



# ID Card

## Tetraamminepalladium(2+) dihydroxide (in solution)

Version 31 March 2021

**Notes:**

- This ID card is used to support the substance sameness discussions and to describe the substance to the best of the members' knowledge.
- It also aims at grouping communications relevant to the request of available data or information, the approval of the proposed Lead Registrant and the registration strategy.
- It is the responsibility of each individual registrant to identify their substance and to report company-specific identity in their Registration Dossier (section 1 of IUCLID).

**DISCLAIMER**

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### 1. Identification of the substance

**Table 1. Identification of the substance**

	Original (in EC inventory)
<b>Name</b>	Tetraamminepalladium(2+) dihydroxide
<b>EC number</b>	270-241-6
<b>CAS number</b>	68413-68-3
<b>Description</b>	Not available
<b>Composition type</b>	Mono-constituent substance

### 2. Synonyms and other identifiers of the substance

**Table 2. Synonyms and other identifiers of the substance**

<b>IUPAC name</b>	Azane;palladium(2+);dihydroxide
<b>CAS name</b>	
<b>Abbreviations</b>	
<b>Other commercial, brand or international names</b>	Palladium(2+) hydroxide ammoniate (1:2:4) Tetraamminepalladium dihydroxide Tetraamminepalladium (II) hydroxide
<b>Other identity codes</b>	PubChem ID: 6456004

### 3. Substances (with core identifiers) also falling under this substance (with justification)

None

### 4. Information related to molecular and structural formula of the substance



Table 3. Information related to molecular and structural formula of the substance

<b>Molecular formula</b>	H14N4O2Pd
<b>Structural formula</b>	
<b>Smiles notation</b>	N.N.N.N.[OH-].[OH-].[Pd+2]
<b>Optical activity</b>	
<b>Typical ratio of (stereo) isomers</b>	
<b>Molecular Weight / Molecular Weight range</b>	208,56 g/mol

## 5. Typical composition of the substance

Table 4. Typical composition

	Name	Symbol / Formula	Min & Max concentrations (%) <sup>§</sup>	Typical concentration (%) <sup>§§</sup>
<b>Main constituent(s)*</b>	Tetraamminepalladium(2+) dihydroxide	H14N4O2Pd	->=99.5 - <=100% <sup>§</sup>	99.9
	<del>Water</del>		<del>86-94</del>	<del>93</del>
<b>Impurity(ies)<sup>#</sup></b>	Several minor (especially metallic) impurities which do not affect the classification of the substance because of their non-hazardous nature or because they do not exceed the classification cut-off limits in the substance	e.g. Ag, Au, Cu, Ir, Pb, Pt, Rh, Ru	>=0 - <=0.5%	0.1

\* ≥ 80 % (w/w) for mono-constituent substances; ≥ 10 % (w/w) and < 80 % (w/w) for multi-constituent substances.

<sup>#</sup> An impurity is an unintended constituent present in a substance, as produced. It may originate from the starting materials or be the result of secondary or incomplete reactions during the production process. While impurities are present in the final substance, they were not intentionally added.

<sup>§</sup> Concentration ranges define the substance sameness criteria agreed by all registrants..

<sup>§§</sup> Typical concentration refers to the representative sample used for testing.

<sup>§</sup> Corresponds to 51% Pd.

The information of the boundary composition refers to the composition of solid Tetraamminepalladium(2+) dihydroxide. Although solid Tetraamminepalladium(2+) dihydroxide can be isolated, protective gas atmosphere is needed to keep it stable. Under normal atmospheric conditions Tetraamminepalladium(2+) dihydroxide reacts with carbon dioxide under formation of Tetraamminepalladium hydrogencarbonate. In practice Tetraamminepalladium(2+) dihydroxide is put on the market in an aqueous solution containing up to a maximum of 14 % (w/w) of Tetraamminepalladium(2+) dihydroxide.



## 6. Information on appearance, physical state and properties of the substance

**Table 5. Appearance / physical state / properties of the substance in solution**

<b>Physical state</b>	Solution
<b>Solvent</b>	aqueous alkaline solution
<b>Concentration range of substance in solution</b>	$\geq 0.5$ – $\leq 14$ % <sup>§</sup>
<b>pH (range) of the solution</b>	
<b>Excess acid</b>	

<sup>§</sup> Corresponds to 0.3 - 7 % Pd.

## 7. Analytical data

Annex VI of REACH requires the registrant to describe the analytical methods and/or to provide the bibliographical references for the methods used for identification of the substance and, where appropriate, for the identification of impurities and additives. This information should be sufficient to allow the methods to be reproduced.

**Table 6. Analytical methods for identification of the substance**

Parameter / Method	Recommended for substance identification and sameness check	Applicable	Not applicable or not recommended
<b>Elemental analysis</b>			
ICP (ICP-MS or ICP-OES)	X		
Atomic absorption spectroscopy (AAS)			
Glow discharge mass spectrometry (GDMS)			
<b>Molecular analysis</b>			
Infrared (IR) spectroscopy			
Raman spectroscopy	X		
<b>Mineralogical analysis</b>			
X-Ray Fluorescence (XRF)		X	
X-Ray Diffraction (XRD)			
<b>Morphology and particle sizing</b>			
Electron microscopy (SEM, TEM, REM)*#			X
Laser diffraction*#			X
Particle size by other means (e.g. sieve analysis)#			X
Surface area by N-BET*#			X
<b>Other</b>			

\* Analytical techniques particularly (but not exclusively) relevant for nanomaterials.

