Issue date: 1/8/2004
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Safety Data Sheet

1. Chemical product and company identification

Product name	:	Silver, Powder

Company information

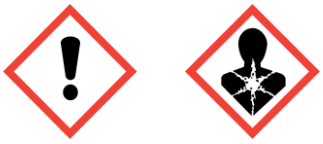
Name of manufacturer	:	KANTO CHEMICAL CO., INC.
Address	:	2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, JP
Name of section	:	Business Administration Department, Reagent Division
Telephone number	:	+81-3-6214-1090
Facsimile number	:	+81-3-3241-1047
Mail address	:	BC32@kanto.co.jp
Reference No	:	37057
Recommended use	:	For research use only
Restrictions on use	:	Seek expert judgment when using the product for applications other than those recommended.

2. Hazards identification

GHS classification

Health hazards	Serious eye damage/eye irritation	Category 2B
	Skin sensitization	Category 1
	Specific target organ toxicity (single exposure)	Category 1 (respiratory organs)
	Specific target organ toxicity (repeated exposure)	Category 1 (eye, respiratory organs)

Hazard pictograms



Signal word : Danger

Hazard statements : May cause an allergic skin reaction
Causes eye irritation
Causes damage to organs (respiratory organs)
Causes damage to organs (eye, respiratory organs) through prolonged or repeated exposure

Precautionary statements

Prevention : Do not breathe dust.
Wash hands, forearms and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.

Response : IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Call a POISON CENTER or doctor.
Get medical advice/attention if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage : Store locked up.

Disposal : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

3. Composition/information on ingredients

Distinction of substance or mixture : Substance

Chemical name	Concentration (%)	Formula	TSCA	EC-No.	CAS RN
Silver	≥ 99	Ag	Listed	231-131-3	7440-22-4

4. First aid measures

First aid measures

First-aid measures after inhalation : Remove the victim to fresh air, and make him blow his nose and gargle.

First-aid measures after skin contact : Wash the affected areas under running water.

First-aid measures after eye contact : Wash the affected areas under running water for at least 15 minutes. If necessary, get medical treatment.

First-aid measures after ingestion : Give the victim water or salt water and make him vomit. Get medical attention.

Personal Protection in First Aid and Measures : Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Suitable extinguishing media : This product is noncombustible.

Unsuitable extinguishing media : None

Firefighting instructions : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Personal protection (Emergency response) : Firefighters should wear protective equipment.

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures

General measures : Wear proper protective equipment and avoid contact with skin and inhalation of dust. Conduct operations from upwind and evacuate people downwind.

Environmental precautions

Environmental precautions : Attention should be given to avoid damage to the environment by

flowing of spillage to rivers.

Methods and Equipment for Containment and Cleaning up

For containment : Sweep up in a chemical waste container. Flush contaminated area with copious amounts of water.

7. Handling and storage

Handling

Technical measures : Wear appropriate protective equipment to avoid contact with skin or inhalation of dust.

Precautions for safe handling : Avoid formation of dust and aerosols.

Storage

Storage conditions : Store in a dark, cool place and tightly closed.

Material used in packaging/containers : Glass, polyethylene, polypropylene.

8. Exposure controls / Personal protection equipment

ACGIH TWA	0.1 mg/m³

Appropriate engineering controls : Install a local ventilation system in case of dusty condition.

Protective equipment

Respiratory protection : If necessary, wear dust mask

Hand protection : Impervious protective gloves

Eye protection : Safety goggles

Skin and body protection : Protective clothing, protective boots

9. Physical and chemical properties

Physical state : Solid

Color : Silvery white

Odor : Odorless

pH : No data available

Melting point : 960.5 ° C (In vacuum)

Freezing point : No data available

Boiling point : 1980 ° C

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability : Non flammable.

Vapor pressure : No data available

Relative density : 10.49 (20℃)

Density : No data available

Relative gas density : No data available

Solubility : Water: Insoluble. Soluble in nitric acid and concentrated sulfuric acid.

