

## Safety Data Sheet

## Silver Cyanide

1st Version : May. 21. 2007

Revised : Feb. 28. 2024

## 1. Product and company information

Product Name : Silver Cyanide  
 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 use of the product and restrictions on use : Silver plating

## 2. Hazard identification

## GHS classification of the substance

Health hazards : Acute toxicity, oral Category 3  
 Serious eye damage/eye irritation Category 1  
 Specific target organ toxicity, repeated exposure Category 2 (Skin and respiratory organs)

## GHS Label elements

## Pictograms :



Signal word : Danger  
 Hazard statements : H301 : Toxic if swallowed  
 H318 : Causes serious eye damage  
 H373 : May cause damage to organs through prolonged or repeated exposure

## Precautionary statement

Safety measures : P264 : Wash hand thoroughly after handling.  
 P270 : Do not eat, drink or smoke when using this product.  
 P280 : Wear protective gloves/protective clothing/eye protection/face protection.  
 P260 : Do not breathe dust/fume/gas/mist/vapors/spray.  
 Emergency measures : P301 + P310 : If swallowed : Immediately call a doctor.  
 P330 : Rinse mouth.  
 P305 + P351 + P338 : If in eyes: Rinse cautiously with water for several minutes.  
 Remove contact lenses if present and easy to do - continue rinsing.  
 P310 : Immediately call doctor/physician.  
 P314 : Get medical advice/attention if you feel unwell.

Storage : P403 + P233 : Store in a well-ventilated place. Keep container tightly closed.  
 P405 : Store locked up.

Disposal : P501 : Dispose of contents/container entrust to a specialized waste disposal company.

## 3. Composition/information on ingredients

Substance or Mixture :		Substance			
Chemical name	Molecular formula (molecular weight)	CAS No.	Reference numbers in gazetted list in Japan (CSCL)	Reference numbers in gazetted list in Japan (ISHL)	Concentration or concentration range
Silver(I) Cyanide	AgCN (133.886)	506-64-9	1-3	—	100%

**4. First-aid measures**

If inhalation :	Get medical advice/attention if you feel unwell.
Skin contact :	If skin irritation or rash occurs get medical advice/attention.
Eye contact :	Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a doctor.
Ingestion :	Rinse mouth. Immediately call a doctor.
Most important symptoms / effects, acute and delayed :	Eye pain, severe burns, burning sensation, headache, dizziness, nausea, unconsciousness, respiratory paralysis, convulsion, diarrhea, vomiting, respiratory arrest.
Protection of people implementing emergency measures :	Rescuers should wear suitable protective equipment according to the circumstances. (See section 8. Exposure controls / personal protection)

**5. Fire-fighting measures**

Suitable extinguishing media :	Water spray, foam retardants, powder retardants, dry sand, etc.
Do not use extinguishing media :	Rod-shaped water discharge
Specific hazards :	This substance is nonflammable and does not burn itself, but can decompose when heated to produce corrosive and / or toxic fumes. When mixed in contact with high concentrations of acids, highly toxic and flammable hydrocyanic acid (gas) is produced. In an enclosed space, a mixture with explosive air to produced. Contact may cause skin and eye irritation.
Specific fire extinguishing method :	If it cannot be moved, cool it by sprinkling water around the container and its surroundings. Move the container from the region on fire if there is no danger. Continue to thoroughly cool the containers using copious amounts of water even after the fire has been extinguished.
Special protective actions fire-fighters :	Wear suitable air respirators and protective clothing (heat resistant). (See section 8. Exposure controls / personal protection)

**6. Accidental release measures**

Personal precautions, protective equipment and emergency procedures :	Workers must wear appropriate protective equipment (see section 8. Exposure controls / personal protection) and avoid contact with eyes and skin and inhalation. Do not touch the leakage and do not walk on it. Immediately isolate appropriate distances in all directions as leak areas. Prohibit the entrance except the person concerned. Stay upwind. Move away from lowlands.
Environmental precautions:	Ventilate enclosed area before entering. Avoid discharging into the environment.
Methods and materials for containment and cleaning up :	No information
Measures to prevent secondary disasters:	No information

**7. Handling and storage**

Handling Technical measures :	Take the equipment measures described in "8. Exposure controls/personal protection" and wear protective equipment. Described in "8. Exposure controls/personal protection" perform local exhaust and general ventilation.
Precautions for safe handling :	Do not eat, drink or smoke when using this product. Ventilation for exhaust. Wash hands thoroughly after handling. Do not swallow.

