

1. PRODUCT AND COMPANY IDENTIFICATION

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|---|--|
| Product Name | Mercury Oxide, Enriched Mercury Oxide |
| Synonyms | Mercury (II) oxide; mercuric oxide red; mercuric oxide yellow |
| Chemical Formula | HgO |
| Molecular Weight | 216.59 |
| CAS No. | 21908-53-2 |
| RTECS No. | OW8750000 |
| Supplier Address* | ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States |
| Telephone | +1 415-440-4433 |
| Fax | +1 415-563-4433 |
| Emergency Phone Number (both supplier and manufacturer) | Infotrac/ +1 800-535-5053 |
| Email | *May include subsidiaries or affiliate companies/divisions iusa@isoflex.com |
| Website | www.isoflex.com |
| Preparation Information | ISOFLEX USA Product Safety +1 415-440-4433 |

2. HAZARDS IDENTIFICATION

Emergency Overview: Danger! May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Causes severe irritation to eyes, skin and respiratory tract; may cause burns. May cause allergic skin reaction. Mercury compounds affect the kidneys and central nervous system. Oxidizer. Contact with other material may cause fire.

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 = 4 Flammability = 0 Physical Hazard = 3 Personal Protection: E

| | |
|----------------------------|----------|
| HEALTH HAZARD | 3 |
| FLAMMABILITY | 0 |
| PHYSICAL HAZARD | 1 |
| PERSONAL PROTECTION | E |

Lab Protective Equipment Goggles; Lab Coat; Proper Gloves

Storage Color Code Blue (Health)

Potential Health Effects

Inhalation

Causes irritation to the respiratory tract. Symptoms include sore throat, coughing, pain, tightness in chest, breathing difficulties, shortness of breath and headache. Pneumonitis may develop. Can be absorbed through inhalation with symptoms to parallel ingestion.

Ingestion

Highly Toxic! Average lethal dose for inorganic mercury salts is about 1 gram. May cause burning of the mouth and pharynx, abdominal pain, vomiting, corrosive ulceration, bloody diarrhea. May be followed by a rapid and weak pulse, shallow breathing, paleness, exhaustion, central nervous system problems, tremors and collapse. Delayed death may occur from renal failure.

Skin Contact

Causes irritation. Symptoms include redness and pain. May cause burns. May cause sensitization. Can be absorbed through the skin with symptoms to parallel those of ingestion.

Eye Contact

Causes irritation and burns to eyes. Symptoms include redness, pain, blurred vision; may cause serious and permanent eye damage.

Chronic Exposure

Chronic exposure through any route can produce central nervous system damage. May cause muscle tremors, personality and behavior changes, memory loss, metallic taste, loosening of the teeth, digestive disorders, skin rashes, brain damage and kidney damage. Can cause skin allergies and can accumulate in the body. Repeated skin contact can cause the skin to turn gray in color. Not a known reproductive hazard, but related mercury compounds can damage the developing fetus and can decrease fertility in males and females.

Aggravation of Pre-existing Conditions

Persons with nervous disorders, or impaired kidney or respiratory function, or a history of allergies or a known sensitization to mercury, may be more susceptible to the effects of the substance.

3. COMPOSITION / INFORMATION ON INGREDIENTS

| | |
|-------------------|---------------|
| Chemical Name: | Mercury Oxide |
| CAS No.: | 21908-53-2 |
| Chemical Formula: | HgO |
| Molecular Weight: | 216.59 |

4. FIRST AID MEASURES

Inhalation Exposure

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Oral Exposure

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Exposure

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing and shoes thoroughly 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.

5. FIREFIGHTING MEASURES

Fire

Substance is a strong oxidizer, and its heat of reaction with reducing agents or combustibles may cause ignition. Upon heating it decomposes to form oxygen, which increases the flammability of combustibles.

Explosion

Not considered an explosion hazard

Suitable Extinguishing Media

Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.

Special Information

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure-demand or other positive-pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Avoid dust formation. Avoid breathing vapors, mist or gas.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods for Cleaning Up

Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust. Do not sweep. Damp mop any residue. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

Handling

Follow strict hygiene practices. 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. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Isolate from any source of heat or ignition. Do not use or store on porous work surfaces (wood, unsealed concrete, etc.). Protect from light.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits

OSHA Acceptable Ceiling Concentration

Mercury and mercury compounds: 0.1 mg/m³ (TWA), skin

ACGIH Threshold Limit Value (TLV)

Inorganic and metallic mercury, as Hg: 0.025 mg/m³ (TWA) skin, A4 not classifiable as a human carcinogen

ACGIH Biological Exposure Indices

Total inorganic mercury in urine (preshift): 35 ug/g creatinine; total inorganic mercury in blood (end of shift): 15 ug/l

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

Personal Respirators

If the exposure limit is exceeded and engineering controls are not feasible, a NIOSH-approved full facepiece particulate respirator (NIOSH-type N100 filters) may be worn for 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.

Skin Protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Label Information

Label Hazard Warning: DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES SEVERE IRRITATION TO EYES, SKIN AND RESPIRATORY TRACT; MAY CAUSE BURNS. MAY CAUSE ALLERGIC SKIN REACTION. MERCURY COMPOUNDS AFFECT THE KIDNEYS AND CENTRAL NERVOUS SYSTEM. OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

Label Precautions: Keep container closed; Use only with adequate ventilation; Store in a tightly closed container; Do not store near combustible materials.

