Safety Data Sheet

Silver Oxide

Created: Oct. 01. 2012
Revised: Nov. 01. 2016

1. Chemical Articles and Company Information

Name of Chemical Article:	Silver Oxide
Company Name:	Toyo Chemical Industrial Co., Ltd.
Address:	2-26-13 Naka-Izumi, Komae-City, Tokyo
Tel.:	+81-3-3489-5152
Fax:	+81-3-3488-1706
Emergency Contact:	As above
Recommended Applications and Use Restrictions:	Silver oxide battery

2. Summary of Hazards

GHS Classification

Damage to health	Acute (oral) toxicity	Class 4

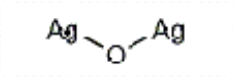
GHS Label Elements

Picture descriptions:

Cautionary terms:	Warning
Hazard information:	Poisonous if ingested
Cautions	
Safety Measures:	When using the product, do not eat, drink, or smoke. Avoid heat. Wear protective gloves, goggles, and face mask. Prevent contact with eyes, skin, and clothing. Do not inhale the dust. Wash hands thoroughly after handling. Avoid discharging into the environment.
Emergency Measures:	If the substance contacts the eye, irrigate with water thoroughly for several minutes. If contact lenses can be removed easily, remove and wash them. If eye irritation persists, consult a physician and receive treatment. If clothing is spattered, promptly remove and isolate all soiled clothing. If the substance adheres to the skin, wash using copious amounts of soap and water. If skin irritation occurs, consult a physician and receive treatment. If skin irritation occurs, consult a physician to receive diagnosis and treatment. If exposed or fear exposure, consult a physician to receive diagnosis and treatment. If ingested, rinse out the mouth, and immediately consult a physician to receive diagnosis and treatment. Gather any leaks.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Lock the storage location.
Disposal:	If discarding contents or containers, entrust to a specialized waste disposal company.
Other hazards:	Not available

3. Composition and Component Information

Single Substance or Mixture:	Single Substance
Chemical name or general name:	Silver oxide (I)
Another name:	-

Concentration or concentration range:	100%
Molecular formula (molecular weight):	Ag_2O（231.74）
Chemical characteristics (rational or structural formula):	
CAS No.:	20667-12-3
Reference numbers in gazetted list in japan(CSCL and ISHL):	1-9
Impurities and stabilization additives that contribute to the classification:	No information

4. Emergency Measures

If inhaled:	Move to a location with fresh air. If you feel unwell, consult a physician to receive diagnosis and treatment.
Adhesion to skin:	If clothing is spattered, promptly remove and isolate all soiled clothing. If the substance adheres to the skin, wash using copious amounts of soap and water. Contact a physician promptly.
Contact with eyes:	Rinse cautiously with water for several minutes. Continue rinsing. Contact a physician promptly.
If ingested:	Rinse mouth. If you feel unwell, consult a physician to receive diagnosis and treatment.
The most important sign of an acute symptom and the tardive symptom and symptom:	No information
Protection of people implementing emergency measures:	Rescuers should wear suitable protective equipment according to the circumstances.
Special precautions for physicians:	No information

5. Measures during Fires

Extinguishing agents:	Water, carbon gas, foam, powder
Extinguishants that must not be used:	No information
Characteristic dangers:	Be careful not to inhale the dust.
Characteristic extinguishing methods:	The product is not flammable, but promptly move containers in the vicinity of the fire to a safe location. If moving is not possible, scatter water on the containers and their surroundings to cool. If ignition occurs, douse the fire using copious amounts of water, etc. At this time, make sure there is no discharge of concentrated effluent into rivers, etc.
Protection of firefighters:	Wear appropriate air respiratory organs, hazmat suit (heat-resistant).

6. Measures during Leaks

Physical precautions, protective equipment, and measures during emergencies:	The worker wears a tool for appropriate protection (in item of "8. Exposure Avoidance and Protection Measures" reference) and avoids clothes, contact and inhalation to skin. Touch the leak thing and do not walk the inside. Cordon off the periphery of the dispersal area to prohibit the entrance of personnel. Prohibit the entrance except the person concerned.
Environmental precautions:	Avoid discharging into the environment.
Methods and materials for contamination and methods and materials for cleaning up:	No information
Collection and neutralization:	No information
Preventing secondary accidents:	No information

7. Handling and Storage Precautions

Handling

Technical measures:	Install local exhausters, and eye and hand washing facilities, in the handling locations. Ideally, handle in locations with local exhausters and overall ventilators. Wear protective gloves, goggles, and face mask.
Precautions for safe handling:	Prior to use, obtain an instruction book. Do not handle until all safety precautions and readings are understood. When using the product, do not eat, drink, or smoke. Wash hands thoroughly after handling. Do not touch, inhale, or drink. Prevent contact with eyes, skin, and clothing. Avoid discharging into the environment.
Contact evasion:	In item of "10. Stability and Reactivity" reference.

Storage

Safe storage conditions:	Lock the storage location. Store in a well-ventilated, cool location. Store away from the light. Technical measures:No information
Container and packing materials:	Airtight containers (glass, polyethylene, etc.)

