

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

Product Identifier:

Identification as on the label/Trade name: Cadmium Oxide, Enriched Cadmium Oxide

Molecular weight: 128.41

Chemical formula: CdO

Synonyms: Cadmium (II) oxide, cadmium monoxide.

Details of the supplier of the Safety Data Sheet:

Neonest AB
Storgatan 70C, Solna
SE-17152
Sweden

Contact details:

+46-76-219-9731

24-hour Emergency Contact:

Swedish Poisons Centre
Phone: 112 - Ask for Poisons Information, 112 – begär Giftinformation.

Other International Contacts:

CHEMTREC 24-hour: +1-703-741-5500 (US + Worldwide)
NHS: 111 (UK)
Charite: +49 30 450 531 000 (Netherlands)
INTCF: +34 917689800 (Spain)
CapTv: +33 1 40 05 48 48 (France)

Section 2: Hazards Identification

Classification of the substances or mixture:

The mixture is classified according to: Regulation EC 1272/2008 [EU-GHS/CLP]

Hazard classes/Hazard categories:

Acute Toxicity, Inhalation (Category 2)
Mutagenicity (Category 2)
Carcinogenicity (Category 1B)
Reproductive Toxicity (Category 2)
STOT RE (Category 1)
Aquatic Acute (Category 1)
Aquatic Chronic (Category 1)

Hazard statement:

H330
H341
H350
H361
H372
H400
H410

Label elements:

Hazard pictograms:



Signal Words: Danger.

Hazard Statements:

H330 Fatal if inhaled.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P391 Collect spillage.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local and national regulations.

Other hazards: None known.

Section 3: Composition/Information on Ingredients

Substance/Mixture: Substance.

Ingredients:

| Substance name (IUPAC/EC) | CAS-No. | Molecular weight | Concentration % by weight | Classification EC1272/2008 | |
|---------------------------|-----------|------------------|---------------------------|----------------------------|------|
| | EC-No. | | | | |
| Cadmium oxide | 1306-19-0 | 128.41 | >99% | Acute Tox. 2 | H330 |
| | | | | Muta. 1B | H341 |
| | | | | Carc. 1B H350 | H350 |
| | | | | Repr. 1B H360 | H361 |
| | 215-146-2 | | | STOT RE 1 | H372 |
| | | | | Aquatic Acute 1 | H400 |

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|--|--|--|--|-----------------------|
| | | | | Aquatic Chronic 1H410 |
|--|--|--|--|-----------------------|

For explanation of abbreviations see Section 16.

Section 4: First-Aid Measures

Description of first aid measures:

In case of inhalation: Move to fresh air. If not breathing, give artificial respiration. Seek immediate medical attention.

In case of skin contact: If on skin, rinse well with running water for a minimum of 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate the eyes. Seek immediate medical attention if any adverse effects occur.

In case of eye contact: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. Seek immediate medical attention.

In case of ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed:

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 flulike 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.

Eyes: May cause irritation, redness, and pain.

Skin contact: May cause irritation, redness, and pain.

Ingestion: Toxic. Ingested cadmium salts may cause severe and sometimes fatal poisonings. Symptoms can include severe nausea, vomiting, diarrhoea, 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.

Indication of any immediate medical attention and special treatment needed: Treat symptomatically. Show this safety data sheet to a physician or emergency room.

Section 5: Fire-Fighting Measures

Extinguisher media:

Suitable extinguisher media: Use any means suitable for extinguishing surrounding fire.

Unsuitable extinguishing media: None known.

Special hazards arising from the mixture: May emit toxic cadmium fumes during a fire.

Advice for fire-fighters: Wear self-contained breathing apparatus and protective clothing for firefighting.

Further information: Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Section 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

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.

Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained.

Methods for containment and cleaning up:

Methods for cleaning up: 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. 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.

Reference to other sections:

Treat recovered material as described in the section "Disposal considerations".

Section 7: Handling and Storage

Precautions for safe handling:

Advice on safe 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.

Hygiene measures: Do not eat, drink or smoke when using this product.

Conditions for safe storage, including incompatibilities:

Requirements for storage areas and containers: 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.

Section 8: Exposure Controls/Personal Protection

Control parameters:

Occupational exposure limits:

OSHA Threshold Limit Value (PEL)

5 ug/m³ of Cadmium (TWA), 2.5 ug/m³ (Action Level)

ACGIH Threshold Limit Value (TLV)

0.01 mg/m³ total dust, 0.002 mg/m³ respirable fraction for cadmium and compounds, as Cd; listed as A2, suspected human carcinogen.

Exposure controls:

Appropriate engineering controls: 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.

Individual protection measures, such as personal protective equipment:

Eye/face protection: Use safety glasses. If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Hand protection: Use chemical resistant gloves. Examples of preferred glove barrier materials include: Butyl rubber, Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, polyvinyl alcohol, Polyvinyl chloride.

