

Safety Data Sheet

Silver Cyanide

Created: May. 21, 2007

Revised: Nov. 01, 2016

1. Chemical Articles and Company Information

Name of Chemical Article: 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 Applications and Use Restrictions: Silver plating

2. Summary of Hazards

GHS Classification

Damage to health	Acute (oral) toxicity	Class 3
	Skin corrosiveness and irritation	Class 3
	Critical injury to eyes and eye irritation	Class 1
	Specific marker organ and systemic toxicity (repeated exposure)	Class 2 (Skin and respiratory organs)

GHS Label Elements

Picture descriptions:



Cautionary terms: Danger
 Hazard information: Poisonous if ingested
 Mild skin irritation
 Critical eye injury
 Risk of organ (skin and respiratory organ) damage due to long-term or repeated exposure.

Cautions

Safety Measures: When using the product, do not eat, drink, or smoke.
 Wear protective gloves, goggles, and face mask.
 Prevent contact with eyes, skin, and clothing.
 Do not inhale the dust.
 Wash hands thoroughly after handling.

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 ingested, rinse out the mouth, and immediately consult a physician for treatment.
 If you feel unwell, consult a physician to receive diagnosis and treatment.

Storage: 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 cyanide (I)
 Another name: -
 Concentration or concentration range: 100%

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Molecular formula (molecular weight): AgCN (133.87)
Chemical characteristics (rational or structural formula): $\text{Ag-C}\equiv\text{N}$
CAS No.: 506-64-9
Reference numbers in gazetted list in japan(CSCL and ISHL): 1-3
Impurities and stabilization additives that contribute to the classification: No information

4. Emergency Measures

If inhaled: If you feel unwell, consult a physician to receive diagnosis and treatment.
Adhesion to skin: If skin irritation occurs, consult a physician and receive treatment.
Contact with eyes: If the substance contacts the eye, irrigate with water thoroughly for several minutes.
If eye irritation persists, consult a physician and receive treatment.
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: Eye pain, major burns, burning sensation, headache, dizziness, nausea, loss of consciousness, respiration paralysis, convulsions, diarrhea, vomition, stopped respiration
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

Extinguishants: Water spray, powder, and dry sand
Extinguishants that must not be used: Rod infusers
Characteristic dangers: Strong noninflammability, and itself does not burn.
When disintegrate heated up and might generate corrosive and/or toxic haze.
When highly-concentrated acids contact it and mix it, hydrocyanic acid (gas) of the deadly poison combustibility occurs.
Air-fuel mixture with the explosive air occurs in the sealing up space.
Inflammation might be caused to skin and eyes by contact.
Characteristic extinguishing methods: 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.
Protection of firefighters: Under fierce heat, highly toxic hydrogen cyanide gas is emitted, so fight fires from upwind, and wear protective equipment such as a rebreather or respirator.
Keep upwind all personnel unnecessary to disaster prevention activities.

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: The leak thing that sweeps it on an airtight container, and was collected is disposed later.
Preventing secondary accidents: Prevent inflow to drainage ditches, sewers, cellars, or sealed locations.

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.

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Precautions for safe handling:	Prohibit the use of high-temperature devices, sparks, and naked flames in the vicinity. When using the product, do not eat, drink, or smoke. Do not touch, inhale, or drink. Prevent contact with eyes, skin, and clothing. Do not inhale dust, fumes, or mist. Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. If not using deliberately, avoid discharging into the environment.
Contact evasion:	In item of "10. Stability and Reactivity" reference.
Storage	
Safe storage conditions:	Securely seal the containers, and store in a well-ventilated, cool location. Isolate from acids and strong oxidants during storage. Avoid storing with foodstuffs. Lock the storage location. Technical measures:No information
Container and packing materials:	Airtight containers (glass, polyethylene, polypropylene, etc.)

