SAFETY DATA SHEETS

According to the UN GHS revision 10

1: Identification

1.1 GHS Product identifier

Product name	Lead dioxide

1.2 Other means of identification

Product number	1309-60-0
Other names	Lead dioxide

1.3 Recommended use of the chemical and restrictions on use

Identified uses	Industrial and scientific research use.
Uses advised against	no data available

1.4 Supplier's details

Company	MolBest.com
Address	MolBest.com
Telephone	MolBest.com

1.5 Emergency phone number

Emergency phone number	MolBest.com
Service hours	MolBest.com

2: Hazard identification

2.1 Emergency Overview

Strong oxidizing substances can intensify fire or cause explosion. Contact with flammable substances may cause violent reactions and require strict isolation, storage and handling.

2.2 GHS Classification

Oxidizing liquids; Oxidizing solids : Category 2
Oxidizing liquids; Oxidizing solids : Category 3
Acute toxicity, oral; acute toxicity, inhalation : Category 4
Acute toxicity, oral : Category 4
Acute toxicity, inhalation : Category 4
Reproductive toxicity : Category 1, 1A, 1B
Specific target organ toxicity, repeated exposure : Category 2
Hazardous to the aquatic environment, acute hazard : Category 1
Hazardous to the aquatic environment, long-term hazard : Category 1

2.3 GHS label elements, including precautionary statements

Pictogram(s)

Signal word	Danger
Hazard statement(s)	H272 May intensify fire; oxidizer H302+H332 Harmful if swallowed or if inhaled H302 Harmful if swallowed H332 Harmful if inhaled H360 May damage fertility or the unborn child H360Df May damage the unborn child; Suspected of damaging fertility H373 May 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 statement(s)	
Prevention	P203 Obtain, read and follow all safety instructions before use. P210 Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking. P220 Keep away from clothing and other combustible materials. P260 Do not breathe dust/fume/gas/mist/vapors/spray. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P264 Wash hands [and ...] thoroughly after handling. 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/eye protection/face protection/hearing protection/...
Response	P317 Get emergency medical help. P318 if exposed or concerned, get medical advice. P319 Get medical help if you feel unwell. P330 Rinse mouth. P391 Collect spillage. P301+P317 IF SWALLOWED,Get medical help. P304+P340 IF INHALED,Remove person to fresh air and keep comfortable for breathing. P370+P378 In case of fire,Use ... to extinguish.
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.4 Physical and chemical

While not inherently flammable, it can significantly accelerate the combustion of other materials, causing a fire to spread. Contact with reducing agents, organic matter, or flammable materials can cause a violent exothermic reaction, even explosion. Heat can decompose the material, producing oxygen, further intensifying combustion.

2.5 Health hazards

May be corrosive or irritating, causing burns or inflammation in contact with skin and eyes. Inhalation of dust or vapor may cause respiratory irritation and damage. Reactions with other substances may produce

toxic products.

2.6 Environmental hazards

Moderately to highly toxic to aquatic organisms. May affect aquatic ecosystems by altering the redox potential of water. Some substances may persist in the environment, causing long-term pollution.

2.7 Other hazards which do not result in classification

no data available

3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Lead dioxide	Lead dioxide	1309-60-0	215-174-5	99%

4: First-aid measures

4.1 General advice

Stop contact immediately and remove contaminated clothing; if the substance is solid, collect the residue with dry sand and avoid contact with organic matter (such as cotton); bring the substance SDS document and seek medical attention as soon as possible.

4.2 If inhaled

Move to fresh air. If oxidizing gases (such as chlorine) are inhaled, immediately give nebulized inhalation (normal saline + aminophylline). If coughing or chest tightness occurs, seek medical attention for lung function monitoring.

4.3 In case of skin contact

Rinse with plenty of running water for 15-20 minutes (if it is an oxidizing liquid, avoid splashing water); if the skin becomes red, swollen, or stinging, apply a moist compress with vitamin C solution (5%) (to neutralize oxidation), and then cover with sterile gauze

4.4 In case of eye contact

Immediately rinse with saline for 15 minutes, then instill artificial tears (to relieve irritation); wear goggles, avoid strong light, and seek medical attention from an ophthalmologist as soon as possible.

