

Safety Data Sheet

Palladium (II) Sulfate Solution

Created : July. 29. 2010

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1. Product and Company Information

Product Name :	Palladium (II) Sulfate Solution
Company Name :	Toyo Chemical Industrial Co., Ltd.
Address :	2-26-13 Naka-Izumi, Komae-City, Tokyo
Tel :	+81-3-3489-5152
Fax :	+81-3-3488-1706
Emergency Contact :	As above
Recommended use of the product and restrictions on use :	Palladium plating, catalysts

2. Hazard identification

GHS classification of the substance

Health hazards :	Acute toxicity, Inhalation : Dusts and mists	Category 2
	Skin corrosions/irritation	Category 1A
	Serious eye damage/irritation	Category 1
	Specific target organ toxicity, single exposure	Category 1 (respiratory)
	Specific target organ toxicity, repeated exposure	Category 1 (respiratory)
Environmental hazards :	Hazardous to the aquatic environment, acute hazard	Category 3

GHS Label elements

Pictograms :



Signal word : Danger

Hazard Statements :

H330 : Fatal if inhaled (Dusts and mists)
 H314 : Causes severe skin burns and eye damage
 H318 : Causes serious eye damage
 H370 : Causes damage to organs (respiratory)
 H372 : Causes damage to organs through prolonged or repeated exposure (respiratory)
 H402 : Harmful to aquatic life

Precautionary statement

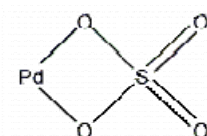
Safety Measures :

P260 : Do not breathe dust/fume/gas/mist/vapors/spray.
 P264 : Wash hand thoroughly after handling.
 P270 : Do not eat, drink or smoke when using this product.
 P271 : Use only outdoors or in a well-ventilated area.
 P273 : Avoid release to the environment.
 P280 : Wear protective gloves/protective clothing/eye protection/face protection.
 P284 : [In case of inadequate ventilation] Wear respiratory protection.
 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].

Emergency Measures :

	P304 + P340 : IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.
	P308 + P311 : IF exposed or concerned: Call a POISON CENTER/doctor/...
	P310 : Immediately call a doctor/physician.
	P314 : Get medical advice/attention if you feel unwell.
	P363 : Wash contaminated clothing before reuse.
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.
Other hazards :	No information

3. Composition/information on ingredients

Substance or Mixture :	Substance
Chemical name or general name:	Palladium(II) Sulfate
Another name:	—
Concentration or concentration range:	PdSO ₄ : 7.6% (Pd 4.0%)
Molecular formula (molecular weight):	PdSO ₄ : (202.48)
Chemical characteristics (rational or structural formula) :	
CAS No. :	13566-03-5
Reference numbers in gazetted list in japan(CSCL and ISHL) :	1-(3)-375
Impurities and stabilizing additives that contribute to classification :	Sulfuric acid

4. First-aid measures

If inhalation :	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin contact :	Take off contaminated clothing, shoes, etc. Rinse skin immediately with water. If changes in appearance manifest, or pain continues, consult a physician.
Eye contact :	Rinse eyes with water for several minutes and seek medical attention. When washing the eyes, open the eyelids thoroughly with your fingers, and wash the eyeballs and eyelids for that the water can reach all corners.
Ingestion :	Rinse mouth. Get medical advice/attention if you feel unwell.
Most important symptoms/effects, acute and delayed :	Corrosiveness, burning sensation, sore throat, cough, breathlessness, shortness of breath, redness, pain, blisters, severe skin burns, abdominal pain, shock or collapse.
Protection of people implementing emergency measures :	Rescuers should wear suitable protective equipment according to the circumstances.
Special precautions for physicians :	Symptoms of pulmonary edema are often unknown until a few hours have passed, so rest and follow-up are required.