8. Exposure Avoidance and Protection Measures

Control concentration:	3mg/m ³ (as CN)
Tolerable concentration:	
Japan Society for Occupational Health (2015)	0.01mg/m ³ (as Ag) 5mg/m ³ (as CN) (Max. tolerable concentration)
ACGIH (2013)	TWA 0.01mg/m ³ (as Ag) STEL 5mg/m ³ (as CN)
Equipment measures:	Install local exhausters, and eye and hand washing facilities, in the handling locations.
Protective Equipment	
Respirator:	Poison masks (respirator during fires), and dust masks
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:	White
Odor:	No information
Odor threshold value:	No information
pH:	No information
Melting point and boiling point:	Dissolves at 320°C
Boiling point, initial boiling point, and boiling range:	No information
Ignition point:	No information
Vaporization speed (butyl acetate=1):	No information
Burnability (solids and gas):	Noninflammability:HSDB(2006)
Explosion range:	No information
Vapor pressure:	2.63E-005mmHg (25°C) (estimated value)
Vapor density (vapor=1):	No information
Specific gravity (density):	d3.95
Solubility:	Water 20°C 2.2 x 10 ⁻⁵ g/100mL 10% ammonia water 18°C 0.52 g/100g
n-Octanol/water partition coefficient:	logPow=-0.69 (estimated value)
Spontaneous ignition temperature:	No information
Dissolution temperature:	Dissolves at 320°C
Viscosity:	No information

10. Stability and Reactivity

Reactivity:	No information
Stability:	Darkens when exposed to strong light.
Possibility of harmful reactions:	Highly toxic and flammable hydrogen cyanide gas is emitted due to contact with acid or heat dissolution.
Conditions to be avoided:	Light, heat, acids, and oxidants
Incompatible substances:	Strong oxidants
Hazardous degradable organisms:	Hydrogen cyanide and nitrogen oxides

11. Harmfulness Information

Acute toxicity	
Oral:	Rat oral: LD50; 123mg/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:	Mild skin irritation. Skin irritation: Rabbit; 500mg/24hr mild
Critical injury to eyes and eye irritation:	Critical eye injury. Eye irritation: Rabbit; 5mg/24hr severe
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 exposure):	Risk of organ (skin and respiratory organ) damage due to long-term or repeated exposure.
Inhalable respiratory organ harmfulness:	No data available

12. Environmental Impact Information

Ecotoxicity	
Aquatic environmental harm (acute hazard):	It is toxic and has effect to ecosystem for the hydrosphere environment creature, but cannot classify it because it is lacking in data.
Aquatic environmental harm (long-term hazard):	It is toxic and has effect to ecosystem for the hydrosphere environment creature, but cannot classify it because it is lacking in data.
Hazard to the ozone layer :	The materials concerned are not listed by an affiliated book of Montreal Protocol.

13. Disposal Precautions:

Residual waste:	Collect the silver using a roasting and reduction process, or an oxide precipitation process. During roasting, gasses containing CN are emitted, so do not roast using an incinerator without cleaning equipment. (Ideally, entrust to a specialized company.)
Dirty containers and packaging:	Suitably process containers according to the relevant regulations and local government standards. When disposing of empty containers, make sure to discard the contents completely.

14. Shipping Precautions

International Regulations	
UN No.:	1684
Proper Shipping Name:	Silver cyanide
Class:	6.1
Sub Risk:	-
Packing Group:	II
Marine Pollutant:	P
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:	No

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Japanese Regulations

Land Regulations Information
Maritime Regulations Information
Aviation Regulations Information
Special Safety Measures

Obey Poisonous and Deleterious Substances Control Law regulations.
Obey Ship Safety Law regulations.
Obey the Civil Aeronautics Law.
During transport, avoid direct sunlight, and load so that the containers are not damaged, corroded, or leaking, and secure the load to prevent toppling.
Do not transport together with food or livestock feed.
Yellow card display is required during transport.

Urgent Measures during a Crisis
Policy Number:

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15. Applicable Laws

Fire Service Act: Substances requiring notification of storage (30kg)
Poisonous and Deleterious Substances Control Law: Poison not for pharmaceutical use
PRTR Law: Class 1 designated chemical substance (attached table 1-144)
Water Pollution Control Act: Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinance Designating Wastewater Standards Art.1)

Marine Pollution Prevention Law
Pollutant Release and Transfer: Class 1
Regulations for the carriage and storage of dangerous goods in ship: Poison (P) (class 2)
Civil Aeronautics Act: Poison (class 2)
Act on Port Regulations: Poison

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)