



# ID Card

## Rhodium trihydroxide

Version 18 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).

### **DISCLAIMER**

All data and information contained in this document shall be treated by the receiving party (i) in full confidence with the adequate respect of any confidential and/or proprietary nature of such information and (ii) only in the framework of the purpose of agreeing on substance sameness, Lead Registrant and overall REACH Strategy for the concerned Substance under REACH (the 'Purpose').

The receiving party (and any representative) shall not be allowed to use or circulate any or all parts of this document for any other purpose than the Purpose, without the prior written consent of the European Precious Metals Federation (EPMF).

The content provided in this document is given for the Purpose and as such, no guarantee or warranty whatsoever (expressed or implied) is given as to its accuracy, completeness, merchantability or fitness for any particular purpose which the receiving party may have. In any case, any use by the receiving party would be made at its sole risk and liability.

## 1. Identification of the substance

**Table 1. Identification of the substance**

	<b>Original (in EC inventory)</b>
<b>Name</b>	Rhodium trihydroxide
<b>EC number</b>	244-508-2
<b>CAS number</b>	21656-02-0
<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>	Rhodium(3+);trihydroxide
<b>CAS name</b>	
<b>Abbreviations</b>	
<b>Other commercial, brand or international names</b>	Rhodium hydroxide
<b>Other identity codes</b>	

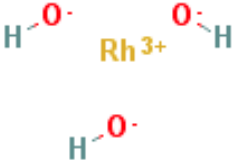
### 3. Substances (with core identifiers) also falling under this substance (with justification)

**Table 3. Substances also falling under this substance**

Name	EC number	CAS number	Justification
Rhodium hydroxide hydrate		120824-04-6	Rhodium hydroxide hydrate is a mixture of different hydrates ( $\text{Rh}(\text{OH})_3 \cdot n\text{H}_2\text{O}$ with $n=1-3$ ). According to Annex V(6) of the REACH Regulation, hydrates of a substance are exempted from Registration provided that the anhydrous form has been registered by the manufacturer or importer using this exemption.

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

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

<b>Molecular formula</b>	$\text{H}_3\text{O}_3\text{Rh}$ (anhydrous basis)
<b>Structural formula</b>	
<b>Smiles notation</b>	<chem>[OH-].[OH-].[OH-].[Rh+3]</chem>
<b>Optical activity</b>	Not applicable
<b>Typical ratio of (stereo) isomers</b>	Not applicable
<b>Molecular Weight / Molecular Weight range</b>	153,93 g/mol (anhydrous basis); 171,93 g/mol (monohydrate) – 207,93 g/mol (trihydrate)

### 5. Typical composition of the substance

Rhodium trihydroxide is only placed on the market in hydrated form. All forms of Rhodium trihydroxide will be addressed in the same Registration Dossier but are reported individually in IUCLID section 1.2.

- Rhodium trihydroxide (anhydrous)

**Table 5. Typical composition**

	Name	Symbol / Formula	Min & Max concentrations (%) <sup>§</sup>	Typical concentration (%) <sup>§§</sup>
<b>Main constituent(s)*</b>	Rhodium trihydroxide	Rh(OH) <sub>3</sub>	87 – 100	90,7
<b>Impurity(ies)#</b>	Chloric acid	Cl	0 – 9	6,9
	Sodium chloride	Na	0 – 3	2,3
	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, Pt, Ru	0 – 1	≤ 0,1

\* ≥ 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.

The composition given above is typical and should therefore represent the majority of Rhodium trihydroxide as manufactured and/or imported in the EEA market.

- Rhodium trihydroxide hydrate

**Table 6. Typical composition**

	Name	Symbol / Formula	Min & Max concentrations (%) <sup>§</sup>	Typical concentration (%) <sup>§§</sup>
<b>Main constituent(s)*</b>	Rhodium trihydroxide hydrate	Rh(OH) <sub>3</sub> .nH <sub>2</sub> O	87 - 100	90,7
<b>Impurity(ies)#</b>	Chloric acid	HCl	0 – 9	6,9
	Sodium chloride	NaCl	0 – 3	2,3
	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, Pt, Ru	0 – 1	≤ 0,1

\* ≥ 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.

The composition given above is typical and should therefore represent the majority of Rhodium trihydroxide hydrate as manufactured and/or imported in the EEA market.

