

# Safety Data Sheet

## Potassium Silver Cyanide

1st Version : May. 21. 2007

Revised : Feb. 28. 2024

### 1. Product and company information

Product Name :	Potassium 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 2 (Skin and respiratory organs)
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, repeated exposure	Category 2 (Skin and respiratory organs)
Environmental hazards :	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, chronic hazard	Category 1

#### GHS Label elements

##### Pictograms :



##### Signal word :

Danger

##### Hazard statements :

H300 : Fatal if swallowed  
 H316 : Causes mild skin irritation  
 H318 : Causes serious eye damage  
 H373 : May cause damage to organs through prolonged or repeated exposure (skin, respiratory system)  
 H400 : Very toxic to aquatic life  
 H401 : Toxic to aquatic life

#### Precautionary statement

##### Safety measures :

P260 : Do not breathe dust/fume/gas/mist/vapors/spray.  
 P262 : Do not get in eyes, on skin, or on clothing.  
 P264 : Wash hand thoroughly after handling.  
 P270 : Do not eat, drink or smoke when using this product.  
 P273 : Avoid release to the environment.  
 P280 : Wear protective gloves/protective clothing/eye protection/face protection.

##### Emergency measures :

P301 + P310 : If swallowed : Immediately call a doctor.  
 P301 + P330 + P331 : If swallowed : Rinse mouth. Do not induce vomiting.  
 P303 + P361 + P353 : If on skin (or hair) : Take off Immediately all contaminated clothing. Rinse skin with water [or shower].  
 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.  
 P330 : Rinse mouth.  
 P391 : Collect spillage.  
 P405 : Store locked up.  
 P501 : Dispose of contents/container entrust to a specialized waste disposal company.

Storage :  
 Disposal :

**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
Potassium Silver(I) Cyanide	K[Ag(CN) <sub>2</sub> ] (199.01)	506-61-6	1-1088	—	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, powder, and dry sand  
 Do not use extinguishing media : Carbon dioxide gas (can generate highly toxic hydrogen cyanide gas)  
 Specific hazards : Strong heat causes highly toxic hydrogen cyanide gas to be emitted.  
 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 : In case of fire in the surroundings, immediately move the container to a safe place.  
 If it cannot be moved, cool it by sprinkling water around the container and surroundings.  
 In case of ignition, extinguish with plenty of water.  
 Special protective actions fire-fighters : If heated to a high temperature, highly toxic hydrogen cyanide gas is generated, so the fire extinguishing operation is performed by wearing a protective mask such as an air supply mask or an air respirator from the windward side.  
 Keep all those unrelated to disaster prevention activities upwind.  
 (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.  
 Ventilate enclosed area before entering.

Environmental precautions:	Avoid discharging into the environment.
Methods and materials for containment and cleaning up :	Sweep up any leaks and collect in a sealable empty container for later disposal.
Preventing secondary accidents :	Prevent inflow to drainage ditches, sewers, cellars, or sealed locations.

## 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. Do not contact, inhale or swallow. Do not get in eyes, on skin, or on clothing. Do not breathe dust, fumes, or mist. Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. If not using deliberately, avoid release to the environment.
Contact evasion :	See "10. Stability and reactivity" section.
Storage	
Safe storage conditions :	Store locked up. Store in a closed container Store in a well-ventilated place. Store in cool place. Store in separately from acids and strong oxidants. Avoid simultaneous storage with food.
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 shoes, 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 in its dry state, but if wet, smells faintly of ammonia.

Melting point/freezing point :	No information
Boiling point, initial boiling point, and boiling range :	No information
Flammability :	No information
Lower and upper explosion limit / flammability limit :	No information
Flash point :	No information
Auto-ignition temperature :	No information
Decomposition temperature :	No information
pH :	Alkali when dissolved in water.
Kinematic viscosity :	No information
Solubility :	Water: 20°C 25g/100g
Partition coefficient: n-octanol / water (log value) :	No information
Vapor pressure :	No information
Density and/or relative density	d2.364
Relative vapour density :	No information
Particle characteristics	No information

## 10. Stability and reactivity

Reactivity :	No information
Chemical stability :	If dry, it will not change with light.
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, acids, and oxidants
Incompatible materials :	Strong oxidants
Hazardous decomposition products :	Hydrogen cyanide

## 11. Toxicological information

Acute toxicity	
Oral :	It was classified into Category 2 based on LD50 20.9mg / kg of the oral administration test using rats.
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 its 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 corrosions/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. But was considered to be mildly irritating and was classified into Category 3. (As Silver Cyanide)
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. (As Silver Cyanide)
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)) .

Aspiration hazard : Based on the above the classification was Category 2 (skin, respiratory). (As Silver Cyanide)  
Classification is not possible due to lack of data.

## 12. Ecological information

Toxicity  
Hazardous to the aquatic environment (acute) : It was classified into Category 1 from 96 hours LC50=0.113mg/L of the crustacea (Mysid Shrimp)) (ECETOC TR91, 2003). (As Potassium Cyanide)  
Hazardous to the aquatic environment (chronic) : Since acute toxicity was Category 1 and an underwater action and bio-accumulation were unknown, it was classified into Category 1. (As Potassium Cyanide)  
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).  
Before disposal, treat as much detoxification, stabilization and neutralization as possible to lower the level of hazards.  
Dispose of in accordance with relevant laws and local government standards.  
Dirty containers and packaging : Containers should be disposed of 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. : 1588  
Proper shipping name : Cyanides, inorganic, solid  
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.

## 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 :	Dangerous or Harmful Substances Subject to Be Indicated their Names (Article 57 of the act, Article 18 of the Cabinet Order, Appendix Table 9) Dangerous or Harmful Substances Whose Names, etc. Should Be Notified (Article 57-2 of the act, Article 18-2 of the Cabinet Order, Appendix Table 9) Dangerous or Harmful Substances for which a risk assessment should be conducted (Article 57-3 of the act) Ordinance on industrial safety and health Article 594-2
PRTR :	Class I designated chemical substance (Appended Table 1 105 Silver and its water-soluble compounds.)
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)
Water pollution control act :	Harmful substances (Law art.2, Enforcement order art.2, ordinance designating 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 )
--------------------	---

**\*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.