

tetrammineplatinum(II) chloride solid

Section 1. Identification

Code: C1027T

GHS product identifier: tetrammineplatinum(II) chloride solid

Chemical name: tetraammineplatinum dichloride

Other means of identification: Platinum(2+), tetraammine-, chloride (1:2), (SP-4-1)-; Platinum tetramine dichloride; Tetraammine platinous chloride; Platinum(2++), tetraammine-, dichloride, (SP-4-1)-; TETRAAMMINEDICHLOROPLATINUM(II); Platinum(II), tetraammine-, dichloride

Product type: Solid.

Relevant identified uses of the substance or mixture and uses advised against: Not applicable.

Supplier's details: Johnson Matthey, 2001 Nolte Drive, West Deptford, NJ 08066 USA

Emergency telephone number (with hours of operation): For Hazardous Materials [or Dangerous Goods] Incident, Spill, Leak, Fire, Exposure, or Accident Call CHEMTREC Day or Night (collect calls accepted).
Within USA and Canada: 1-800-424-9300. Outside USA and Canada: +1 703-527-3887

Section 2. Hazards identification

OSHA/HCS status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture CORROSIVE TO METALS - Category 1
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms



Signal word **Warning**

Hazard statements May be corrosive to metals.
Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

Prevention Wear protective gloves/clothing and eye/face protection. Keep only in original container.

Response Absorb spillage to prevent material damage. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. 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 attention.

Storage

Disposal Not applicable.

Hazards not otherwise classified None known.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Chemical name tetraammineplatinum dichloride

Other means of identification Platinum(2+), tetraammine-, chloride (1:2), (SP-4-1)-; Platinum tetramine dichloride; Tetraammine platinous chloride; Platinum(2++), tetraammine-, dichloride, (SP-4-1)-; TETRAAMMINEDICHLOROPLATINUM(II); Platinum(II), tetraammine-, dichloride

CAS number/other identifiers

CAS number 13933-32-9

Product code C1027T

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
tetraammineplatinum dichloride	100	13933-32-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	Causes serious eye irritation.
Inhalation	No known significant effects or critical hazards.
Skin contact	Causes skin irritation.
Ingestion	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical No specific fire or explosion hazard.

Hazardous thermal decomposition products Decomposition products may include the following materials:
nitrogen oxides
halogenated compounds
metal oxide/oxides

Special protective actions for fire-fighters Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark Not available.

Remark Not available.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill Move containers from spill area. Absorb spillage to prevent material damage. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in a corrosion resistant container with a resistant inner liner. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
tetraammineplatinum dichloride	<p>ACGIH TLV (United States, 3/2015). TWA: 0.002 mg/m³, (as Pt) 8 hours.</p> <p>NIOSH REL (United States, 10/2013). TWA: 0.002 mg/m³, (as Pt) 10 hours.</p> <p>OSHA PEL (United States, 2/2013). TWA: 0.002 mg/m³, (as Pt) 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1 mg/m³, (as Pt) 8 hours. Form: Metallic form TWA: 0.002 mg/m³, (as Pt) 8 hours. Form: Soluble</p>

Appropriate engineering controls

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection

Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Physical state	Solid. [Crystalline solid.]	Melting point	Not available.
Color	White.	Boiling point	Not available.
Odor	Not available.	Flash point	Not available.
Odor threshold	Not available.	Burning time	Not available.
Vapor pressure	Not available.	Burning rate	Not available.
Vapor density	Not available.	Flammability (solid, gas)	Not available.
Evaporation rate	Not available.	Lower and upper explosive (flammable) limits	Not available.
Relative density	Not available.	Auto-ignition temperature	Not available.
pH	Not available.	Decomposition temperature	Not available.

Section 9. Physical and chemical properties

Partition coefficient: n-octanol/water Not available. SADT Not available.
 Solubility in water Not available. Viscosity Not available.
 Solubility Not available.

Section 10. Stability and reactivity

Reactivity No specific test data related to reactivity available for this product or its ingredients.
 Chemical stability The product is stable.
 Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur.
 Conditions to avoid No specific data.
 Incompatible materials Reactive or incompatible with the following materials:
 metals
 Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Conclusion/Summary Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
tetraammineplatinum dichloride	Skin - Primary dermal irritation index (PDII)	Mammal - species unspecified	2.8	-	-

Conclusion/Summary

Skin Causes skin irritation.

Eyes Causes eye irritation.

Respiratory Not available.

Sensitization

Not available.

Skin Not available.

Respiratory Not available.

Mutagenicity

Not available.

Conclusion/Summary Not available.

Carcinogenicity

Not available.

Conclusion/Summary Not available.

Reproductive toxicity

Not available.

Conclusion/Summary Not available.

Teratogenicity

Not available.

Conclusion/Summary Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Section 11. Toxicological information

Aspiration hazard

Not available.

Information on the likely routes of exposure Routes of entry anticipated: Dermal.
Routes of entry not anticipated: Oral, Inhalation.

Potential acute health effects

Eye contact	Causes serious eye irritation.
Inhalation	No known significant effects or critical hazards.
Skin contact	Causes skin irritation.
Ingestion	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Long term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Potential chronic health effects

Not available.

