



SAFETY DATA SHEET

Version 8.4
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SDS No. Eternal-Element-ET-Ag-202501
Product Number Eternal-Element-ET-Ag-202501

Silver(I) oxide

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Silver(I) oxide

Product Number : ET-Ag-202501

Brand : Eternal-Element

CAS-No. : 20667-12-3

1.2 Details of the supplier of the safety data sheet

Company : Shanghai Sheeny Metal Mateirals Co.,Ltd.
Room 210, Kedi Building,
No. 688 Huajiang Road, Jiading District,
SHANGHAI
201800 SHANGHAI
CHINA

上海斯年金属材料有限公司

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210室

邮政编码 : 201800

Telephone : +86 16602150044

Fax : +86 16602150044

1.3 Emergency telephone

Emergency Phone # : +86 4006632276

1.4 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : For R&D use only. Not for pharmaceutical, household or other

Page 1 of 13



uses.

2. HAZARDS IDENTIFICATION


Emergency Overview

| | |
|---|-------------|
| Appearance | : powder |
| Color | : dark gray |
| Odor | : odorless |
| May intensify fire; oxidizer. May be harmful if swallowed. Causes serious eye damage. Very toxic to aquatic life with long lasting effects. | |

GHS Classification

| | |
|------------------------------------|--------------|
| Oxidizing solids | : Category 2 |
| Acute toxicity (Oral) | : Category 5 |
| Serious eye damage/eye irritation | : Category 1 |
| Short-term (acute) aquatic hazard | : Category 1 |
| Long-term (chronic) aquatic hazard | : Category 1 |

GHS label elements

| | |
|--------------------------|---|
| Hazard pictograms | :  |
| Signal Word | : Danger |
| Hazard Statements | : H272 May intensify fire; oxidizer. H303 May be harmful if swallowed. H318 Causes serious eye damage. H410 Very toxic to aquatic life with long lasting effects. |
| Precautionary Statements | : Prevention: P210 Keep away from heat. P220 Keep/Store away from clothing/ combustible materials. P221 Take any precaution to avoid mixing with combustibles. P273 Avoid release to the environment. P280 Wear protective gloves/ eye protection/ face protection. |

Response:

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P312 Call a POISON CENTER/ doctor if you feel unwell.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P391 Collect spillage.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Reduced Labeling (≤ 125 ml)

Pictogram



Signal Word

Danger

Hazard Statements

H272

May intensify fire; oxidizer.

H303

May be harmful if swallowed.

H318

Causes serious eye damage.

H410

Very toxic to aquatic life with long lasting effects.

Precautionary Statements none

Physical and chemical hazards

May intensify fire; oxidizer.

Health hazards

May be harmful if swallowed. Causes serious eye damage.

Environmental hazards

Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

| Chemical name | CAS-No. | Concentration (% w/w) |
|----------------|------------|-----------------------|
| Disilver oxide | 20667-12-3 | ≤ 100 |

4. FIRST AID MEASURES

General advice : Show this material safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air.

| | |
|---|---|
| In case of skin contact | : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. |
| In case of eye contact | : After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses. |
| If swallowed | : After swallowing: immediately make victim drink water (two glasses at most). Consult a physician. |
| Most important symptoms and effects, both acute and delayed | : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11 |
| Protection of first-aiders | : For personal protection see section 8. |
| Notes to physician | : No data available |

5. FIRE-FIGHTING MEASURES

| | |
|--|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media | : For this substance/mixture no limitations of extinguishing agents are given. |
| Specific hazards during fire fighting | : Not combustible. Has a fire-promoting effect due to release of oxygen. Ambient fire may liberate hazardous vapours. |
| Hazardous combustion products | : Silver/silver oxides |
| Specific extinguishing methods | : Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for fire-fighters | : In the event of fire, wear self-contained breathing apparatus. |

6. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8. |
| Environmental precautions | : Do not let product enter drains. |
| Methods and materials for containment and cleaning up | : Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts. |

7. HANDLING AND STORAGE

Handling

For precautions see section 2.2.

| | |
|---|---|
| Advice on protection against fire and explosion | : Keep away from open flames, hot surfaces and sources of ignition. |
|---|---|

Storage

| | |
|---|--|
| Further information on storage conditions | : Tightly closed. Separately or together with other oxidising substances only and away from sources of ignition and heat. Because of their oxidation potential these products can raise the burning rate of combustible substances substantially or ignite combustible substances on contact with them. |
| Storage class | : 5.1A, Strongly oxidizing hazardous materials |
| Recommended storage temperature | : Recommended storage temperature see product label. |
| Further information on storage stability | : Light sensitive. |
| Packaging material | : Suitable material: Amber Glass Bottle/Jar, LDPE Bottle/Jar |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P2