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

**Table 7. Appearance / physical state / properties of the solid substance**

<b>Physical state</b>	Solid
<b>Physical form*</b>	Crystalline
<b>Appearance</b>	Dark brown powder
<b>Particle size**</b>	Fine to coarse powder
<b>Does the solid hydrolyse?#</b>	No
<b>Is the solid hygroscopic?§</b>	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.

\*\* Nanofom: 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 5

## 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 8. 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	X		
Raman spectroscopy			
<b>Mineralogical analysis</b>			
X-Ray Fluorescence (XRF)			



X-Ray Diffraction (XRD)		X	
<b>Morphology and particle sizing</b>			
Electron microscopy (SEM, TEM, REM)*#			
Laser diffraction*#	X		
Particle size by other means (e.g. sieve analysis)#			
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) volunteers to be the Lead Registrant for Rhodium trihydroxide. 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 IR analysis of a reference sample used for testing.

Spectrometer: Infrared spectrometer Tensor 27, BRUKER Optics

Spectral range: 4000 - 550 cm<sup>-1</sup>

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

Scans: 32 scans

Temperature: ambient

Sample preparation: Attenuated total reflection

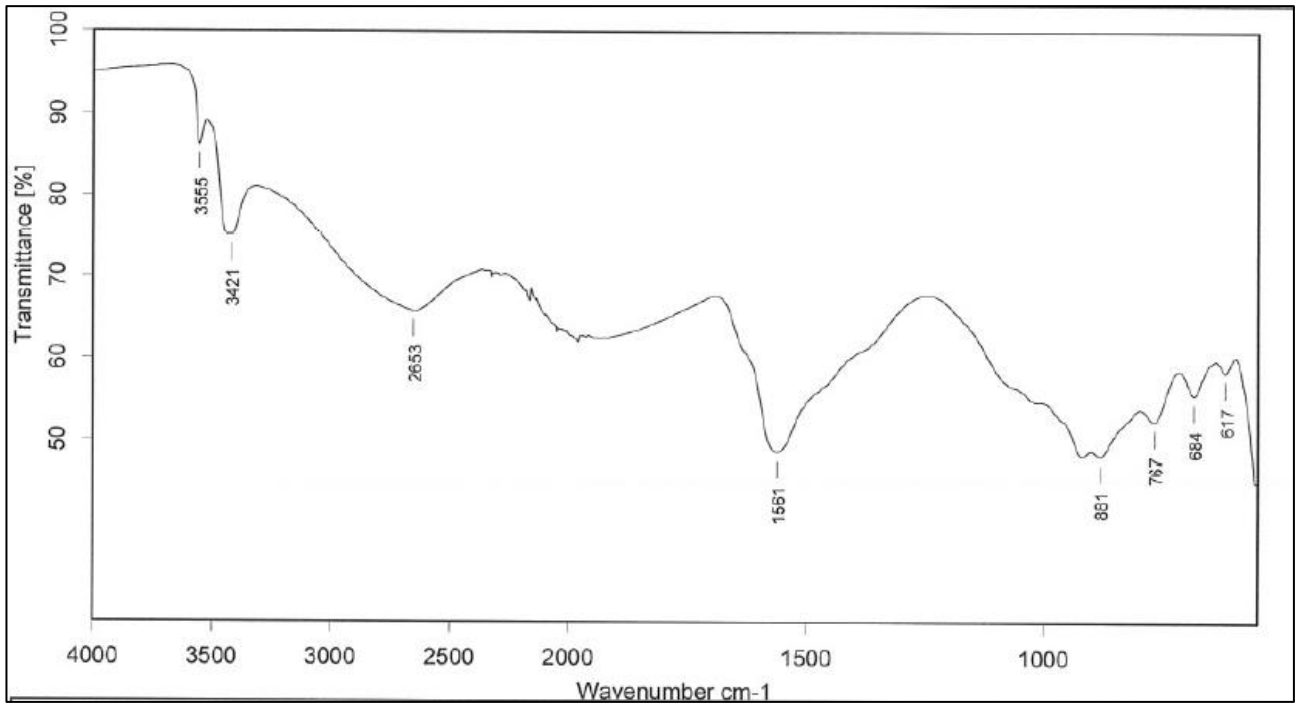


Figure 1. IR spectrum of Rhodium trihydroxide hydrate