8. Exposure Avoidance and Protection Measures

Control concentration:	No information
Tolerable concentration:	
Japan Society for Occupational Health (2015)	0.01mg/m^3 (as Ag)
ACGIH (2014)	TLV-TWA 0.1mg/m^3 (as Ag)
Equipment Measures:	Install local exhausters, and eye and hand washing facilities, in the handling locations. Install a ventilating device to keep an air pollutant management density or less.

Protective Equipment

Respirator:	When ventilation is insufficient, wear a suitable respirator.
Hand protective equipment:	Wear protective gloves. (Rubber gloves, etc.)
Eye protective equipment:	Wear eye protective equipment. (Goggles, etc.)
Skin and body protective equipment:	Wear protective face equipment, clothing, and protective shoes, etc. (Protective clothing, protective boots, etc.)

9. Physical and Chemical Properties

Physical properties

Shape:	Powder
Color:	Black - dark brown
Odor:	Odorless
Odor threshold value:	No information
pH:	No information
Melting point and coagulation point:	No information
Boiling point, initial boiling point, and boiling range:	No information
Ignition Point:	No information
Vaporization speed (butyl chloride=1):	No information
Burnability (solids and gas):	No information
Explosion range:	No information
Vapor pressure:	No information
Vapor density (vapor=1):	No information
Specific gravity (density):	d^{25} 7.22
Solubility:	No information
n-Octanol/water partition coefficient:	No information
Spontaneous ignition temperature:	No information
Dissolution temperature:	Decomposed at 200 ℃ or more
Viscosity:	No information

10. Stability and Reactivity

Reactivity:	No information
Stability:	Is decomposed by heat, light.
Possibility of harmful reactions:	Care should be taken since these will produce a silver nitrate explosive (fulminating silver) in the presence of ammonia.
Conditions to be avoided:	Light and heat
Incompatible substances:	Ammonia, Nitric acid
Hazardous degradable organisms:	Silver

11. Harmfulness Information

Acute toxicity:	
Oral:	Oral:Mouse LD50 1,027mg/kg
Pass; skin:	No data available
Inhalation:Gas	The definition of GHS is a solid.
Inhalation:Steam	The definition of GHS is a solid.
Inhalation:Dust,Mist	No data available
Skin corrosiveness and irritation:	No data available
Critical injury to eyes and eye irritant:	No data available
Respiratory organ sensitivity:	No data available
Skin sensitivity:	No data available
Germ-cell mutagenicity:	No data available
Carcinogenicity:	No data available
Reproductive toxicity:	No data available
Specific marker organs and systemic toxicity (single exposure):	No data available
Specific marker organs and systemic toxicity (repeated exposures):	No data available
Inhalable respiratory organ harmfulness:	No data available

12. Environmental Impact Information

Ecotoxicity	
Aquatic environmental harm (acute hazard):	No data available
Aquatic environmental harm (long-term hazard) :	No data available
Hazard to the ozone layer :	The materials concerned are not listed by an affiliated book of Montreal Protocol.

13. Disposal Precautions:

Residual waste:	Before the disposal, handle detoxification, stabilization and the neutralization as much as possible, and make a dangerous noxious level a low state. Discard according to the related laws and regulations, and local government standards. Submit an industrial waste control documentation (manifest) and entrust waste processing to an industrial waste disposal company authorized by the prefectural governor, etc. If outsourcing waste disposal, thoroughly notify the disposal companies of the dangers and harmfulness before outsourcing.
Dirty containers and packaging:	Suitably process containers according to the related laws and regulations, and local government standards. When disposing of empty containers, make sure to discard the contents completely.

14. Shipping Precautions

International Regulations	
UN No.:	-
Proper Shipping Name:	-
Class:	-
Sub Risk:	-
Packing Group:	-
Marine Pollutant:	-

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:	No
Japanese Regulations	
Land Regulation Information	Obey Poisonous and Deleterious Substances Control Law
Maritime Regulation Information	Obey Ship Safety Law regulations.
Aviation Regulation Information	Obey the Civil Aeronautics Law regulations.
Special safety measures	During transport, avoid direct sunlight, and load so that the containers are not damaged, corroded, or leaking, and secure the load to prevent toppling.

15. Applicable Laws

Handle this product according to local laws and regulations.

16. Other Information

Bibliography:

GHS classification results database: NITE website
GHS model SDS information: JISHA website
Reagent guidebook (Revised 2003)
Collection of Poisonous Materials Standard Notifications
Dictionary of Chemistry (1987 30th printing: Kyoritsu Shuppan)
16112 Chemical Products (2012 The Chemical Daily)

*Caution:

Hazard and harmfulness evaluations were created using the data and information available at the current time, but is not necessarily thorough, so handle with care.

Further, the data and evaluations described herein are not in any way guaranteed. The descriptions refer to normal handling, so for special handling, first implement safety measures conforming to the new application and methods of use.

This SDS is translated into English.(Original version is Japanese)