	Do not get in eyes, on skin, or on clothing.
	Do not breathe dust, fumes, or mist.
	Avoid discharging into the environment.
Contact evasion :	See "10. Stability and reactivity" section.
Storage	
Safe storage conditions :	Store locked up.
	Store in a closed container.
	Store in cool and well-ventilated place.
Container and packing materials:	Airtight containers (glass, polyethylene, polypropylene, etc.)

## 8. Exposure controls/personal protection

Control concentration :	3mg/m <sup>3</sup> (as CN)
Tolerable concentration :	
Japan Society for Occupational Health (2021)	0.01mg/m <sup>3</sup> (as Ag)
ACGIH (2014)	5mg/m <sup>3</sup> (as CN) (Max. tolerable concentration)
	TLV-TWA 0.01mg/m <sup>3</sup> (as Ag soluble compounds)
	TLV-TWA 5mg/m <sup>3</sup> (as CN)
Equipment measures :	Workplaces storing or handling this material should be equipped with an eyewash facilities and safety shower.
	Enclose the equipment or install a local exhaust ventilation to prevent exposure.
Protective equipment	
Respiratory protection :	Wear suitable respiratory equipment (gas mask (in case of fire: air respirator), dust mask). (Refer to JIS T8151 Particulate respirators, JIS T8152 Gas respirators, JIS T8155 Compressed air open-circuit self-contained breathing apparatus)
Hand protection :	Wear protective gloves. (rubber gloves, etc.) (Refer to JIS T8116 Chemical protective gloves)
Eye protection :	Wear appropriate eye protection (regular glasses, plain glasses with side plates, goggles). (Refer to JIS T8147 Protective Glasses)
Skin and body protection :	Wear protective clothing, and protective boots, etc. (Refer to JIS T8115 Chemical Protective Clothing, JIS T8117 Chemical Protective Boots)

## 9. Physical and chemical properties

Physical state :	Solid(Powder)
Color :	White
Odor :	Odorless
Melting point/freezing point :	320°C (Disassembly) : NITE (Access on Jul.2008)
Boiling point, initial boiling point, and boiling range :	
Dlammability :	Incombustibility : HSDB (2006)
Lower and upper explosion limit / flammability limit :	Solids are not applicable
Flash point :	Solids are not applicable
Aut-ignition temperature :	Solids are not applicable
Decomposition temperature :	> 320°C : NITE (Access on Jul.2008)
pH :	No information
Kinematic viscosity :	Solids are not applicable
Solubility :	Insoluble in water : Merk (13th, 2001) Water 0.23mg/L (20°C) : NITE (Acc)
Partition coefficient: n-octanol / water (log value) :	logPow=-0.69 (estimated value) : PHYSPROP (Access on Jul.2008)
Vapor pressure :	2.63E-005mmHg (25°C) (estimated value) : PHYSPROP (Access on Jul.2008)
Density and/or relative density	d3.95(19/4°C) : NITE(Access on Jul.2008)
Relative vapour density :	Solids are not applicable
Particle characteristics	No information

**10. Stability and reactivity**

Reactivity :	No information
Chemical stability :	It is considered to be stable in storage and handling in accordance with laws and regulations.
Possibility of hazardous reactions :	When mixed in contact with high concentrations of acids, highly toxic and flammable hydrocyanic acid (gas) is produced.
Conditions to be avoided :	Light, heat
Incompatible materials :	Phosphorus isocyanato, Fluorine, Dilute hydrochloric acid, Strong oxidants.
Hazardous decomposition products :	It changes to hydrogen cyanide and silver chloride by dilute hydrochloric acid. When in contact and mixing with high concentrations of acids, toxic flammable cyanide (gas) occurs. When heated, CN-, NOx toxic gases are generated.

**11. Toxicological information**

Acute toxicity	
Oral :	Based on the rat LD50 (oral route) value of 123mg/kg (RTECS (2005)).
Dermal :	Classification is not possible due to lack of data.
Inhalation : Gases	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of gas is not expected.
Inhalation : Vapours	Classification is not possible due to lack of data.
Inhalation : Dusts and mists	Classification is not possible due to lack of data.
Skin corrosios/irritation :	Based on RTECS (2005) description of the results of the primary skin irritation test using rabbits "Mild" is not a result of the 4-hour application test. It was considered to have mild irritability and was classified as category 3, but it was not classified as category.
Serious eye damage/irritation :	Based on the description in the report on rabbit eye irritation tests: "Severe," suggesting that the substance is severely irritating to the eye (though only limited study detail is available). Given the absence of data on reversibility, the substance is classified into Category 1-2A, but should be placed in Category 1 from the viewpoint of safety.
Respiratory sensitization :	Classification is not possible due to lack of data.
Skin sensitization :	Classification is not possible due to lack of data.
Germ-cell mutagenicity :	Classification is not possible due to lack of data.
Carcinogenicity :	Classification is not possible due to lack of data.
Reproductive toxicity :	Classification is not possible due to lack of data.
Specific target organ toxicity (single exposure) :	Classification is not possible due to lack of data.
Specific target organ toxicity (repeated exposure) :	Regarding humans, skin and respiratory organs are considered target organs because of descriptions such as "silver deposition disease", "irritation to the nose, dyspnea, bleeding, crusting, and nasal septum perforation" (HSDB (1998)) . Based on the above the classification was Category 2 (skin, respiratory).
Aspiration hazard :	Classification is not possible due to lack of data.

