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Material Safety Data Sheet

Identity: Cadmium Oxide

Formula: CdO

SECTION I - GENERAL INFORMATION

Manufacturer: Advanced Engineering Materials Limited (AEM)

The information below is believed to be accurate and represents the best information available to AEM. However, AEM makes no warranty, expressed or implied with respect to such information and assumes no liability resulting from its use.

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

CAS #	OSHA PEL	ACGIH TLV	%
1306-19-0	5ug (Cd)/m ³	0.05 mg(Cd)/m ³	0.0-100.0%

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Physical States: Solid

Boiling Point: 950.00°C
Melting Point: 1430.00°C
Evaporation Rate: N/A
Solubility in water: Insoluble, soluble in acid and alkalies

Vapor Pressure (vs. air or mmHg): 1mm at 1000°C
Specific Gravity: (H₂O=1): 8.15gm/cc
Flash Point: N/A

Appearance and odor: Red-brown powder and pieces, no odor.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA:

Method Used: Unknown

Explosive Limits: LEL: N/A

UEL: N/A

Extinguishing Media: Product is not flammable. Use suitable extinguishing media for surrounding materials and type of fire.

Special Fire Fighting Procedures:

Firefighters must wear full face, self-contained breathing apparatus with full protective clothing to prevent contact with skin and eyes. Fumes from fire are hazardous. Isolate runoff to prevent environmental pollution.

Unusual Fire and Explosion Hazards:

- When involved in a fire, cadmium oxide may be released.
- When heated to decomposition, cadmium oxide may emit toxic fumes of cadmium.



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-Heated mixtures with magnesium may explode.

SECTION V - REACTIVITY DATA

Stability: Stable

Conditions to Avoid (instability): None

Incompatibility: Magnesium, reducing agents, halogens, hydrides, acids and oxidizing agents.

Hazardous Decomposition or Byproducts: Airborne cadmium fumes, cadmium oxide and hydrogen gas.

Hazardous Polymerization: Will not occur.

Conditions to avoid (hazardous polymerization): None.

SECTION VI - HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other? No

Cadmium oxide is a confirmed human carcinogen with experimental neoplastigenic data. Poison by ingestion, inhalation and intraperitoneal routes. An experimental teratogen. Other experimental reproductive effects. Human systemic effects by inhalation include: change in the sense of smell, change in heart rate, blood pressure increase, an excess of protein in the urine and other kidney or bladder changes. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Cadmium compounds are confirmed carcinogens producing lung tumors. Poison by ingestion. Inhalation of fumes or dusts affects the respiratory tract and kidneys. Brief exposure to high concentrations may result in pulmonary edema and death. Fatal concentrations may be breathed without sufficient discomfort to warn a worker to leave the exposure. Cadmium oxide fumes can cause metal fume fever. (Sax, Dangerous Properties of Industrial Materials, eighth edition)

Signs and Symptoms of Overexposure:

Inhalation: DANGER-POISON. MAY BE FATAL IF INHALED. Throat dryness, cough, headache, vomiting, chest pain, extreme restlessness, irritability, pneumonitis, possibly bronchopneumonia, change in the sense of smell, change in heart rate and an increase in blood pressure.

Ingestion: DANGER-POISON. MAY BE FATAL IF SWALLOWED. Increased salivation, choking, vomiting, abdominal pain, anemia, renal dysfunction, diarrhea, and tenesmus.

Skin: Redness, itching and burning.

Eye: Redness, itching, burning and watering.

Health Hazards (Acute and Chronic):

Inhalation:

Acute: DANGER-POISON. MAY BE FATAL IF INHALED. May cause irritation of the upper respiratory system, vertigo, constriction of the throat, metallic taste in the mouth and cough, dyspnea, cyanosis, tightness



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and chest pain, change in the sense of smell, change in heart rate, increase in blood pressure and excessive protein in urine, flu-like symptoms and pulmonary edema. More severe exposure may cause pulmonary fibrosis/hypertrophy of bronchial vessels and renal necrosis and/or liver damage.

Chronic: May cause irreversible lung injury, pulmonary fibrosis and emphysema, damage to the olfactory nerve. All routes of entry may cause kidney or bladder damage, osteomalacia, osteoporosis, spontaneous fractures, hemolytic and iron-deficiency anemia, weight loss, irritability, renal tubular necrosis, cardiovascular effects, liver damage and prostatic and respiratory cancers.

Ingestion:

Acute: DANGER-POISON. MAY BE FATAL IF SWALLOWED. May cause irritation of mouth and throat, increased salivation, burning sensation and cramps in stomach, nausea, headache and vomiting, weakness, dizziness, diarrhea, shock, convulsions, coma and death.

Chronic: May cause irreversible renal tubular dysfunction, functional changes in the pancreas and adrenal glands. May cause damage to the liver and kidneys.

Skin:

Acute: Direct contact may result in irritation.

Chronic: Repeated or prolonged exposure may result in dermatitis.

Eye:

Acute: Direct contact may cause irritation, redness, pain and smarting.

Chronic: Repeated or prolonged exposure may cause conjunctivitis.

Target Organs: May affect the respiratory system, kidneys, prostate and blood.

Carcinogenicity: NTP? Yes IARC Monographs? Yes OSHA Regulated? Yes

Medical Conditions Aggravated by Exposure: Kidney or respiratory dysfunctions, blood or bone disorders.

Emergency and First Aid Procedures:

Inhalation: Remove victim to fresh air, keep warm and quiet, and give oxygen if breathing is difficult; seek medical attention

Ingestion: Give 1-2 glasses of milk or water and induce vomiting, seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person

Skin: Remove contaminated clothing, brush material off skin, wash affected area with mild soap and water, and seek medical attention if symptoms persist

Eye: Flush eyes with lukewarm water, lifting upper and lower eyelids for at least 15 minutes and seek medical attention



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SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in case material is released or spilled:

Wear appropriate respiratory and protective equipment specified in section VIII. Isolate spill area, provide ventilation and extinguish sources of ignition. Vacuum up spill using a high efficiency particulate absolute (HEPA) air filter and place in a closed container for proper disposal. Take care not to raise dust.

Waste disposal method:

Dispose of in accordance with state, local, and federal regulations. Store in cool, dry area and in tightly sealed container. Wash thoroughly after handling.

Hazard Label Information:

DANGER: CONTAINS CADMIUM Use chemical splash goggles, and avoid creating dust which can cause lung and kidney disease.

Precaution: Store away from magnesium and magnesium alloys

SECTION VIII - CONTROL MEASURES

Protective Equipment Summary (Hazard Label Information):

NIOSH approved respirator, impervious gloves, safety glasses, clothes to prevent contact.

Ventilation:

Local Exhaust: To maintain concentration at low exposure levels.
Special: Enclose process if possible
Mechanical (General): Not recommended
Other: Engineering and work practice

Work/Hygienic/Maintenance Practices:

Implement engineering and work practice controls to reduce and maintain concentration of exposure at low levels. Handle in a controlled, inert atmosphere. Minimize exposure of cadmium by local exhaust and enclosing process if/when possible. Use good housekeeping and sanitation practices. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Shower and change clothes at the end of work shift (DO NOT wear contaminated clothing home). Do not blow dust off clothing or skin with compressed air.

Please be advised that N/A can either mean Not Applicable or No Data Has Been Established