ID Card
Tetraammineplatinum dinitrate

Version 17 July 2023

Notes:

- *This ID card is used to support the substance sameness discussions and to describe the substance to the best of the registrant's 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 with the joint-submission.*
- *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).*

1. Identification of the substance

Table 1. Identification of the substance

	Original (in EC inventory)
Name	Tetraammineplatinum dinitrate
EC number	243-929-9
CAS number	20634-12-2
Description	Not available
Composition type	Mono-constituent substance

2. Synonyms and other identifiers of the substance

Table 2. Synonyms and other identifiers of the substance

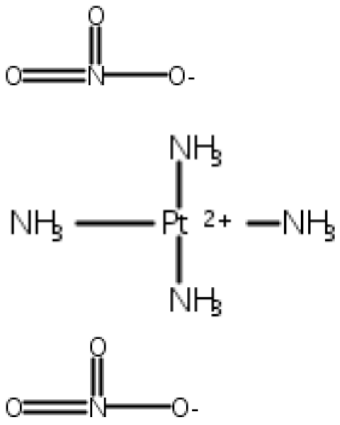
IUPAC name	Azane;platinum(2+);dinitrate
CAS name	Platinum(2+), tetraammine-, (SP-4-1)-, nitrate (1:2)
Abbreviations	
Other commercial, brand or international names	Platinum(2+) nitrate ammoniate (1:2:4) Platinum(II) tetraammine nitrate Tetraammine platinum(II) nitrate Platinum(2+), tetraammine-, (SP-4-1)-, dinitrate Azane platinum(2+) dinitrate
Other identity codes	

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

Molecular formula	(NH3)4Pt(NO3)2
Structural formula	
Smiles notation	[Pt+2].[O-][N+]([O-])=O.[O-][N+]([O-])=O.N.N.N.N
Optical activity	Not applicable
Typical ratio of (stereo) isomers	Not applicable
Molecular Weight / Molecular Weight range	387,21 g/mol

5. Typical composition of the substance

Table 4. Typical composition

	Name	Symbol / Formula	Min & Max concentrations (%)§	Typical concentration (%)§§
Main constituent(s)*	Tetraammineplatinum dinitrate	(NH3)4Pt(NO3)2	99 - 100$	> 99
Impurity(ies)#	Chloride	Cl	0 - 1	< 0,5
	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, Pd, Rh, Ru	0 - 0,5	< 0,5

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

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.

§ Concentration ranges define the substance sameness criteria agreed by all EPMF Members in preparation of the communication with other SIEF members.

§§ Typical concentration refers to the representative sample used for testing.

$ Corresponds to > 49,9 % Pt.

The composition given above is the theoretical composition of the solid substance. In practice, Tetraammineplatinum dinitrate is only brought on the market in solution (usually with 1-4.5% Pt content) because of the explosive properties of the solid form. The solvent can however be separated without affecting the chemical stability of the substance. The solid form is thus considered the same substance as the substance in solution; the solutions are considered mixtures under REACH.

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

Table 5. Appearance / physical state / properties of the solid substance

Physical state	Solid
Physical form*	Crystalline
Appearance	White to light yellow powder
Particle size**	Fine to coarse powder
Does the solid hydrolyse?#	No
Is the solid hygroscopic?§	No

* Crystalline form: solid material whose constituent atoms, molecules, or ions are arranged in an ordered pattern extending in all three spatial dimensions. Amorphous form: solid material whose constituent atoms, molecules, or ions are randomly arranged.

** Nanoform: particles in the size range 1 - 100 nm (for full definition of a nanomaterial, see http://ec.europa.eu/environment/chemicals/nanotech/index.htm#definition). Fine powder: particles in the size range 100 – 2.500 nm. Coarse powder: particles in the size range 2.500 nm – 1 mm. Massive object: particles in the size range > 1 mm.

Hydrolysis: decomposition (cleavage of chemical bonds) by the addition of water.

§ Hygroscopic substance: readily attracts moisture from its surroundings in open air, through either absorption or adsorption. Cf. also water/moisture content in Table 4.

Table 6. Appearance / physical state / properties of the substance in solution

Physical state	Solution
Solvent	Water
Concentration range of substance in solution	2 - 9 %$
pH (range) of the solution	4 - 7
Excess acid	Not applicable

$ Corresponds to 1 - 4.5 % Pt.

