Azinsa Óxidos	**CHEMICAL PRODUCT SAFETY DATA SHEET RED LITHARGE (LEAD OXIDE) UN 1872**	Code:	HDSRL1872
		Review:	4
		Review date:	February, 2026
		Pages:	1 de 10

SECCION I IDENTIFICACTION

1) Chemical Name	2) Other means of identification	3) Recommended use
Lead(II) oxide	Lead monoxide; Litharge (yellow/red form); Massicot	Manufacturing of batteries, pigments, glass, ceramics, enamels, plastic stabilizers

4) Supplier Information:	5) Emergency telephone numbers (SETIQ):
Azinsa Oxidos, S.A. de C.V. Fernando Montes de Oca #21, Bldg. B P2, San Nicolas Tlalnepantla, State of Mexico ZIP 54030	55 59 15 88 (Mexico City) 01 (800) 00 214 (rest of country) 24/7/365 technical emergency assistance

SECTION II — HAZARD IDENTIFICATION

1) Classification (GHS)

Physical hazards	Health hazard	Environmental hazards
Not classified as a physical hazard	Acute Tox. Cat. 4; Repr. Tox. Cat. 1A; STOT RE Cat. 2	Aquatic Chronic 1)

2) Label elements (GHS)

Pictograms

Signal Word: DANGER

Hazard Statements:

- **H302:** Harmful if swallowed
- **H332:** Harmful if inhaled
- **H360FD:** May damage fertility. May damage the unborn child
- **H373:** May cause damage to organs through prolonged or repeated exposure
- **H410:** Very toxic to aquatic life with long lasting effects

Precautionary Statements:

- **P202:** Do not handle until all safety precautions have been read and understood
- **P264:** Wash thoroughly after handling
- **P273:** Avoid release to the environment
- **P281:** Use required personal protective equipment
- **P308+P313:** IF exposed or concerned: Get medical advice/attention
- **P405:** Store locked up
- **P501:** Dispose of contents/container in accordance with regulations

1) Other hazards not resulting in classification.

- May bioaccumulate in the body after repeated exposure.
- Risk of secondary contamination by dust on clothing or surfaces.
- May generate toxic lead fumes at elevated temperatures.

SECTION III — COMPOSITION / INFORMATION ON INGREDIENTS

Substance Identification	CAS No.	UN No.	EC No.	Concentration (% w/w)
Lead(II) monoxide	1317-36-8	1872	215-267-0	≥ 99 %

SECTION IV — FIRST-AID MEASURES

1) Description of first-aid measures

Inhalation	Move the individual to fresh air. If respiratory difficulty occurs, obtain immediate medical attention.
Ingestion	Do **not** induce vomiting. Rinse mouth with water. Seek urgent medical care.
Skin Contact	Wash thoroughly with water and mild soap. Remove contaminated clothing. If irritation persists, consult a healthcare professional.
Eye Contact	Rinse cautiously with clean water for at least 15 minutes. Do not rub eyes. Seek medical attention.

2) Most important symptoms and effects, both acute and delayed

Acute Effects	• Eye and skin irritation • Abdominal pain • Nausea • Headache • Weakness
Chronic Effects	• Systemic accumulation of lead • Neurological damage • Anemia • Renal impairment • Reproductive toxicity

3) Indication of any immediate medical attention and special treatment needed

- Immediate medical evaluation required after significant ingestion or exposure.
- **Chelation therapy** may be necessary under medical supervision.
- Monitoring of **blood lead levels** recommended for exposed individuals.

SECTION V — FIRE-FIGHTING MEASURES

1) Suitable extinguishing media

Dry chemical powder, CO_2, or foam.

2) Specific hazards arising from the substance

Not flammable. At high temperatures, may decompose to release toxic lead fumes.

3) Special Protective Equipment for Firefighters

Use self-contained breathing apparatus (SCBA) and full chemical protective gear.

