



ID Card

Rhodium tris(2-ethylhexanoate)

Version 18 July 2023

Notes:

- This ID card is used to support the substance sameness discussions and to describe the substance to the best of the EU REACH Joint Submission 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 under EU REACH.
- It is the responsibility of each individual registrant to identify his substance and to report company-specific identity in his 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 EU REACH (the 'Purpose').

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1. Identification of the substance

Table 1. Identification of the substance

	Original (in EC inventory)
Name	Rhodium tris(2-ethylhexanoate)
EC number	244-079-1
CAS number	20845-92-5
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

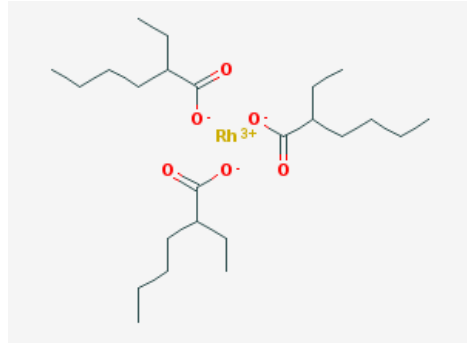
IUPAC name	2-ethylhexanoate;rhodium(3+)
CAS name	
Abbreviations	
Other commercial, brand or international names	Rhodium(III) 2-ethylhexanoate Rhodium 2-ethylhexanoate Hexanoic acid, 2-ethyl-, rhodium(3+) salt (3:1) Rhodium(3+) tris(2-ethylhexanoate)
Other identity codes	PubChem ID: 89395

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	C ₂₄ H ₄₅ O ₆ Rh
Structural formula	
Smiles notation	CCCCC(CC)C(=O)[O-].CCCCC(CC)C(=O)[O-].CCCCC(CC)C(=O)[O-].[Rh+3]
Optical activity	Not applicable
Typical ratio of (stereo) isomers	
Molecular Weight / Molecular Weight range	532,52 g/mol

5. Typical composition of the substance

The composition given below is the theoretical composition of the most concentrated form. The most concentrated form of Rhodium tris(2-ethylhexanoate) contains 85,4 % Rhodium tris(2-ethylhexanoate).

The residual 2-ethylhexanoic acid cannot be completely removed without affecting the stability of the substance or changing its chemical composition. A minimum of approx. 12 % of 2-ethylhexanoic acid is needed to keep the Rhodium tris(2-ethylhexanoate) stabilized.

Table 4. Typical composition – most concentrated form

	Name	Symbol / Formula	Min & Max concentrations (%)[§]	Typical concentration (%)
Main constituent(s)*	Rhodium tris(2-ethylhexanoate)	C ₂₄ H ₄₅ O ₆ Rh	81 – 88 [§]	85,4
Impurities[#]	2-ethylhexanoic acid (CAS# 149-57-5)	C ₈ H ₁₆ O ₂	12 – 19 ^{§§}	12,0
	water	H ₂ O	0 - 3	2,6
	Several minor (especially metallic) impurities which do	e.g. Ag, Au, Ir, Pd, Pt, Ru,	0 – 0,1	< 0,1

	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	Fe, Co, Mn, Na		
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* $\geq 80\%$ (w/w) for mono-constituent substances; $\geq 10\%$ (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.

§§ Quantity of by-product/solvent necessary to preserve the chemical stability of Rhodium tris(2-ethylhexanoate).

§ Corresponds to 15,6 - 17,0 % Rh.

In practice, Rhodium tris(2-ethylhexanoate) is only brought on the market in a diluted solution containing 7,5 – 12,9% Rhodium tris(2-ethylhexanoate) (corresponding to 1,5 – 2,5% Rhodium content). Typical solvents intentionally added after the manufacturing of the substance are 2-ethylhexanol or 2-ethylhexanoic acid.