Body protection: Wear protective clothing as appropriate.

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.

Section 9: Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance (form): Solid (crystals or powder).

Colour: Brown.

Density: 8.15 g/cm³

Odour: Odourless.

Odour threshold: No data available.

Molecular Weight: 128.41

pH (concentration): No data available.

Melting point/range (°C): 950 °C crystals, < 1426 °C powder.

Boiling point/range (°C): 1559 °C

Freezing point (°C): No data available.

Flash point (°C): No data available.

Evaporation rate: No data available.

Flammability (solid, gas): No data available.

Ignition temperature (°C): No data available.

Upper/lower flammability/explosive limits: No data available.

Vapour pressure (20 °C): 1.3 mbar @ 1000 °C

Vapour density: No data available.

Relative density (25 °C): No data available.

Water solubility (g/L) at 20 °C: Insoluble.

n-Octanol/Water partition coefficient: No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: No data available.

Viscosity, dynamic (mPa s): No data available.

Explosive properties: The substance or mixture is not classified as explosive.

Oxidising properties: The substance or mixture is not classified as oxidizing.

Section 10: Stability and Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.

Conditions to avoid: Fire and other elevated temperature conditions.

Incompatible materials: Explodes when heated with magnesium. Cadmium dust presents a fire/explosion hazard if reacted with oxidizing agents, metals, hydrogen azide, zinc, selenium or tellurium.

Hazardous decomposition products: Toxic cadmium oxide fumes may be formed at high temperatures (> 900 °C).

Section 11: Toxicological Information

Information on toxicological effects:

Acute Toxicity:

LD₅₀ Oral, Rat - 72 mg/kg; Inhalation - Mouse LC₅₀: 250 mg/m³/2-hour - Investigated as a tumorigen, mutagen, reproductive effector.

Classification according to GHS (1272/2008/EG, CLP)**Skin corrosion/irritation:**

Not classified based on available information.

Serious eye damage/eye irritation:

Not classified based on available information.

Respiratory or skin sensitisation:

Not classified based on available information.

Germ cell mutagenicity:

Suspected of causing genetic defects.

Carcinogenicity:

IARC: Yes

NTP: Yes

OSHA: Yes

Reproductive toxicity:

Suspected of damaging fertility or the unborn child.

Specific target organ toxicity – single exposure (STOT):

Not classified based on available information.

Specific target organ toxicity (STOT) – repeated exposure:

Causes damage to organs through prolonged or repeated exposure.

Aspiration toxicity:

Not classified based on available information.

Section 12: Ecological Information

Toxicity: Toxicity to fish: LC₅₀ *Pimephales promelas*, 7.029 mg/l, 96 hours.

Persistence and degradability: No data available.

Bioaccumulative potential: No data available.

Mobility in soil: No data available.

Results of PBT& vPvB assessment: Not relevant.

Other adverse effects: Very toxic to aquatic life.

Section 13: Disposal Considerations

Waste treatment methods: 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 local and national regulations.

Section 14: Transport Information

DOT:

Proper Shipping Name: CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE).

Hazard Class: 6.1

UN Number: 2570

Packing Group: III

Hazard Labels:



International (Water, IMO):

Proper Shipping Name: CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE).

Hazard Class: 6.1

UN Number: 2570

Packing Group: III

International (Air, ICAO):

Proper Shipping Name: CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE).

Hazard Class: 6.1

UN Number: 2570

Packing Group: III

IATA:

Proper Shipping Name: CADMIUM COMPOUND, N.O.S. (CADMIUM OXIDE).

Hazard Class: 6.1

UN Number: 2570

Packing Group: III

Section 15: Regulatory Information

EU regulations:

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended
Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended
Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations:

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use:

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Not regulated.

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work

Not regulated.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.

Not regulated.

Other EU regulations:

Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

Always applicable.

Directive 94/33/EC on the protection of young people at work

Not listed.

Other regulations: The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

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.

National regulations: Follow national regulation for work with chemical agents.

Chemical safety assessment: No Chemical Safety Assessment has been carried out.

Section 16: Other Information

List of abbreviations:

ACGIH American Conference of Governmental Industrial Hygienists
ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA As Low As Is Reasonably Achievable
AMU Atomic Mass Unit
ANSI American National Standards Institute
BLS Basic Life Support
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)
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
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
HMIS 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
IMDG International Maritime Code for Dangerous Goods
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
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
RTECS Registry of Toxic Effects of Chemical Substances
SARA Superfund Amendments and Reauthorization Act (USA)
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

References:

Not available.

Full text of any H-statements not written out in full under Sections 2 to 15:

H330 Fatal if inhaled.

H341 Suspected of causing genetic defects.

H350 May cause cancer.

H361 Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

Revision information:

None.

Training information:

Follow training instructions when handling this material.

Further Information:

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.

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