



1st Version : Jun. 27. 2012
Revised : Mar. 31. 2026
Ver.10

Safety Data Sheet Tetraammine Palladium(II) Chloride Solution

1. Product and company information

Product Name : Tetraammine Palladium(II) Chloride Solution
Company Name : Toyo Chemical Industrial Co., Ltd.
Address : 2-26-13, Naka-Izumi, Komae-City, Tokyo
Tel : +81-3-3489-5152
Fax : +81-3-3489-5152
Emergency Contact : As above
Recommended use of the product and restrictions on use : Palladium plating

2. Hazard identification

GHS classification of the substance All items are "Outside scope of classification" or "Cannot classify".

GHS Label elements

Pictograms : None
Signal word : None
Hazard statements : None

Precautionary statement

Safety measures : Do not breathe gas/mist/vapors.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
Avoid release to the environment.

Emergency measures : If swallowed : Call a doctor. If you feel unwell.
If swallowed : Rinse mouth. Do not induce vomiting.
If on skin : Wash with plenty of water/soap
If inhaled: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes.
Remove contact lenses if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Storage: Store locked up.
Disposal: Dispose of contents/container entrust to a specialized waste disposal company.
Other hazards : No information

3. Composition/information on ingredients

Substance or Mixture :		Mixture			
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
Tetraammine Palladium (II) Chloride	[Pd(NH ₃) ₄]Cl ₂ (245.45)	13815-17-3	1-1122	—	20.5 %
Ammonia	NH ₃ (17.03)	7664-41-7	1-391	1-391	0.5 %
Water	H ₂ O (18.02)	7732-18-5	—	—	79.0 %

4. First-aid measures

Inhalation :	Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin contact :	Wash with plenty of water. 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. If eye irritation persists: Get medical advice/attention.
Ingestion :	Rinse mouth. Call a doctor. If you feel unwell.
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 :	Powder, Carbon dioxide gas, Water spray, Copious amounts of water
Do not use extinguishing media :	No information
Specific hazards :	This substance is nonflammable and does not burn itself, but can decompose when heated to outbreak harmful gas, so wear protective equipment when firefighting.
Characteristic extinguishing methods:	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 its surroundings. In case of ignition, extinguish with plenty of water.
Protection of firefighters:	Wear appropriate air-breathing apparatus and chemical protective clothing when extinguishing fires. (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. During work, wear protective equipment to prevent inhalation of dust, dust and gas, and work from the windward side. Prohibit the entrance except the person concerned.
Environmental precautions :	Avoid discharging into the environment.
Methods and materials for containment and cleaning up :	No information
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 :	Obtain instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Do not contact, inhale or swallow. Do not put it in eyes. 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, dry and dark place.

Container and packing materials : Airtight containers (Polypropylene, polyethylene, etc.)

8. Exposure controls/personal protection

Control concentration : Not set

Tolerable concentration :

Japan Society for Occupational Health (2025)	25ppm	as Ammonia
ACGIH (2024)	25ppm	TLV-TWA as Ammonia
	35ppm	TLV-STEL as Ammonia

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 protection (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 suitable protective gloves. (rubber gloves, etc.)
 (Refer to JIS T8116 Chemical protective gloves)

Eye protection : Wear suitable eye protection (regular glasses, plain glasses with side plates, goggles).
 (Refer to JIS T8147 Protective Glasses)

Skin and body protection : Wear suitable protective clothing, and protective boots, etc.
 (Refer to JIS T8115 Chemical Protective Clothing, JIS T8117 Chemical Protective Boots)

9. Physical and chemical properties
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Physical state : Liquid

Color : Light yellow

Odor : Weak ammonia odor

Melting point/freezing point : No information

Boiling point, initial boiling point, and boiling range : No information

Dammability : No information

Lower and upper explosion limit / flammability limit : No information

Flash point : No information

Aut-ignition temperature : No information

Decomposition temperature : No information

pH : 10 ~ 11

Kinematic viscosity : No information

Solubility : Mix arbitrarily in water

Partition coefficient: n-octanol / water (log value) : No information

Vapor pressure : No information

Density and/or relative density : About 1.12

Relative vapour density : No information

Particle characteristics : No information

10. Stability and reactivity

Reactivity : No information

Chemical stability : Stable substance under normal conditions.

Possibility of hazardous reactions :	Reduced to metallic palladium by a strong reducing agent. Harmful gases is released by contact with strong acids and exposure to high temperatures. Contact or mixture with flammable substances may cause heating and ignition due to the catalytic reaction of palladium.
Conditions to avoided :	Heat
Incompatible materisl : :	Reducing agents, metals, strong acid, and organic substances
Hazardous decomposition products :	Nitrogen oxide

11. Toxicological information

Acute toxicity	
Oral :	Classification is not possible due to lack of data.
Dermal :	It has been reported that subcutaneous injection of a water-soluble Pd salt into rats causes necrosis at the administration site when the amount is large, but classification is not possible due to lack of data.
Inhalation : Gases	Classification is not possible due to lack of data.
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 :	Classification is not possible due to lack of data.
Serious eye damage/irritation :	Classification is not possible due to lack of data.
Respiratory sensitization :	Classification is not possible due to lack of data.
Skin sensitization :	May cause skin allergy, but 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) :	Classification is not possible due to lack of data.
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
Hazard to the ozone layer :	The materials concerned are not listed by an affiliated book of Montreal Protocol.

13. Disposal Precautions:

Residual waste :	Recover palladium using reduction roasting or oxidative precipitation. Do not incinerate in an incinerator or the like without a cleaning device because a gas containing harmful components is generated during incineration (It is desirable to outsource to a specialized company). Outsource to an industrial waste disposal contractor licensed by the prefectural governor, or if a local public entity does the disposal, outsource it there. If outsourcing waste disposal, thoroughly notify the disposal companies of the dangers and harmfulness before outsourcing. Avoid discharging wastewater and washing wastewater containing this substance of directly into rivers, or landfill, or dumping.
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Dirty containers and packaging : Containers should be disposed properly according to relevant laws and local government standards.
When disposing of empty containers, completely remove the contents.

14. Transport information

International regulations

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

Japanese regulations

Land regulations information :	Not applicable
Maritime regulations information :	Not applicable
Aviation regulations information :	Not applicable
Special safety measures :	When transporting, avoid direct sunlight, load containers without damage, corrosion, or leakage, and securely prevent collapse of cargo.

15. Regulatory information (Japanese law)

Ammonia is designated under Article 57 (labelling), Article 57-2 (SDS), and Article 57-3 (risk assessment) of the Industrial Safety and Health Act.

*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.