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

Table 5. Appearance / physical state / properties of the substance in most concentrated form*

Physical state	Viscous / liquid, depending on content of 2-ethylhexanoic acid
Concentration range of substance in solution	81 – 88 % (typical concentration 85,4 %, corresponding to 15,6 to 17 % Rhodium)
By-product generated during manufacturing of substance	2-ethylhexanoic acid, acts as solvent and stabilizer, necessary to preserve the chemical stability of Rhodium tris(2-ethylhexanoate)
pH (range) of the solution	
Excess acid	

* For liquid substances (solvent cannot be separated from substance without changing the identity of the substance) and not for mixtures, suspensions, and other non-substance forms in which the substance is manufactured and/or imported under REACH.

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

Physical state	Solution
Solvent intentionally added after the manufacturing of the substance	2-ethylhexanoic acid or 2-ethylhexanol
Concentration range of substance in solution	$< 88\%$ (usually at a concentration of 7,5 – 12,9% Rhodium tris(2-ethylhexanoate), corresponding to 1,5 – 2,5% Rhodium content)
pH (range) of the solution	
Excess acid	

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 Deutschland GmbH & Co. KG (Germany) is the Lead Registrant for Rhodium tris(2-ethylhexanoate). 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.

Spectrometer: LabRam-HR HORIBA
Laser: Diode 785 nm
Spectral range: 150 - 3030 cm^{-1}
Grating: 600gr/mm
Acq. Time / Accum. 30s / 12
Temperature: ambient
Sample preparation: liquid phase, glass vial, closed; Multipass
Temperature: ambient