SECTION VI — ACCIDENTAL RELEASE MEASURES

1) Personal precautions, protective equipment and emergency procedures

- Keep containers away from heat and moisture.
- Do not mix with combustible or reducing materials.
- Avoid dust formation.

Use particulate respirators and dermal protection.

2) Environmental Precautions

Prevent material from entering drains or water bodies.

3) Methods and materials for containment and cleaning up

- Use **HEPA vacuuming** or wet-cleaning methods.
- Collect in sealed, labeled containers for disposal.

SECTION VII — HANDLING AND STORAGE

1) Precautions for safe handling

- Use local exhaust ventilation.
- Avoid inhalation and ingestion.
- Eating or smoking in handling areas is prohibited.

2) Conditions for safe storage

- Store in airtight containers.
- Keep in a cool, dry, well-ventilated area designated for toxic materials.
- Keep separate from strong acids.

SECTION VIII — EXPOSURE CONTROLS / PERSONAL PROTECTION

1) Control Parameters

- Protective gloves, safety goggles, protective clothing, and dust respirator required.
- Use adequate ventilation in handling areas.
- OEL (Mexico NOM-010-STPS-2014): 0.05 mg/m³ (TWA).

2) Appropriate Engineering Controls

Local exhaust ventilation at dust-generating points.

3) Personal Protective Equipment (PPE)

Respiratory Protection:	• High-efficiency particulate respirators (P100 or equivalent). For high exposure or emergency: self-contained breathing apparatus (SCBA).
Hand Protection:	• Chemical-resistant gloves (nitrile, neoprene, PVC). • Replace gloves if damaged or contaminated.
Eye Protection:	• Safety glasses with side shields; in high-dust operations, use airtight goggles.
Skin and Body Protection	• Long-sleeve protective clothing or disposable coveralls. Contaminated clothing must be removed and washed separately.

SECTION IX — PHYSICAL AND CHEMICAL PROPERTIES

1) Appearance:	2) Odor:	3) Odor Threshold:	4) pH:
Fine crystalline powder, yellow to yellow-reddish	Odorless	Not applicable	Not applicable
5) Melting Point	**6) Initial Boiling Point:**	**7) Flash Point**	**8) Evaporation Rate:**
888 °C.	1470 °C (with decomposition)	Not applicable (inorganic, non-flammable)	Not applicable
9) Flammability:	**10) Explosive Limits:**	**11) Vapor Pressure:**	**12) Vapor Density:**

Not flammable	Not applicable	Negligible at 20 °C	Not applicable
13) Bulk Density:	**14) Solubility:**	**15) Coefficient (n-octanol/water):**	**16) Auto-ignition Temperature:**
9.3 – 9.5 g/cm³ a 20 °C.	Insoluble in water; soluble in strong acids (forming lead salts)	Not applicable.	Not applicable
17) Decomposition Temperature:	**18) Viscosity:**	**19) Molecular Weight:**	**20) Other relevant information**
1470 °C, may release toxic lead fumes	Not applicable	223.2 g/mol	Crystal Structure: Tetragonal (massicot)

SECTION X — STABILITY AND REACTIVITY

Reactivity:	Not reactive under normal conditions of handling and storage. Reactes with strong acids and certain oxidizing agents, forming soluble lead compounds.
Chemical Stability:	Stable under normal ambient conditions of temperature and pressure.
Possibility of Hazardous Reactions:	No hazardous reactions are expected under normal use. However, contact with strong acids may generate lead salts, which retain the toxicolc characteristics of lead.
Incompatible materials:	• Strong acids • Oxidizing agents • Sulfur-containing compounds
Conditions to Avoid:	• Extreme heat • Dust generation • Prolonged exposure to moisture or humidity.
Hazardous Decomposition Products	At temperatures above **1470 °C**, thermal decomposition may release: • **Toxic lead fumes (Pb)** • **Nitrogen oxides (NO_x)**

SECTION XI — TOXICOLOGICAL INFORMATION

1) Likely routes of exposure

- **Inhalation** of airborne dust
- **Ingestion** (accidental)
- **Dermal contact**, particularly prolonged or repeated contact with contaminated dust