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 7. Analytical methods for identification of the substance

Parameter / Method	Recommended for substance identification and sameness check	Applicable	Not applicable or not recommended
Elemental analysis			
ICP (ICP-MS or ICP-OES)	X		
Atomic absorption spectroscopy (AAS)			
Glow discharge mass spectrometry (GDMS)			
Molecular analysis			
Infrared (IR) spectroscopy			X
Raman spectroscopy	X		
Mineralogical analysis			
X-Ray Fluorescence (XRF)		X	
X-Ray Diffraction (XRD)	X		
Morphology and particle sizing			
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		
Other			

* 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 is the Lead Registrant for Tetraammineplatinum dinitrate. The EPMF will provide support to the Lead Registrant as laid down in the EPMF Agreement.

9. Scope of the Registration Dossier

The uses included in this Registration Dossier are listed on the EPMF website.

10. Analytical reference information

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

Spectrometer: Bruker RFS 100/S

Laser: NdYAG 1064 nm

Spectral range: 3500 – 50 cm^{-1}

Resolution: 2 cm^{-1}

Scans: 100 scans

Temperature: ambient

Sample preparation: solution in glass vail, closed

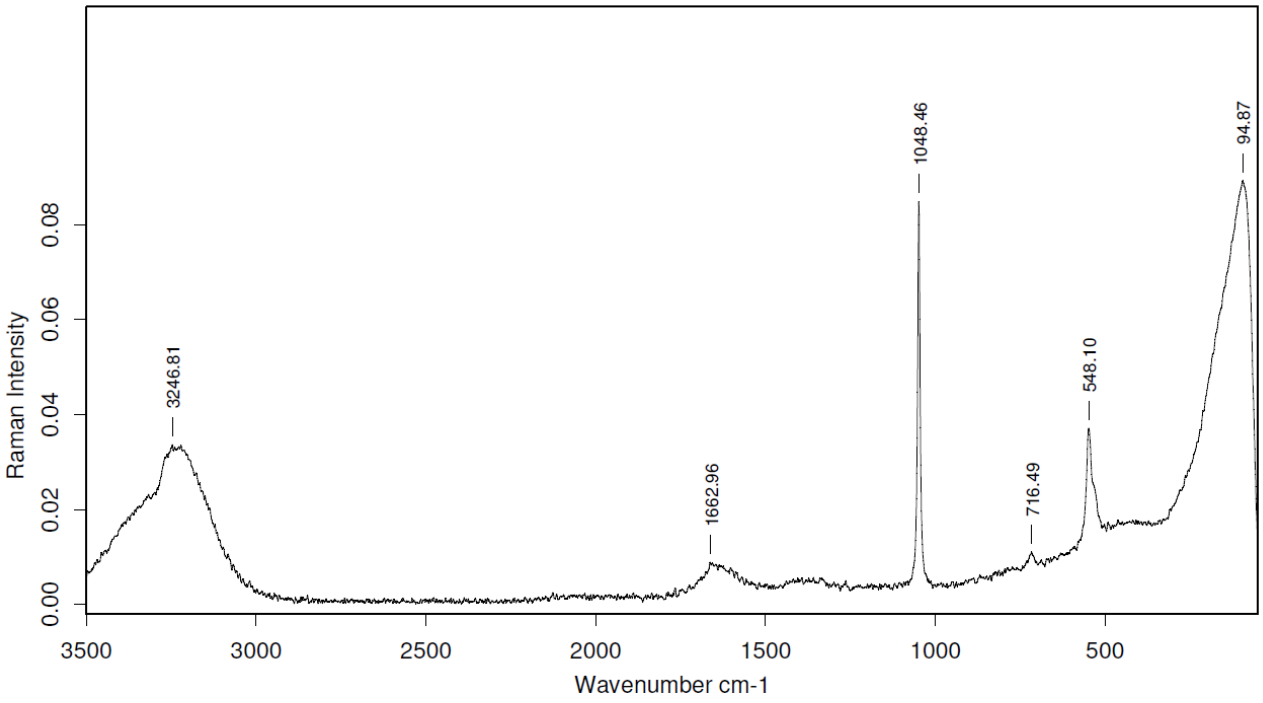


Figure 1. Raman spectrum of Tetraammineplatinum dinitrate solution