Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 *Reviewed on 05/29/2024*

1 Identification

· **Product identifier**

· **Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder**
disilver oxide

· **Article number:** S2164
· **CAS Number:**
20667-12-3
· **EC number:**
243-957-1

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Aqua Solutions, Inc.
6913 Highway 225
DEER PARK, TX 77536
USA
800-256-2586

· **Information department:**
Technical Coordinator
Sherman Nelson shermann@aquasolutions.org
· **Emergency telephone number:**
Chemtrec: 800-424-9300
Canutec: 613-996-6666

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS03 Flame over circle

Oxidizing Liquids 1 H271 May cause fire or explosion; strong oxidizer.
Oxidizing Solids 1 H271 May cause fire or explosion; strong oxidizer.

GHS05 Corrosion

Eye Damage 1 H318 Causes serious eye damage.

· **Label elements**
· **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS03 GHS05

· **Signal word** Danger
· **Hazard statements**
May cause fire or explosion; strong oxidizer.
May cause fire or explosion; strong oxidizer.
Causes serious eye damage.
· **Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 *Reviewed on 05/29/2024*

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 1)

Keep/Store away from clothing/combustible materials.
Take any precaution to avoid mixing with combustibles.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear fire/flame resistant/retardant clothing.
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.
If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
In case of fire: Use CO2, powder or water spray to extinguish.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Collect spillage.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**

Health = 3
Fire = 3
Reactivity = 0

The substance possesses oxidizing properties.

· **HMIS-ratings (scale 0 - 4)**

*Health = *3*
Fire = 3
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** *Not applicable.*
· **vPvB:** *Not applicable.*

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description**
CAS: 20667-12-3 Silver Oxide, 99+%, Laboratory Grade, Powder
· **Identification number(s)**
· **EC number:** *243-957-1*

4 First-aid measures

· **Description of first aid measures**
· **After inhalation:** *Supply fresh air; consult doctor in case of complaints.*
· **After skin contact:** *Generally the product does not irritate the skin.*
· **After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.*
· **After swallowing:** *If symptoms persist consult doctor.*
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 Reviewed on 05/29/2024

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 2)

· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Use neutralizing agent.
Dispose contaminated material as waste according to section 13.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
· **Protective Action Criteria for Chemicals**
· **PAC-1:** 0.3 mg/m³
· **PAC-2:** 93 mg/m³
· **PAC-3:** 560 mg/m³

7 Handling and storage

· **Handling:**
· **Precautions for safe handling** Thorough dedusting.
· **Information about protection against explosions and fires:** No special measures required.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see section 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:** Not required.
· **Additional information:** The lists that were valid during the creation were used as basis.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 Reviewed on 05/29/2024

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 3)

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Not required.
· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**

Tightly sealed goggles

· **Body protection:** Protective work clothing

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Powder
Color:	Dark grey
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Product is not flammable.
· **Decomposition temperature:**	Not determined.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 Reviewed on 05/29/2024

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 4)

· **Ignition temperature:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard. Explosive when mixed with combustible material.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure:**	Not applicable.
· **Density at 20 °C (68 °F):**	7.143 g/cm³ (59.60834 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not applicable.
· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	.0016 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Strong irritant with the danger of severe eye injury.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**

· **Carcinogenic categories**
· **IARC (International Agency for Research on Cancer)** Substance is not listed.
· **NTP (National Toxicology Program)** Substance is not listed.
· **OSHA-Ca (Occupational Safety & Health Administration)** Substance is not listed.

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 Reviewed on 05/29/2024

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 5)

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Assessment by list): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, ADN, IMDG, IATA**	Not regulated
· **UN proper shipping name**	
· **DOT, ADN, IMDG, IATA**	Not regulated
· **Transport hazard class(es)**	
· **DOT, ADN, IMDG, IATA**	
· **Class**	Not regulated
· **Packing group**	
· **DOT, IMDG, IATA**	Not regulated
· **Environmental hazards:**	Environmentally hazardous substance, solid
· **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/29/2024 Reviewed on 05/29/2024

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 6)

· **Transport/Additional information:**

· **DOT**
· **Remarks:** Not Regulated

· **IMDG**
· **Remarks:** Not Regulated

· **IATA**
· **Remarks:** Not Regulated

· **UN "Model Regulation":** Not regulated

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.
· **Sara**
· **Section 355 (extremely hazardous substances):** Substance is not listed.
· **Section 313 (Specific toxic chemical listings):** Substance is listed.
· **TSCA (Toxic Substances Control Act):** ACTIVE
· **Hazardous Air Pollutants** Substance is not listed.
· **Proposition 65**
· **Chemicals known to cause cancer:** Substance is not listed.
· **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
· **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
· **Chemicals known to cause developmental toxicity:** Substance is not listed.

· **Carcinogenic categories**
· **EPA (Environmental Protection Agency)** Substance is not listed.
· **TLV (Threshold Limit Value)** Substance is not listed.
· **NIOSH-Ca (National Institute for Occupational Safety and Health)** Substance is not listed.
· **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

GHS03 GHS05

· **Signal word** Danger
· **Hazard statements**
May cause fire or explosion; strong oxidizer.
May cause fire or explosion; strong oxidizer.
Causes serious eye damage.
· **Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep/Store away from clothing/combustible materials.
Take any precaution to avoid mixing with combustibles.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
Wear fire/flame resistant/retardant clothing.

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

Trade name: Silver Oxide, 99+%, Laboratory Grade, Powder
disilver oxide

(Contd. of page 7)

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.
If on clothing: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
In case of fire: Use CO2, powder or water spray to extinguish.
In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
Collect spillage.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

*
16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *Environment protection department.*
· **Contact:**
Date of Preparation / Last Revision:
· **Date of preparation / last revision**
Revision 1.2, 05/28/2024: Reviewed SDS for accuracy. MH/STN
Creation date for SDS 11-10-2014. STN
05/29/2024
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Oxidizing Liquids 1: Oxidizing liquids – Category 1
Oxidizing Solids 1: Oxidizing solids – Category 1
Eye Damage 1: Serious eye damage/eye irritation – Category 1
· *** Data compared to the previous version altered.**