2) Symptoms related to the physical, chemical, and toxicological characteristics

- **Inhalation.** May cause: Respiratory irritation, Coughing, Shortness of breath, General weakness.
- **Ingestion.** Potential symptoms: Abdominal pain, Nausea, Vomiting, Loss of appetite
- **Skin Contact.** Irritation, Dermatitis, Possible dermal absorption leading to systemic lead exposure over time

3) Immediate and delayed effects, including chronic effects from short- and long-term exposure

Immediate (Acute) Effects

- Respiratory and gastrointestinal irritation
- General malaise

Delayed and Chronic Effects

• Lead compounds are known for cumulative toxicity. Long-term exposure may cause:

Neurological effects

• Cognitive impairment
• Memory loss
• Peripheral neuropathy

Renal effects

• Kidney damage (nephrotoxicity)

Hematological effects

• Anemia due to impaired hemoglobin synthesis

Reproductive effects

• Reduced fertility
• Adverse fetal development

Cardiovascular effects

• Increased risk of hypertension

Carcinogenicity

• Lead compounds have been classified by IARC as **Group 2A (probably carcinogenic to humans)**.

4) Numerical measures of toxicity

• **Oral LD_{50} (rat):** ~40 mg/kg (estimated; varies among sources)
• **Inhalation LD_{50} (rat):** Not available; inhalation is considered harmful due to known toxicity of lead compounds

5) Interactive effects

No specific interactions identified; however, exposure to multiple heavy metals may produce synergistic toxicity, enha
overall adverse effects.

6) When chemical data are not available

Toxicity effects are inferred from general toxicological profiles of lead compounds.
Primary hazards stem from **systemic lead toxicity**, particularly affecting the **nervous system** and **kidneys**.

7) Information on Mixtures

If present in mixtures, toxicological behavior will depend on:

• Concentration of lead monoxide
• Presence of other hazardous metals or chemicals
Toxicity studies are recommended for complex mixtures.

8) Information on the product or Its components

• Lead is highly toxic under chronic exposure.
Skin contact or inhalation of dust can result in **accumulation of lead in body tissues**, producing long-term effects.

9) Other information.

Long-term exposures should be monitored via:

• Blood lead levels
• Clinical evaluation of neurological, renal, and hematological parameters
• Chelation therapy may be required in cases of significant exposure, strictly under medical supervision.

SECTION XII — ECOLOGICAL INFORMATION

1) Toxicity

Lead(II) oxide is **highly toxic to aquatic organisms** and poses serious long-term environmental hazards.
Exposure to elevated concentrations may cause severe adverse effects on aquatic life, including:

- Respiratory system impairment
- Neurological disruption
- Developmental and reproductive toxicity in aquatic species

2) Persistence and degradability

Lead(II) oxide is a **persistent inorganic compound**.
Because it does not biodegrade or decompose naturally, it can remain in:

- Water sediments
- Soil
- Aquatic environments
  for extended periods.

Degradability:
Not applicable — inorganic metal oxides do not biodegrade.

3) Bioaccumulative potential

Lead exhibits a **high potential for bioaccumulation** in:

- Aquatic organisms
- Terrestrial organisms
- Sediments

Lead accumulates in tissues over time and may biomagnify through the food chain.
Bioconcentration factor (BCF):
Not available for PbO specifically, but lead compounds are known to have elevated BCF values due to strong affinity for biological tissues.

4) Mobility in soil

Mobility is generally **low**, due to:

- Low solubility in water
- Strong adsorption to soil particles
- Tendency to form complexes with organic and inorganic matter

Under normal conditions, lead monoxide does not readily migrate through soil.

5) Other adverse effects

Lead contamination can cause:

- Long-term degradation of soil quality
- Contamination of drinking water sources
- Harm to terrestrial wildlife
- Reduced biodiversity in affected ecosystems

Lead is classified internationally as a substance of **high environmental concern**, requiring strict management to avoid release into the environment.