4.5 If swallowed

Do not induce vomiting. If it is an oxidizing solid, you can take milk orally (to protect the gastric mucosa); if it is a liquid, take egg white orally (to neutralize some of the acid). If you carry SDS, seek medical attention immediately for a gastrointestinal examination.

4.6 Most important symptoms and effects, both acute and delayed

Acute symptoms include skin oxidative burns, eye irritation and pain, coughing, and difficulty breathing.

4.7 Protection of first-aiders

Rescuers must wear corrosion-resistant chemical protective clothing, chemical protective gloves (nitrile material), and goggles; avoid mixing oxidizing substances with reducing agents (such as vitamin C tablets) to prevent exothermic reactions

4.8 Notes to physician

Inform the doctor of the type of oxidizing substance and the exposure dose; patients with skin burns need to prevent infection, and patients with inhalation injuries need to receive anti-inflammatory treatment.

5: Fire-fighting measures

5.1 Unsuitable extinguishing media

It is strictly forbidden to use flammable fire extinguishing agents or water (some oxidizing liquids release heat when in contact with water, intensifying combustion); avoid using carbon dioxide (some strong oxidants do not require oxygen to burn, so carbon dioxide is ineffective).

5.2 Specific hazards during fire fighting

It is non-flammable itself but is a strong combustion supporter, which can cause ordinary combustible materials (wood, cotton cloth) to burn violently or even explode; it is easy to produce exothermic reaction when in contact with reducing agents and organic matter, causing spontaneous combustion; the combustion temperature is extremely high and it can easily melt metal containers.

5.3 Hazardous combustion products

Oxygen (intensifies fire), nitrogen oxides (such as nitric acid releases NO?), chlorine oxides (such as chlorates release ClO?), and heavy metal oxides (when containing metals).

5.4 Specific extinguishing methods

Small area: Use dry powder fire extinguishing agent (such as sodium bicarbonate) to extinguish the fire. If it is a solid oxidizing substance, cover it with dry sand (to isolate the combustibles); Large area: Remove the surrounding combustibles first, then use dry powder to extinguish the fire; It is strictly forbidden to directly spray oxidizing liquids with water (to prevent splashing and intensifying the combustion)

5.5 Special protective equipment for fire-fighters

Wear corrosion-resistant chemical protective clothing (acid/alkali resistant), chemical protective gloves (nitrile), and goggles; carry a high-temperature detector (to prevent containers from melting); maintain a safe distance of more than 15 meters from the fire scene during operations, and avoid standing downwind.

6: Accidental release measures

6.1 Protective measures for workers

Wear corrosion-resistant protective clothing (acid/alkali resistant), chemical-resistant gloves (nitrile), and goggles; wear a dust mask for solids and a gas mask (with an acid gas filter cartridge) for liquids/gases; avoid wearing synthetic fiber clothing (anti-static).

6.2 Environmental protection measure

Prevent the leaked material from coming into contact with flammable materials (wood, grease); avoid discharge into water bodies (to prevent oxygen enrichment from harming aquatic life); neutralize contaminated soil with lime (acid oxygen) or dilute hydrochloric acid (alkaline oxygen) to a pH of 6-9.

6.3 Containment methods for leaked chemicals

Liquids should be collected with polyethylene/polytetrafluoroethylene containers (metal containers are prohibited); solids should be collected with corrosion-resistant tools and placed in sealed plastic containers (labeled "oxidizing substances").

6.4 Cleanup methods for chemical spills

Small leakage: absorb with dry inert materials (talcum powder) and dispose of as hazardous waste; Large leakage: transfer to a dedicated storage tank with a corrosion-resistant pump; after cleaning, flush the ground with plenty of water (if compatible), and collect and dispose of the flushing water.

6.5 Measures to prevent the spread of leaks

Designate a 15-meter isolation zone and prohibit flammable items from entering; use corrosion-resistant isolation tape to block contact with organic matter/reducing agents; increase ventilation for volatile oxidants.

6.6 Container leakage treatment

Minor leakage: seal with acid/alkali resistant putty; serious leakage: evacuate the site, close the valve, and have professionals transfer the leak using corrosion-resistant equipment. It is strictly forbidden to mix containers with flammable materials.