Label First Aid: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form
Color
Odor

Powder
Bright, orange-red or orange-yellow
Odorless

Safety Data

Solubility:
Specific Gravity:
pH:
% Volatiles by volume @ 21 °C (70 °F):

Insoluble in water
11.14
No information found
0

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|----------------------------|----------------------|
| Boiling Point: | Not applicable |
| Melting Point: | 500 °C (932 °F) |
| Vapor Density (Air=1): | No information found |
| Vapor Pressure (mm Hg): | No information found |
| Evaporation Rate (BuAc=1): | 0.6 |

10. STABILITY AND REACTIVITY

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| <i>Stability</i> | Stable under ordinary conditions of use and storage. Decomposes on exposure to light into mercury and oxygen. At 400 °C, product becomes almost black, but red again on cooling. |
| <i>Hazardous Decomposition Products</i> | Emits toxic mercury vapors |
| <i>Hazardous Polymerization</i> | This substance does not polymerize. |
| <i>Incompatible Materials</i> | Reacts with reducing materials. Incompatible with chlorine, hydrazine hydrate, hydrogen peroxide, hydrogen trisulfide, hypophosphorous acid, iodine plus methanol plus ethanol, magnesium, phosphorus, phospham, sodium potassium alloy, sulfur, acetyl nitrate, butadiene, hydrocarbons, sulfur chloride, methanethiol. |
| <i>Conditions to Avoid</i> | Light, heat, incompatibles |

11. TOXICOLOGICAL INFORMATION

Toxicological Data

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|------------------------------|---|
| <i>Oral - Rat - LD50</i> | 18 mg/kg - Investigated as a tumorigen and a reproductive effector |
| <i>Dermal - Rat - LD50</i> | 315 mg/kg |
| <i>Reproductive Toxicity</i> | All forms of mercury can cross the placenta to the fetus, but most of what is known has been learned from experimental animals. |

Carcinogenicity

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|---|---|
| <i>NTP Carcinogen</i> | Known: No; Anticipated: No |
| <i>IARC Category</i> | 3 |
| <i>OSHA</i> | No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. |
| <i>Germ Cell Mutagenicity</i> | No data available |
| <i>Specific Target Organ Toxicity / Single Exposure</i> | No data available |
| <i>Specific Target Organ Toxicity - Repeated Exposure</i> | May cause damage to organs through prolonged or repeated exposure |
| <i>Aspiration Hazard</i> | No data available |
| <i>Additional Information</i> | RTECS: OW8750000 Liver injury may occur; kidney injury may occur; nausea, vomiting, diarrhea, tremors, salivation |

12. ECOLOGICAL INFORMATION

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|-------------------------------|--|
| <i>Environmental Fate</i> | For mercury: This material has an experimentally determined bioconcentration factor (BCF) of greater than 100. This material is expected to significantly bioaccumulate. |
| <i>Environmental Toxicity</i> | For mercury: This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l. |

13. DISPOSAL CONSIDERATIONS*Product*

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an RCRA-approved waste facility. 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 unused contents in accordance with federal, state and local requirements.

Contaminated Packaging

Dispose of container in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION**DOT**

| | |
|--|---------------|
| <i>Proper Shipping Name</i> | Mercury Oxide |
| <i>Hazard Class</i> | 6.1 |
| <i>UN/NA</i> | UN1641 |
| <i>Packing Group</i> | II |
| <i>Information Reported for Product/Size</i> | 125 G |

International (Water, I.M.O.)

| | |
|--|---------------|
| <i>Proper Shipping Name</i> | MERCURY OXIDE |
| <i>Hazard Class</i> | 6.1 |
| <i>UN/NA</i> | UN1641 |
| <i>Packing Group</i> | II |
| <i>Information reported for Product/Size</i> | 125 G |

IMDG

| | |
|-----------------------------|------------------|
| <i>Proper Shipping Name</i> | MERCURY OXIDE |
| <i>UN No.</i> | 1641 |
| <i>Class</i> | 6.1 |
| <i>Packing Group</i> | II |
| <i>EMS No.</i> | F-A, S-A |
| <i>Marine Pollutant</i> | Marine pollutant |

IATA

| | |
|-----------------------------|---------------|
| <i>Proper Shipping Name</i> | Mercury oxide |
| <i>UN No.</i> | 1641 |
| <i>Class</i> | 6.1 |
| <i>Packing Group</i> | II |

15. REGULATORY INFORMATION*REACH Number*

A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.

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| SARA 302 Components | The following components are subject to reporting levels established by SARA Title III, Section 302: <i>Mercury monoxide / CAS No. 21908-53-2 / Revision Date 2007-07-01</i> |
| SARA 313 Components | This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313. |
| SARA 311/312 Hazards | Acute Health Hazard, Chronic Health Hazard |
| Massachusetts Right to Know Components | <i>Mercury monoxide / CAS No. 21908-53-2 / Revision Date 2007-07-01</i> |
| Pennsylvania Right to Know Components | <i>Mercury monoxide / CAS No. 21908-53-2 / Revision Date 2007-07-01</i> |
| New Jersey Right to Know Components | <i>Mercury monoxide / CAS No. 21908-53-2 / Revision Date 2007-07-01</i> |
| California Prop. 65 Components | WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm: <i>Mercury monoxide / CAS No. 21908-53-2 / Revision Date 2007-09-28</i> |

16. OTHER INFORMATION

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|------------------------|--|
| <i>Prepared By</i> | ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States |
| <i>Issuing Date</i> | January 14, 2015 |
| <i>Revision Date</i> | August 1, 2021 |
| <i>Revision Number</i> | 2 |
| <i>Revision Note</i> | Required review and update |

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 |
| 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 |
| IECSC | Inventory of Existing Chemical Substances Produced or Imported in China |
| 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 |
| 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 |
| 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.

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