5. Fire-fighting measures

Suitable extinguishing media :	This substance is does not burn itself. Use extinguishing media appropriate for surrounding fire.
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(SOx), 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 spraying water around the container and its surroundings. In case of ignition, extinguish with large amounts of water. At this time, care should be taken so that the concentrated waste liquid is not discharged into rivers.
Protection of firefighters :	Wear suitable air respirators and protective clothing (heat resistant).

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.
Environmental precautions:	Around the splattered area on put a rope prohibit the entry except the person concerned.
Methods and materials for containment and cleaning up :	Avoid discharging into the environment.
Collection and neutralization :	No information
Preventing secondary accidents :	Collect spills for containers, neutralize using soda ash, etc., and rinse off with plenty of water.
	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 handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. Do not contact, inhale or swallow. Use only outdoors or in a well-ventilated area. Wash hands thoroughly after handling. Avoid release to the environment.
Contact evasion :	See "10. Stability and Reactivity" section.
Storage	
Safe storage conditions :	Store in keep away from heat, strong alkalis and contact with reducing substances. Store locked up. Store in a closed container, and well-ventilated place. Technical measures:No information
Container and packing materials :	Use containers regulated by UN transportation laws.

8. Exposure controls/personal protection

Control concentration :	No information
Tolerable concentration :	
Japan Society for Occupational Health (2015)	1 mg/m ³ (as Sulfuric acid)
ACGIH (2013)	0.2 mg/m ³ (TLV-TWA) (as Sulfuric acid)
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 (such as air supply mask, air respirator, or oxygen respirator).
Hand protection :	Wear suitable protective gloves. (Neoprene gloves, etc.)
Eye protection :	Wear suitable eye protective equipment. (Goggles, etc.)
Skin and body protection :	Wear suitable protective face equipment, clothing, and protective shoes, etc. (Impermeable protective clothing, protective boots, etc.)

9. Physical and Chemical Properties

Physical state :	Liquid
Color :	Reddish-brown
Odor :	Odorless
Odor threshold :	No information
pH :	1 max.
Melting point/freezing point :	No information
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) :	No information
Explosion range :	No information
Vapor pressure :	No information
Vapor density (vapor=1) :	No information
Specific gravity (density) :	About 1.2~1.3
Solubility :	No information
n-Octanol/water partition coefficient :	No information
Spontaneous ignition temperature :	No information
Decomposition temperature :	No information
Viscosity :	No information

10. Stability and Reactivity

Reactivity :	No information
Chemical stability :	If there is sufficient water, it decomposes to palladium oxide.
Possibility of hazardous reactions :	It is reduced to metallic palladium by a strong reducing agent. Contact with metal, or exposure to high temperatures generates harmful gases (SO _x). Contact or mixture with flammable substances may cause heating and ignition due to the catalytic reaction of palladium.
Conditions to avoided :	Heat and Humidity
Incompatible materials :	Reducing agents, metals, strong alkalis, and organic substances
Hazardous decomposition products :	Sulfur oxides

11. Toxicological Information

Acute toxicity	
Oral:	Based on sulfuric acid oral rat LD ₅₀ value 2,140mg / kg (SIDS (2001)), and reports of deaths from human ingestion (the amount is unknown), it was classified into Category 5.
Dermal :	Classification not possible due to lack of data.
Inhalation : Gases	The definition of GHS is a liquid.
Inhalation : Vapours	The definition of GHS is a liquid.
Inhalation : Dusts and mists	Based on sulfuric acid rat LC ₅₀ value (4 hour exposure): 0.375 mg / L (SIDS (2001)) and (1 hour exposure): 7 ppm (4 hour equivalent: 0.347 mg / L) (SIDS (2001)), it was classified into Category 2.
Skin corrosios/irritation :	Since the pH is 1 or less, it was determined to be corrosive in accordance with the GHS classification criteria and was classified as Category 1A.
Serious eye damage/irritation :	In a case of personal injury caused by sulfuric acid, severe eye damage accompanied by dissolution of the anterior chamber was observed (ATSDR (1998)), Sulfuric acid caused moderate irritation to rabbit eyes with 5% solution and severe irritation with 10% solution (SIDS (2001)), and pH of sulfuric acid is less than 1, based on these results, it was classified as Category 1.
Respiratory sensitization :	Classification not possible due to lack of data.
Skin sensitization :	Classification not possible due to lack of data.
Germ-cell mutagenicity :	Classification not possible due to lack of data.
Carcinogenicity :	Classification not possible due to lack of data.