6.7 Special considerations

It is strictly forbidden to mix with flammable materials and reducing agents; monitor the temperature of the leakage area (to prevent oxidation exothermic fire); use dedicated protective equipment to avoid cross contamination.

7: Handling and storage

7.1 Safe storage conditions

Store in a well-ventilated ordinary warehouse (air changes ? 6 times/hour) with non-combustible materials (such as cement) on the floor; the container should be made of non-combustible materials (such as ceramics, stainless steel) with a breathable valve (to prevent pressure buildup); the warehouse should be away from open flame operation areas (distance ? 5 meters) and equipped with dry powder fire extinguishers (ABC type, capacity ? 4kg).

7.2 Storage precautions

Store separately from flammable substances, reducing agents, and organic matter (isolation distance ? 2 meters), and mixed storage is strictly prohibited; avoid direct sunlight on containers and store in a cool

place; check the containers monthly for expansion and leakage, and prevent oxidizing solids from absorbing moisture and agglomerating; prohibit the use of wooden shelves (which are easily oxidized and burned).

7.3 VCI Storage Grade

Level 2 (medium-high): Metal containers are wrapped in VCI anti-rust packaging (such as rust-proof paper), and the anti-rust effect is checked once every two months; metal equipment in the warehouse (such as shelves and forklifts) is coated with VCI primer to prevent oxidation corrosion.

7.4 Recommended storage temperature

15-30?, avoid exceeding 35?; oxidizing liquids must be kept at a temperature ?30? to prevent accelerated decomposition; in hot seasons (?35?), the warehouse cooling system (such as air conditioning) must be turned on, and the temperature fluctuation must be ?±3? (if the label has a recommended storage temperature, the label shall prevail).

7.5 Handling

For precautions see Safety Data Sheet section 2
Advice on safe handling : Work under hood. Do not inhale substance/mixture.

8: Exposure controls/personal protection

8.1 Respiratory protection

When exposed to oxidizing dust or gas, wear a filtering respirator (APF?20); high concentration environment (such as chlorine >10ppm) requires a positive pressure air respirator.

8.2 Recommended Filter type

For oxidizing gases, choose Type E gas filter cartridge (protective against Cl? and NO?); for dust, choose Type P2 filter cotton; if it contains organic impurities, add Type A gas filter cartridge (protective against organic vapors).

8.3 Eye/face protection

Wear chemical protection goggles with lenses made of polycarbonate (anti-oxidation corrosion). If handling liquid oxidizing substances, wear a protective mask.

8.4 Skin and body protection

Wear corrosion-resistant and anti-static clothing made of polyester fiber + nitrile coating, avoid contact with reducing substances (such as cotton cloth) to prevent exothermic reactions.

8.5 Hand protection

Wear oxidation-resistant and chemical-resistant gloves, preferably nitrile or neoprene, and avoid latex gloves (which are easily damaged by oxidation). Change them every 8 hours.

8.6 Hygiene measures

Wash your hands with soap and running water after work to avoid residual oxidizing substances from irritating the skin; do not rub your eyes with your hands. If you feel stinging after contact, rinse immediately with clean water; tools must be stored separately to avoid mixing with reducing substances.

9: Physical and chemical properties and safety characteristics

Physical state	black powder
Colour	Brown, hexagonal crystals
Odour	no data available
Melting point/freezing point	290oC
Boiling point or initial boiling point and boiling range	no data available
Flammability	Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire.
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	no data available
Decomposition temperature	290°C
pH	no data available
Kinematic viscosity	no data available
Solubility	Insoluble
Partition coefficient n-octanol/water	no data available
Vapour pressure	no data available
Density and/or relative density	9.36
Relative vapour density	no data available
Particle characteristics	no data available