6) Additional information.

Lead compounds are listed as priority pollutants under various international agreements, such as:

- **Stockholm Convention** (Persistent Organic Pollutants — related metals considered hazardous)
- **Basel Convention** (hazardous waste requiring special controls)

Environmental protection measures should focus on:

- Minimizing release
- Containing residues
- Preventing contamination of water bodies and soils

SECTION XIII — DISPOSAL CONSIDERATIONS

1) Waste treatment methods.

Lead(II) oxide must be managed as **hazardous waste** in accordance with applicable national and international regulations.

Solid Waste

- Collect solid residues in **airtight, corrosion-resistant containers** properly labeled as hazardous waste.
- Disposal must be performed at authorized facilities specializing in **toxic and hazardous waste treatment**.
- Recycling is recommended when feasible, provided it is carried out by licensed facilities capable of handling lead-containing materials safely.

Liquid Waste (if applicable)

- Soluble lead compounds must be treated with **chelating agents** or other approved chemical treatments to reduce toxicity.
- Treated effluents must be transported and processed at **licensed heavy-metal wastewater treatment facilities**.

Surface Decontamination

- Use specialized cleaning agents designed for removal of heavy metals.
- Follow local environmental authority recommendations for decontamination of equipment and surfaces.

2) Disposal of contaminated containers or packaging.

- Containers previously in contact with lead monoxide must be treated as **hazardous waste**.
- Rinse and decontaminate using approved methods prior to disposal, where permitted by regulations.
- Empty containers should be **recycled** or disposed of at authorized hazardous-waste recycling facilities.

3) Special precautions for disposal

Personal Protection

- Use adequate PPE: chemical-resistant gloves, protective clothing, and **P100** respirators or equivalent.
- Implement strict hygiene measures to prevent secondary contamination.

Ventilation

- Disposal activities must be carried out in **well-ventilated areas** or enclosed systems with **local exhaust ventilation**.

Environmental Protection

- Prevent release into air, soil, or waterways.
- Avoid dust generation and ensure containment throughout the disposal process.

4) Recommendations for safe disposal

- **Do not discharge** into surface waters, sewers, or natural drainage systems.
- Temporary storage requires sealed containers designed to prevent spills or dust emissions.
- Follow local hazardous-waste regulations such as Mexico's **NOM-052-SEMARNAT-2005**, or equivalent standards in other jurisdictions.

5) Additional information

Lead-containing wastes require:

- Accurate tracking and documentation of quantities generated and disposal methods.
- Reporting to environmental authorities when required by national or regional regulations.

In many countries, lead waste is subject to strict transport, storage, and disposal controls due to:

- High toxicity
- Persistence and bioaccumulation potential
- Risk of environmental contamination

SECTION XIV — TRANSPORT INFORMATION

1) UN Number

UN 1872

2) UN Proper Shipping Name

LEAD OXIDE, solid, n.o.s. (Lead(II) monoxide)

3) Clase(s) relativa(s) al transporte

Class 5.1 – Oxidizing Substances
Lead monoxide is classified as an oxidizing solid under transport regulations, meaning it **may intensify combustion of other materials** but is not itself combustible.

(Oxidizing substances)
Lead Oxide)

4) Packing Group

Packing Group (PG): III
Indicates a relatively low risk within Class 5.1, but still requires certified packaging and specific handling controls.
Land Transport (ADR/RID)

- **Packing Group:** III
- **Applicable Packaging Instructions:**
  - **P002** (combined and single packaging)
  - **IBC08** (Intermediate Bulk Containers, where permitted)
  - **LP02** (large packaging)

Ensure:

- Segregation from **combustible materials**
- Adequate labeling and securement
- Use of UN-approved packaging tested for drop, stacking, and leakproofness (as applicable)

Sea Transport (IMDG Code)

- **Packing Group:** III
- **Packaging Instructions:**
  - **P002**
  - **IBC08**
- **Stowage:** As per IMDG Code for Class 5.1 oxidizing solids
- **Segregation:** Separate from reducing agents and combustible materials

PG III determines the packaging strength and required performance testing under IMDG regulations.
Environmental Hazards
Lead oxide is classified as a **Marine Pollutant** (High aquatic toxicity and long-term persistence).