Reproductive toxicity :	Classification not possible due to lack of data.
Specific target organ toxicity (single exposure) :	Sulfuric acid is respiratory tract symptoms such as cough and shortness of breath have been observed with low-level inhalation exposure (DFGOT 2001), at high -level exposures acute effects such as coughing, shortness of breath, and excretion of bloody sputum, as well as permanent effects such as reduced lung function and fibrosis, emphysema were observed (ATSDR 1998), and pulmonary bleeding and dysfunction were observed in guinea pig 8-hour inhalation exposure (ATSDR1998), based on these results, it was classified as Category 1 (respiratory).
Specific target organ toxicity (repeated exposure) :	In a 28-day inhalation exposure test of sulfuric acid in rats, cell proliferation was observed in the laryngeal mucosa within the guidance value range of Category 1 (SIDS (2001)), Repeated inhalation exposure test of sulfuric acid in guinea pigs for 14 to 139 days showed airway and lung disorders such as nasal septum edema, emphysema, atelectasis, bronchiolar hyperemia, edema, bleeding and thrombus at concentrations within the guidance value range of Category 1. (ATSDR (1998)), In addition, in a 78-week inhalation exposure study in cynomolgus monkeys, histological findings such as cell hyperplasia and wall thickening in the bronchioles of the lung at doses within the guidance value range of Category 1 (0.048 mg / L, 23.5 hr / day) were performed. Changes were observed (ATSDR (1998), based on these results, it was classified as Category 1 (respiratory).
Aspiration hazard :	Classification not possible due to lack of data.

12. Ecological Information

Toxicity	
Hazardous to the aquatic environment (Acute) :	Based on sulfuric acid 96 hours LC50 = 16-28mg / L ((fish : bluegill)(SIDS (2003))), it was classified into Category 3.
Hazardous to the aquatic environment (long-term) :	Classification not possible due to lack of data.
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).
Dirty containers and packaging :	Containers should be disposed of 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. :	2796 SULPHURIC ACID (with not more than 51% acid)
Proper Shipping Name :	SULPHURIC ACID with not more than 51% acid
Class :	Class 8: Corrosive
Sub Risk :	—
Packing Group :	II
Marine pollutant (Sea) :	—
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code :	No
Japanese Regulations	
Land Regulations Information :	Obey Poisonous and Deleterious Substances Control Act and Fire Services Act regulations.
Maritime Regulations Information :	Obey Ship Safety Law regulations.
Aviation Regulations Information :	Obey the Civil Aeronautics Law.

Special Safety Measures :	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 must be held required during transport.
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15. Regulatory information (Japanese law)

Fire Service Act:	Substances requiring notification of storage (As the sulfuric acid) (200kg)
Poisonous and Deleterious Substances	Deleterious substance not for medical use
Control Act :	
Industrial Safety and Health Act :	Notifiable substance (Article 57-2, government ordinance Article 18-2 attached table No. 9-613) (As the sulfuric acid)
Ordinance on Prevention of Hazards	Specified Chemical Substance (Group 3) (As the sulfuric acid)
Due to Specified Chemical Substances :	
PRTR :	—
Regulations for the carriage and storage of dangerous goods in ship :	Corrosive Substances
Civil Aeronautics Act:	Corrosive Substances

16. Other Information

References, etc. :	GHS classification results database: NITE website GHS model SDS information: JISHA website Ministry of Health, Labor and Welfare website Reagent guidebook Collection of Poisonous Materials Standard Notifications Dictionary of Chemistry (1987 30th printing: Kyoritsu Shuppan) 16112 Chemical Products (2012 The Chemical Daily)
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*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)