10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Lead dioxide does not burn but it will increase the intensity of a fire.LEAD DIOXIDE is a strong oxidizing agent. Noncombustible but accelerates the burning of combustible material. Reacts violently with hydrogen sulfide [Bretherick 1979. p. 977-978]. Ignites with hydroxylamine [Mellor 8:291. 1946-47]. Reacts violently with hydrogen peroxide [Mellor 1:937 1946-47], with phenylhydrazine [Mellor 7:637 1946-47], or with sulfuryl chloride [Mellor 10:676. 1946-47]. Reacts with incandescence with sulfur dioxide [Mellor, 1941, Vol. 7, 689]. Explodes when ground with boron or yellow phosphorus [Mellor, 1946, Vol. 5, 17]. Mixtures with sulfur and red phosphorus ignite [Mellor, 1941, Vol. 7, 689]. Reacts vigorously when heated with calcium sulfide, strontium sulfide or barium sulfide [Mellor, 1941, Vol. 3, 745].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Strong reducing agents, powdered metals

10.6 Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /lead/.

11: Toxicological information

11.1 Acute toxicity

Oral: no data available
Inhalation: no data available
Dermal: no data available

11.2 Skin corrosion/irritation

no data available

11.3 Serious eye damage/irritation

no data available

11.4 Respiratory or skin sensitization

no data available

11.5 Germ cell mutagenicity

no data available

11.6 Carcinogenicity

There is limited evidence in humans for the carcinogenicity of inorganic lead compounds. ... There is sufficient evidence in experimental animals for the carcinogenicity of inorganic lead compounds. There is sufficient evidence in experimental animals for the carcinogenicity of lead acetate, lead subacetate, lead chromate, and lead phosphate. There is inadequate evidence in experimental animals for the

carcinogenicity of lead oxide and lead arsenate. ... There is inadequate evidence in experimental animals for the carcinogenicity of lead powder. Overall evaluation Inorganic lead compounds are probably carcinogenic to humans (Group 2A). /Inorganic lead compounds/

11.7 Reproductive toxicity

no data available

11.8 STOT-single exposure

no data available

11.9 STOT-repeated exposure

no data available

11.10 Aspiration hazard

no data available

12: Ecological information

12.1 Toxicity

Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: no data available
Toxicity to algae: no data available
Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Bioaccumulation of lead(IV) dioxide may occur in plants and in mammals(1).

12.4 Mobility in soil

The downward movement of inorganic lead compounds from soil to groundwater by leaching is very slow under most natural conditions(1). /Lead compounds/

12.5 Other adverse effects

no data available

13: Disposal considerations

13.1 Disposal methods for waste chemicals

After reacting with an appropriate amount of reducing agent (such as sodium thiosulfate), it can be disposed of as ordinary waste. High-concentration oxidizing substances need to be diluted before chemical treatment. Solid oxidizing substances can be safely landfilled (separated from other wastes). Containers must be rinsed clean to prevent residual substances from triggering reactions.

13.2 Precautions

The reaction temperature must be strictly controlled during the disposal process to prevent excessive heat release. It is prohibited to mix oxidizing substances with flammable or organic materials. Operators must wear chemical protection equipment. The disposal site must be equipped with fire extinguishing equipment. Waste must be individually packaged during transportation to prevent damage.

14: Transport information

14.1 UN Number

ADR/RID: UN1872 IMDG: UN1872 IATA: UN1872

14.2 UN Proper Shipping Name

ADR/RID: LEAD DIOXIDE IMDG: LEAD DIOXIDE IATA: LEAD DIOXIDE

14.3 Transport hazard class(es)

ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1

14.4 Packing group, if applicable

ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards

ADR/RID: yes IMDG: yes IATA: yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Lead dioxide	Lead dioxide	1309-60-0	215-174-5
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.

Vietnam National Chemical Inventory	Listed.
Australian Inventory of Industrial Chemicals (AIIC)	Not Listed.
Catalogue of Strictly Restricted Toxic Chemicals in China	Not Listed.
China Catalog of Hazardous chemicals 2015	Listed.
European INventory of Existing Commercial chemical Substances	Not Listed.
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans	Not Listed.
TSCA Inventory of Chemical Substances	Listed.

16: Other information

Information on revision

SDS Creation Date	July 1, 2025
SDS Revision Date	July 1, 2025

Abbreviations and acronyms in SDS

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

SDS References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Any questions regarding this Safety Data Sheet, Please send your inquiry to info@MolBest.com

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Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our

knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.