Partition coefficient n-octanol/water (log Pow) : No data available

Explosive limits (vol %)	:	No data available
Viscosity, kinematic	:	No data available
Particle characteristics	:	No data available

10. Stability and reactivity

Reactivity	:	In the molten state, it stores a large amount of oxygen and releases it during solidification. Reacts with ozone to produce silver peroxide. Reacts with hydrogen sulfide to produce silver sulfide.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Salts with oxalic acid and tartaric acid can explode upon heating. Reaction with nitric acid in the presence of ethanol produces explosive silver fulminates.
Conditions to avoid	:	Light, heat.
Incompatible materials	:	Acids, oxidizing substances.
Hazardous decomposition products	:	fume.

11. Toxicological information

Acute toxicity (oral)	:	No classification rat LD50>5000mg/kg
Acute toxicity (dermal)	:	No classification rat LD50>2000mg/kg
Acute toxicity (inhalation)	:	No classification (gas) Classification not possible (vapor) Classification not possible (dust, mist)
Skin corrosion/irritation	:	No classification Since it is reported to be "Slightly irritating" on rabbits, it was classified as "No classification".
Serious eye damage/irritation	:	Causes eye irritation It was classified into category 2B from the statement of mild irritation by rabbit test / recovered in 48 hours.
Respiratory sensitization	:	Classification not possible
Skin sensitization	:	May cause an allergic skin reaction Classified as category 1 because of the descriptions that powder exposure causes allergic contact dermatitis and that contact to accessories containing silver produced allergic reactions.
Germ cell mutagenicity	:	Classification not possible
Carcinogenicity	:	Classification not possible There are descriptions that carcinogenicity was not observed in the test in which powder was intramuscularly injected to rats. And there is no carcinogenic evidence to humans. But there is no information of classification evaluation organizations such as IARC, so it was determined that it cannot be classified.
Reproductive toxicity	:	Classification not possible
STOT-single exposure	:	Causes damage to organs (respiratory organs) The substance was classified into category 1 (respiratory organs). Based on the reports that lung disorders with pulmonary edema developed after exposure to heated metallic silver fumes for 4 hours, and that irritation to the airways develops after occupational exposure to the dust.

STOT-repeated exposure	:	Causes damage to organs (eye, respiratory organs) through prolonged or repeated exposure The argyrism (argyria) which is pigmentation in the skin and mucosa is produced by occupational exposure to powders, but as the description of dysfunction of decreased night vision, it was classified into category 1 (eye). It was classified into category 1 (respiratory organs) with the description that it became bronchitis by deposition to the lungs by prolonged inhalation of a dust.
Aspiration hazard	:	No classification

12. Ecological information

Ecotoxicity

Aquatic acute	:	Classification not possible
Aquatic chronic	:	Classification not possible

Persistence and degradability

No additional information available

Bioaccumulative potential

No additional information available

Mobility in soil

No additional information available

Hazardous to the ozone layer

Ozone	:	Classification not possible

13. Disposal considerations

Ecological waste information	:	Bury in a landfill site approved for the disposal of chemical and hazardous wastes. Or entrust approved waste disposal companies with the disposal.
Contaminated container and packaging	:	In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

International Regulations

Transport by sea(IMDG)

UN-No. (IMDG)	:	Not applicable
Proper Shipping Name (IMDG)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Transport hazard class(es) (IMDG)	:	Not applicable

Air transport(IATA)

UN-No. (IATA)	:	Not applicable
Proper Shipping Name (IATA)	:	Not applicable
Packing group (IATA)	:	Not applicable
Transport hazard class(es) (IATA)	:	Not applicable
Marine pollutant	:	Not applicable

15. Regulatory information

Regulatory information with regard to this substance in your country or region should be examined by your own responsibility.

16. Other information

Data sources : Encyclopaedia Chimica, Kyoritsu Shuppan Co, Ltd. (1963) .
Handbook of 17322 Chemical Products, The Chemical Daily Co. (2022) .
NITE Chemical Risk Information Platform (NITE-CHRIP), National Institute of Technology and Evaluation.

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully.The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements.The information herein is only provision of information, and it does not represent a guarantee the properties of the product.The Safety Data Sheet(SDS) is prepared based on JIS Z7253.