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Eye/face protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Tightly fitting safety goggles

Skin and body protection : protective clothing

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Full contact
Manufacturer : KCL 741 Dermatrill® L

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Splash contact
Manufacturer : KCL 741 Dermatrill® L

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Hygiene measures : Change contaminated clothing. Wash hands after working with substance.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|---------------------------------------|
| Appearance | : powder |
| Color | : dark gray |
| Odor | : odorless |
| Odor Threshold | : No data available |
| pH | : No data available |
| Freezing point | : No data available |
| Boiling point/boiling range | : No data available |
| Flash point | : Not applicable |
| Evaporation rate | : No data available |
| Burning rate | : No data available |
| Upper explosion limit / Upper flammability limit | : No data available |
| Lower explosion limit / Lower flammability limit | : No data available |
| Vapor pressure | : No data available |
| Relative vapor density | : No data available |
| Relative density | : No data available |
| Density | : 7.143 g/cm ³ |
| Solubility(ies) | |
| Water solubility | : 0.0016 g/l slightly soluble (20 °C) |
| Partition coefficient: n- octanol/water | : No data available |
| Autoignition temperature | : No data available |

| | |
|---------------------------|--|
| Decomposition temperature | : 230 °C |
| Viscosity, dynamic | : No data available |
| Viscosity, kinematic | : No data available |
| Flow time | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : The substance or mixture is classified as oxidizing with the category 1. |
| Molecular weight | : 231.74 g/mol |
| Particle characteristics | |
| Particle size | : No data available |

10. STABILITY AND REACTIVITY

| | |
|------------------------------------|---|
| Reactivity | : No data available |
| Chemical stability | : The product is chemically stable under standard ambient conditions (room temperature) . |
| Possibility of hazardous reactions | : Risk of explosion with: Aluminum Ammonia ethanol hydrazines sodium organic nitro compounds Carbon monoxide Risk of ignition or formation of inflammable gases or vapours with: sulfur hydrogen sulphide selenium Sulfides phosphorus combustible substances Exothermic reaction with: magnesium |
| Conditions to avoid | : Light. no information available |
| Incompatible materials | : No data available |

Hazardous decomposition : In the event of fire: see section 5 products

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male and female - 3,804 mg/kg
(OECD Test Guideline 401)

Inhalation: No data available

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Risk of serious damage to eyes.
(OECD Test Guideline 405)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

RTECS: VW4900000

May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver)., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Disilver oxide:

Toxicity to fish : Remarks: No data available

M-Factor (Acute aquatic toxicity) : 10

Persistence and degradability

Components:

Disilver oxide:

Biodegradability : Remarks: No data available

Bioaccumulative potential

Components:

Disilver oxide:

Bioaccumulation : Remarks: No data available

Mobility in soil

Components:

Disilver oxide:

Stability in soil : Remarks: No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Offer surplus and non-recyclable solutions to a licensed disposal company.

14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1479
Proper shipping name : Oxidizing solid, n.o.s.

(Disilver oxide)
Class : 5.1
Packing group : I
Labels : Division 5.1 - Oxidizing substances
Packing instruction (cargo aircraft) : 561
Packing instruction (passenger aircraft) : 557

IMDG-Code

UN number : UN 1479
Proper shipping name : OXIDIZING SOLID, N.O.S.
(Disilver oxide)
Class : 5.1
Packing group : I
Labels : 5.1
EmS Code : F-A, S-Q
Marine pollutant : yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National regulation**GB 6944/12268**

UN number : UN 1479
Proper shipping name : OXIDIZING SOLID, N.O.S.
(Disilver oxide)
Class : 5.1
Packing group : I
Labels : 5.1

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION**National regulatory information****Regulations on Safety Management of Hazardous Chemicals**

Catalogue of Hazardous Chemicals : Listed

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)

| No. / Code | Chemical name / Category | Threshold quantity |
|------------|------------------------------|--------------------|
| W9.2 | Oxidising solids and liquids | 200 t |

Hazardous Chemicals for Priority Management : Listed
under SAWS

Regulations on Occupational Labor Protection in the at workplaces where Toxic Substances Are Used

Catalogue of Highly Toxic Chemicals : Not listed

Regulation of Environmental Management on the First Import of Chemicals and the Import and Export of Toxic Chemicals

China Severely Restricted Toxic Chemicals for Import and Export : Not listed

Regulation on the Administration of Precursor Chemicals

Catalogue and Classification of Precursor Chemicals : Not listed

16. OTHER INFORMATION

Revision Date : 2025/01/02

Further information

Other information : The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Eternal-Element Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.eternal-element.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.
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Date format : yyyy/mm/dd

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System;

GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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