ID Card
Diammineplatinum (II) nitrite

Version 17 July 2023

Notes:

- *This ID card is used to support the substance sameness discussions in SIEFs and to describe the substance to the best of the SIEF 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 with the SIEF.*
- *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	Diammineplatinum(II) nitrite
EC number	238-203-3
CAS number	14286-02-3
Description	None
Composition type	Mono-constituent substance

2. Synonyms and other identifiers of the substance

Table 2. Synonyms and other identifiers of the substance

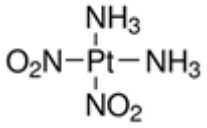
IUPAC name	azane;platinum(2+);dinitrite
CAS name	
Abbreviations	
Other commercial, brand or international names	Diamminebis(nitrito-N)platinum Diammineplatinum dinitrite Platinum diamino dinitrite
Other identity codes	PubChem ID 13071648

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	$(NH_3)_2Pt(NO_2)_2$
Structural formula	
Smiles notation	N.N.N(=O)[O-].N(=O)[O-].[Pt+2]
Optical activity	Not applicable
Typical ratio of (stereo) isomers	Not applicable
Molecular Weight / Molecular Weight range	321,16 g/mol

5. Typical composition of the substance

Table 4. Typical composition

	Name	Symbol / Formula	Min & Max concentrations (%)[§]	Typical concentration (%)
Main constituent(s)*	Diammineplatinum(II) nitrite	$(NH_3)_2Pt(NO_2)_2$	99 – 100[$]	> 99
Impurity(ies)[#]	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 - 1	<1

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

[#] ≥ 1 %. 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.

[$] Corresponds to >60,1% Pt.

The composition given above is the theoretical composition of the solid Diammineplatinum (II) nitrite as manufactured and/or imported in the EEA market. In practice, Diammineplatinum (II) nitrite is only brought on the market in an aqueous ammonia solution (usually with 1 – 20 % Diammineplatinum (II) nitrite content) because of the explosive properties of the solid form. The ammonia/water 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 crystalline powder
Particle size**	Fine powder / Coarse powder
Does the substance contain 'bound water'?#	No
Does the substance contain 'crystallisation water'?#	No
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.

'Bound water': water molecules that are coordinated as bound ligands. 'Crystallisation water' or hydration water: water that occurs in crystals (necessary for the maintenance of crystalline properties) but which is not directly bound to the metal ion (a hydrate contains a definite % of crystallisation water e.g. CuSO4 x 5 H2O, an anhydride does not contain any water)

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.

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

Physical state	Solution
Solvent	Ammonium hydroxide solution
Concentration range of substance in solution	1 - 20%
pH (range) of the solution	10.5 – 12.5
Excess acid	Not applicable

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[1]	
Raman spectroscopy	X		
Mineralogical analysis			
X-Ray Fluorescence (XRF)		X[1]	
X-Ray Diffraction (XRD)		X[1]	
Morphology and particle sizing			
Electron microscopy (SEM, TEM, REM)* #			
Laser diffraction* #			
Particle size by other means (e.g. sieve analysis)#			
Surface area by N-BET* #			
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.

[1] Possible but not recommended due to explosive properties of solid substance

8. Lead Registrant

Heraeus Precious Metals GmbH & Co. KG (Germany) volunteers to be the Lead Registrant for Diammineplatinum (II) nitrite. 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 (solution) analysis** of a reference sample.

Figure 1. Raman spectrum of Diammineplatinum (II) nitrite

Appendix 1 to Test Report No. A160010491

EVONIK INDUSTRIES

Analysis: **Raman spectroscopy (identity)**

Name of product: **Ammonia Sol $(NH_3)_2Pt(NO_2)_2$-Sol.**

Systematic name:	Platinum diammino dinitrite ammonical solution
Batch:	CPI-15864
Spectrometer:	Bruker RFS 100/S
Laser:	NdYAG 1064 nm
Spectral range:	3500 – 50 cm^{-1}
Resolution:	2 cm^{-1}
Scans:	500 scans
Temperature:	ambient
Sample preparation:	liquid phase, glass vail, closed
Result:	The spectrum conforms to the literature data.

Table 1: Characteristic vibration bands

Frequencies in cm^{-1}	Group
3217	NH_3
1339	$-NO_2^-$;stretching
545	Pt-N

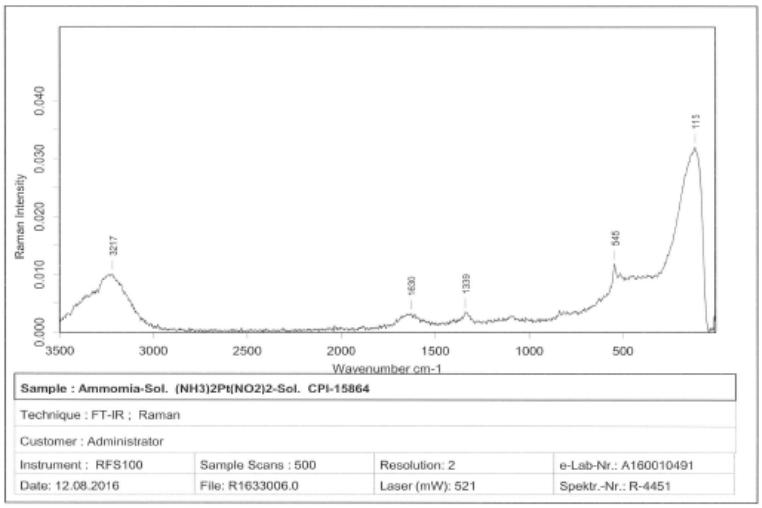


Figure 1.1: Raman spectrum of the test item

Test method:	SOP IR-008
Test period:	11.08.2016
Technician:	Kampa
Approval:	Kiesel

Evonik Technology & Infrastructure GmbH, Paul-Baumann-Straße 1, 45772 Marl, Germany page 1 of 1