# The choice of the technique for particle size depends on the size of the material as manufactured/imported/placed on the market/used.

## 8. Lead Registrant

Heraeus Deutschland GmbH & Co. KG (Germany) is the Lead Registrant for Tetraamminepalladium(2+) dihydroxide. The EPMF will provide support to the Lead Registrant as laid down in the EPMF Agreement.



## 9. REACH Strategy

The table below presents the overall Registration Strategy for Tetraamminepalladium(2+) dihydroxide based on the information available to the EPMF by the date given above on the document.

The Registration Dossier has been prepared for the highest substance status (information requirements associated to a substance or Article 10 Registration being higher than an intermediate handled under strictly controlled conditions or Article 17 or 18 one) and associated tonnage band.

The recap below therefore reflects the scope of work of the EPMF for Tetraamminepalladium(2+) dihydroxide and sets the minimum and maximum set of information that will be gathered and/or produced when preparing the Registration Dossier for Tetraamminepalladium(2+) dihydroxide as described in this ID Card.

If higher information requirements are necessary, these can be included in the Registration dossier (if EPMF is made aware of these additional requirements in-time) as an update to the already submitted dossier.

**Table 7. REACH strategy for the substance (basis for REACH Registration preparation)**

Item	Description
REACH category	Mono-constituent substance
Highest status	Substance
Highest tonnage band	1-10 t/a
Information requirements	Annex VII
Existing classification*	Acute Tox. 4 (H302) (oral) Skin Sens 1A (H317) Eye Irr. 2 (H319) Aquatic Acute 1 (H400) (M-factor 100) Aquatic Chronic 1 (H410) (M-factor 10)
Registration deadline	2018

\* For the pure form, as in the REACH registration dossier

## 10. Scope of the Registration Dossier

The uses included in this Registration Dossier are listed on the [EPMF website](#).

## 11. Analytical reference information

Below the results of Raman analysis of a reference sample used for testing.

Spectrometer: Bruker RFS 100/S

Laser: NdYAG 1064 nm

Spectral range: 3500 – 50 cm<sup>-1</sup>

Resolution: 2 cm<sup>-1</sup>

Scans: 500 scans

Temperature: ambient

Sample preparation: liquid phase (water), glass vial, closed

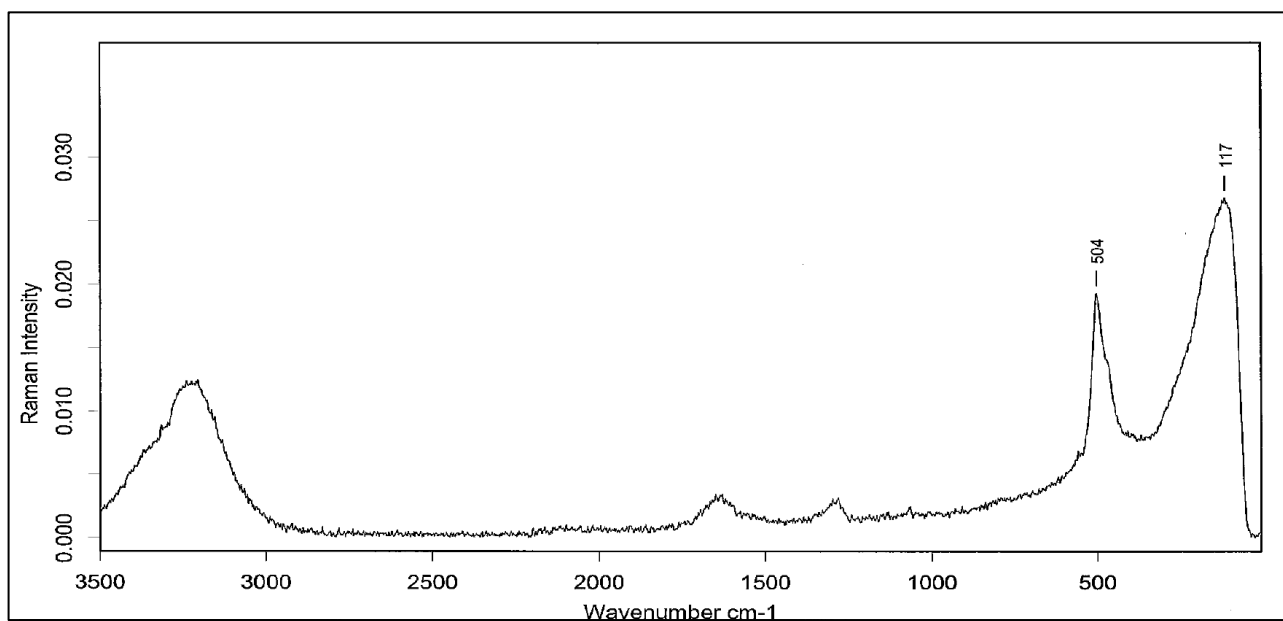


Figure 1. Raman spectrum of Tetraamminepalladium(2+) dihydroxide solution