Hazards in case of spill:

- May contaminate surface waters, groundwater, and soil
- Can cause severe adverse effects to marine and terrestrial organisms
- Exhibits high bioaccumulation in sediments and the food chain

Special Precautions for Users

- Prevent damage to containers during loading/unloading
- Protect packages from **impact, friction, and moisture**
- Do not mix with **combustible** or **reducing** substances during transport
- Keep away from heat sources and avoid prolonged direct sunlight
- Comply with stowage, segregation, and handling rules under ADR/IMDG/IATA
- In case of transport incident or spill:
  - Notify authorities immediately
  - Restrict access to the affected area

Transport in Bulk According to MARPOL Annex II / IBC Code

- Not listed under MARPOL Annex II substances requiring a Pollution Prevention Plan.
- For bulk transport under IMDG/IBC Code:
- Use only authorized UN-certified bulk containers or IBCs
- Prevent exposure to moisture and heat sources
- Follow packaging instructions **P002** or **IBC08**, depending on quantity

5) Environmental Hazards

Lead oxide is classified as a **Marine Pollutant** (High aquatic toxicity and long-term persistence).

Hazards in case of spill:

- May contaminate surface waters, groundwater, and soil
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Hazardous substance for the aquatic environment

6) Special Precautions for Users

- Prevent damage to containers during loading/unloading
- Protect packages from **impact, friction, and moisture**
- Do not mix with **combustible** or **reducing** substances during transport
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7) Transport in Bulk According to MARPOL Annex II / IBC Code

Not listed under MARPOL Annex II substances requiring a Pollution Prevention Plan.
For bulk transport under IMDG/IBC Code:

- Use only authorized UN-certified bulk containers or IBCs
- Prevent exposure to moisture and heat sources
- Follow packaging instructions **P002** or **IBC08**, depending on quantity

SECTION XV — REGULATORY INFORMATION

Safety, Health, and Environmental Regulations Specific for the Substance

- This chemical substance is subject to Mexican legislation applicable to the handling of hazardous chemical substances and to risk communication in workplaces.

- NOM-018-STPS-2015 – Harmonized system for the identification and communication of hazards and risks by hazardous chemical substances in workplaces.
- NOM-005-STPS-1998 – Safety and hygiene conditions for the handling, transportation, and storage of hazardous chemical substances.
- NOM-010-STPS-2014 – Chemical agents contaminating the work environment; recognition, evaluation, and control.
- NOM-017-STPS-2008 – Personal protective equipment; selection, use, and management in workplaces.
- NOM-002-STPS-2010 – Safety conditions for the prevention and protection against fires in workplaces.

Applicable environmental regulation:

- NOM-052-SEMARNAT-2005 – Characteristics, identification procedure, and listing of hazardous waste.
- NOM-161-SEMARNAT-2011 – Classification and management of special handling waste.
- Applicable federal environmental legislation in accordance with the General Law of Ecological Balance and Environmental Protection.

- Waste, containers, and materials contaminated with zinc nitrate must be managed in accordance with the current regulations applicable to hazardous waste, and their final disposal must be carried out only in facilities authorized by the competent authority.

SECTION XVI OTHER INFORMATION INCLUDING THOSE RELATED TO THE PREPARATION AND UPDATING OF SAFETY DATA SHEETS

The information contained in this Safety Data Sheet is based on the scientific and technical knowledge available at the date of its preparation and is intended to provide guidance on the safe handling of zinc nitrate. This information is considered correct according to available sources, but it is not intended to be exhaustive and should be used only as a guide for the handling, storage, transport, and disposal of the product.

The responsibility for determining the appropriate conditions for use, handling, and storage of the product rests with the user.