, or from fire at 800 meters (1/2 mile). 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. Bioaccumulation may occur in plants and seafood. Severe marine pollutant.

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#### 7. HANDLING AND STORAGE

*Handling*

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.

*Storage*

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Wear special protective equipment (Section 8) for maintenance break-in or where exposures may exceed established exposure levels.

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#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Airborne Exposure Limits**

*OSHA Threshold Limit Value (PEL)*      5 µg/m<sup>3</sup> of Cadmium (TWA), 2.5 µg/m<sup>3</sup> (Action Level)

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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.

### Personal Protective Equipment

#### 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 into the general work area. Please refer to the ACGIH document *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

#### Respiratory Protection

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. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit-testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29 CFR 1910.134 for details.

#### Skin Protection

Wear protective gloves and clean body-covering clothing.

#### Eye Protection

Use chemical safety goggles. 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

<i>Appearance:</i>	Fine, brown crystals or powder
<i>Odor:</i>	Odorless
<i>Density:</i>	8.15
<i>% Volatiles by Volume</i> @ 21 °C (70 °F):	0
<i>Boiling Point:</i>	1559 °C (2838 °F) Sublimes
<i>Melting Point:</i>	950 °C (1742 °F) crystals decompose; < 1426 °C (< 2598 °F) powder
<i>Vapor Density (Air=1):</i>	No information found
<i>Vapor Pressure (mm Hg):</i>	1.3 mbar @ 1000 °C
<i>Evaporation Rate (BuAc=1):</i>	No information found
<i>Solubility:</i>	Insoluble in water
<i>pH:</i>	No information found

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## 10. STABILITY AND REACTIVITY

<i>Stability</i>	Stable under ordinary conditions of use and storage
<i>Hazardous Decomposition Products</i>	Toxic cadmium oxide fumes may be formed at high temperatures (> 900 °C).
<i>Hazardous Polymerization</i>	Will not occur
<i>Materials to Avoid</i>	Explodes when heated with magnesium. Cadmium dust presents a fire/explosion hazard if reacted with oxidizing agents, metals, hydrogen azide, zinc, selenium or tellurium.
<i>Conditions to Avoid</i>	Dusting and materials to avoid

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## 11. TOXICOLOGICAL INFORMATION

<i>Oral - Rat - LD50</i>	72 mg/kg; Inhalation - Mouse LC50: 250 mg/m <sup>3</sup> /2-hour - Investigated as a tumorigen, mutagen, reproductive effector
<i>Reproductive Toxicity</i>	Reproductive effects recorded on humans; may cause teratogenic effects
<i>Carcinogenicity</i>	<b>NTP:</b> Yes <b>IARC:</b> Yes <b>OSHA:</b> Yes

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## 12. ECOLOGICAL INFORMATION

<i>Toxicity</i>	Toxicity to fish LC50 - <i>Pimephales promelas</i> (Fathead minnow) - 7.029 mg/l - 96.0 h
<i>Other Information</i>	Very toxic to aquatic life.

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## 13. DISPOSAL CONSIDERATIONS

Product	Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. 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 closed container and unused contents in accordance with federal, state and local requirements.
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## 14. TRANSPORT INFORMATION

### Domestic (Land, DOT)

Proper Shipping Name	CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE)
Hazard Class	6.1
UN No.	UN2570
Packing Group	III
Information reported for product/size	500G

**International (Water, IMO)**

Proper Shipping Name	CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE)
Hazard Class	6.1
UN No.	UN2570
Packing Group	III
Information reported for product/size	500G

**International (Air, ICAO)**

Proper Shipping Name	CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE)
Hazard Class	6.1
UN No.	UN2570
Packing Group	III
Information reported for product/size	500G

**IATA**

Proper Shipping Name	CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE)
Hazard Class	6.1
UN No.	UN2570
Packing Group	III

**15. REGULATORY INFORMATION**

**OSHA Hazards** Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Teratogen, Mutagen.

**SARA 302 Components** The following components are subject to reporting levels established by SARA Title III, Section 302: Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1993-04-24

**SARA 313 Components** The following components are subject to reporting levels established by SARA Title III, Section 313: Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1993-04-24

**SARA 311/312 Hazards** Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right to Know Components** Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1993-04-24

**Pennsylvania Right to Know Components** Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1993-04-24

**New Jersey Right to Know Components** Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1993-04-24

**California Prop. 65 Components** WARNING! This product contains a chemical known to the State of California to cause cancer: Cadmium oxide non-pyrophoric / CAS No. 1306-19-0 / Revision Date 1987-10-01

**California Prop. 65 Components** WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm: Cadmium oxide non-pyrophoric / CAS-No. 1306-19-0 / Revision Date 1987-10-01

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## 16. OTHER INFORMATION

<i>Prepared By</i>	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
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<i>Revision Number</i>	3
<i>Revision Note</i>	Update Supplier Address

### ISOFLEX USA's Commonly Used Abbreviations and Acronyms\*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
IMO	International Maritime Organization
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent

LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
RTK	Right to Know
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

\*One or more of the above-listed items may not appear in this document.

### **General Disclaimer**

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