Conclusion/Summary	Not available.
General	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Interactive effects	Not available.
Other information	Not available.

Section 12. Ecological information

Toxicity

Not available.

Conclusion/Summary	Harmful to aquatic life with long lasting effects.
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Persistence and degradability

Not available.

Conclusion/Summary	Not available.
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Bioaccumulative potential

Section 12. Ecological information

Not available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) Not available.

Mobility Not available.

Other adverse effects No known significant effects or critical hazards.




Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Waste stream Not available.

RCRA classification Not available.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	UN3260	UN3260	UN3260
UN proper shipping name	Corrosive solid, acidic, inorganic, n.o.s. (tetraammineplatinum dichloride, solid)	CORROSIVE SOLID, ACIDIC, INORGANIC, N. O.S. (tetraammineplatinum dichloride, solid)	Corrosive solid, acidic, inorganic, n.o.s. (tetraammineplatinum dichloride, solid)
Transport hazard class(es) and Packing group	8 III 	8 III 	8 III 
Environmental hazards	No.	No.	No.
Additional information	<p>Limited quantity Yes.</p> <p>Packaging instruction Passenger aircraft Quantity limitation: 25 kg</p> <p>Cargo aircraft Quantity limitation: 100 kg</p> <p>Special provisions IB8, IP3, T1</p> <p>Remarks NOT RESTRICTED per 49CFR 173.154 (d)</p>	<p>Emergency schedules (EmS) F-A, S-B</p> <p>Special provisions 223, 274</p>	<p>Passenger and Cargo Aircraft Quantity limitation: 25 kg Packaging instructions: 860</p> <p>Cargo Aircraft Only Quantity limitation: 100 kg Packaging instructions: 864</p> <p>Limited Quantities - Passenger Aircraft Quantity limitation: 5 kg Packaging instructions: Y845</p> <p>Special provisions A3</p>

Special precautions for user Avoid exposure. ERG No. 154

Section 14. Transport information

Transport in bulk according to Annex II of MARPOL and the IBC Code Not available.

Proper shipping name Not available.

Ship type Not available.

Pollution category Not available.

Section 15. Regulatory information

U.S. Federal regulations TSCA 8(a) CDR Exempt/Partial exemption: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) Not listed

Clean Air Act Section 602 Class I Substances Not listed

Clean Air Act Section 602 Class II Substances Not listed

DEA List I Chemicals (Precursor Chemicals) Not listed

DEA List II Chemicals (Essential Chemicals) Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ Not applicable.

SARA 311/312

Classification Reactive
Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
tetraammineplatinum dichloride	100	No.	No.	Yes.	Yes.	No.

State regulations

Massachusetts This material is not listed.

New York This material is not listed.

New Jersey This material is not listed.

Pennsylvania This material is listed.

Not available.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Section 15. Regulatory information

Australia	Not determined.
Canada	This material is not listed in DSL but is listed in NDSL.
China	Not determined.
Europe	This material is listed or exempted.
Japan	Japan inventory (ENCS): Not determined. Japan inventory (ISHL): This material is listed or exempted.
Malaysia	Not determined.
New Zealand	Not determined.
Philippines	Not determined.
Republic of Korea	This material is listed or exempted.
Taiwan	This material is listed or exempted.
Turkey	Not determined.

Section 16. Other information

Procedure used to derive the classification


Classification	Justification
CORROSIVE TO METALS - Category 1	Expert judgment
SKIN IRRITATION - Category 2	Expert judgment
EYE IRRITATION - Category 2A	Expert judgment

History

Date of printing	10/01/2017
Date of issue/Date of revision	10/01/2017
Date of previous issue	29/11/2016
Version	3
Prepared by	Not available.
Key to abbreviations	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) UN = United Nations
References	Not available.

Indicates information that has changed from previously issued version.

US Label (29 CFR 1910.1200(f)(1))

tetrammineplatinum(II) chloride solid		
CAS: 13933-32-9	Code: C1027T	
Warning		
May be corrosive to metals. Causes serious eye irritation. Causes skin irritation.		
Wear protective gloves/clothing and eye/face protection. Keep only in original container. Absorb spillage to prevent material damage. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. 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 attention. Read SDS before using this product. Do not handle until all safety precautions have been read and understood.		
Johnson Matthey 2001 Nolte Drive, West Deptford, NJ 08066 USA non-emergencies: +1 856 384 7050; emergencies +1 800 424 9300		

Notice to reader

Section 16. Other information

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is given in good faith, being based on the latest information available to Johnson Matthey PLC and is to the best of Johnson Matthey PLC's knowledge and belief, accurate and reliable at the time of preparation. However, no representation, warranty or guarantee is made as to the accuracy, liability or completeness and Johnson Matthey PLC assumes no responsibility therefore, and disclaims any liability for any loss, damage or injury howsoever arising (including in respect of any claim brought by any third party) incurred using this information. The product is supplied on the condition that the user accepts responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. Freedom from patent or any other proprietary rights of any third party must not be assumed.