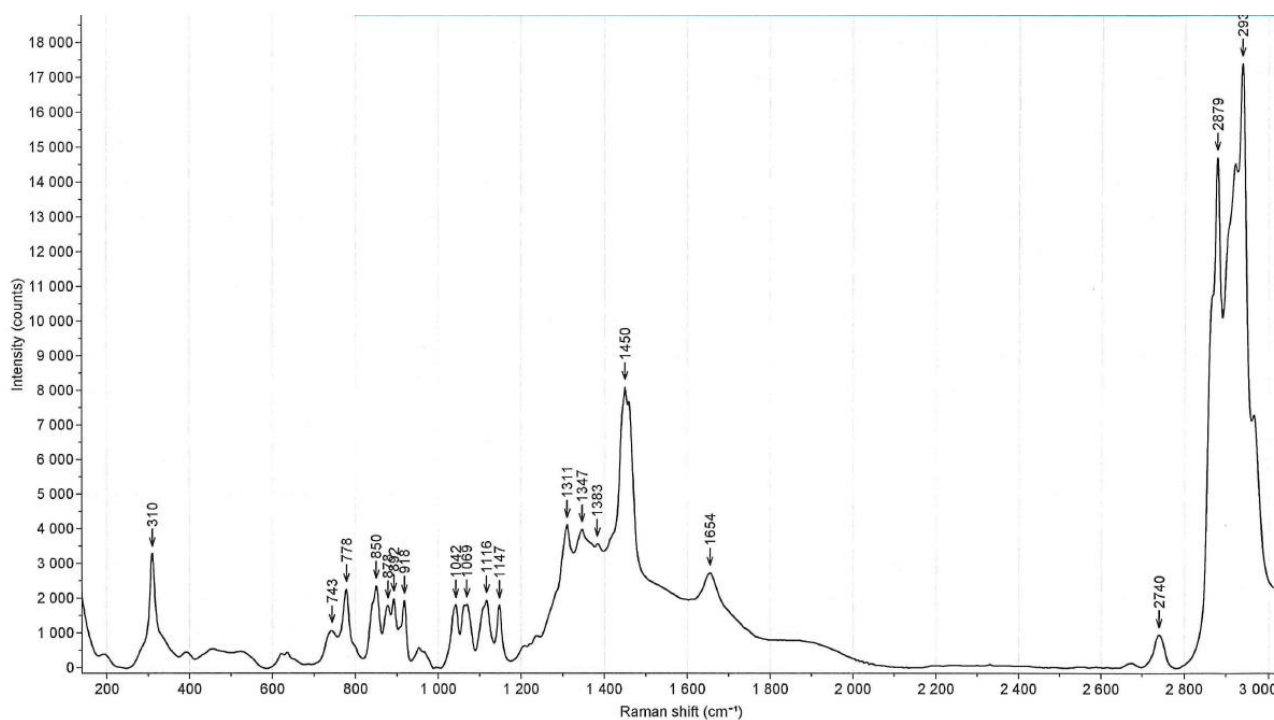


Figure 1. Raman spectrum of Rhodium tris(2-ethylhexanoate) with 2-ethylhexanoic acid as solvent

Spectrometer: LabRam-HR HORIBA
Laser: Diode 785 nm
Spectral range: 3030 - 150cm⁻¹
Grating: 600gr/mm
Acq. Time / Accum. 15s / 12
Temperature: ambient
Sample preparation: liquid phase, glass vial, closed; Multipass
Temperature: ambient

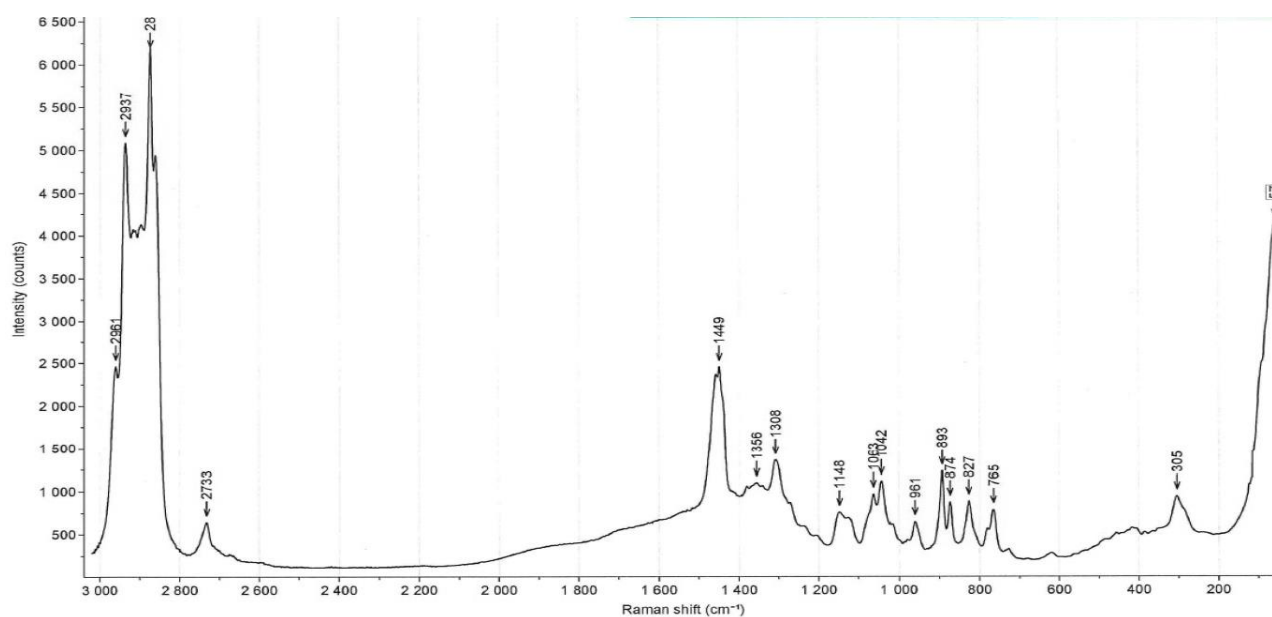


Figure 2. Raman spectrum of Rhodium tris(2-ethylhexanoate) with 2-ethylhexanol as solvent