**12. Ecological information**

Toxicity	
Hazardous to the aquatic environment (acute) :	Classification is not possible due to lack of data.
Hazardous to the aquatic environment (chronic) :	Classification is not possible due to lack of data.
Persistence and degradability :	No information
Bioaccumulative potential :	No information
Mobility in soil :	No information
Hazardous to the ozone layer :	The materials concerned are not listed by an affiliated book of Montreal Protocol.

**13. Disposal considerations**

Residual waste :	Recover silver using reduction roasting or oxidative precipitation. Do not incinerate in an incinerator or the like without a cleaning device because a gas containing CN components is generated during incineration (It is desirable to outsource to a specialized company).
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Before disposal, treat as much detoxification, stabilization and neutralization as possible to lower the level of hazards.

Dispose in accordance with relevant laws and local government standards.

Dirty containers and packaging : Containers should be disposed properly in accordance with relevant laws and local government standards.

When disposing of empty containers, completely remove the contents.

## 14. Transport information

International regulations

UN No. :	1684
Proper shipping name :	Silver Cyanide
Class :	6.1
Sub risk :	—
Packing group :	II
Marine pollutant (sea) :	Applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code :	Not applicable

Japanese regulations

Land regulations information : Obey poisonous and deleterious substances control act regulations.

Maritime regulations information : Obey ship safety law regulations.

Aviation regulations information : Obey the civil aeronautics law.

Special safety measures : Yellow card must be held required during transport.

Do not transport together with food or livestock feed.

Do not add heavy goods.

When transporting, avoid direct sunlight, load containers without damage, corrosion, or leakage, and securely prevent collapse of cargo.

Urgent measures during a crisis policy number : 151

## 15. Regulatory information (Japanese law)

Poisonous and deleterious substances control act :	Poisonous substance not for medical use Article 2-8 of cabinet order
Fire service act :	Substances requiring notification of storage (30kg) (Article 9-3 of the act, Article 1-105 appended table 1-8, Ministerial ordinance 1989 No. 2 Article 1)
Industrial safety and health act :	Ordinance on industrial safety and health Article 594-2
PRTR :	Class I designated chemical substance (Appended table 1 164)
Labor standards act :	The following disease due to chemical substances etc: (Law art.75 (2), Enforcement rules Art.35 appended table 1-2. (iv)-(a) )
Air pollution control act :	Hazardous air pollutants (45 of Central environment council 9th report) Hazardous air pollutants (68 of Central environment council 9th report)
Water pollution control act :	Harmful substances (Law art.2, Enforcement order art.2, ordinance designatin wastewater standards art.1)
Marine pollution control law :	Individual goods transportation P (Enforcement rules art.30-2-3 Ministry of land, infrastructure, transport and tourism notice)
Ship safety act :	Poisons•Poison
Civil aeronautics act :	Poisons•Poison
Act on port regulations :	Poisons•Poison

\* Laws and regulations are examples and do not cover domestic laws and regulations.

## 16. Other information

References, etc. :	GHS classification results database: NITE website GHS model SDS information: JISHA website Ministry of health, labor and welfare website JIS Z7252 : 2019 JIS Z7253 : 2019 Selection Manual for Protective Equipment for Prevention of Skin Damage, etc. (Ministry of Health, Labour and Welfare Feb.2024 )
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**\*Caution:**

Although hazard and harmfulness evaluations are based on the data and information available at the current time, they may not be sufficient.

Please handle with care.

Furthermore, the data and evaluations described herein are not in any way guaranteed. The descriptions refer to normal handling.

Regarding special handling, please handle based on the safety measures which are suitable for the intended applications and methods of use.

This SDS is an English translation of a document prepared in Japanese in accordance with JIS Z7253:2019.