

## Certificate of Analysis

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**Product Name:** Ruthenium Red

**Catalog No.:** 1439

**Batch No.:** 4

CAS Number: 11103-72-3

IUPAC Name: Ammoniated ruthenium oxychloride

### 1. PHYSICAL AND CHEMICAL PROPERTIES

**Batch Molecular Formula:**  $H_{42}N_{14}O_2Ru_3Cl_6 \cdot 2\frac{1}{2}H_2O$

**Batch Molecular Weight:** 831.39

**Physical Appearance:** Bright yellow solid

**Solubility:** water to 10 mM

**Storage:** Store at RT

**Batch Molecular Structure:**  $[(NH_3)_5RuORu(NH_3)_4ORu(NH_3)_5]^{6+} 6Cl^-$

### 2. ANALYTICAL DATA

**Microanalysis:**

	Carbon	Hydrogen	Nitrogen
Theoretical	5.7	23.59	
Found	5.5	23.51	

Caution - Not Fully Tested • Research Use Only • Not For Human or Veterinary Use

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**Description:**

Blocks Ca<sup>2+</sup> uptake and release from mitochondria, and Ca<sup>2+</sup> release from ryanodine-sensitive intracellular stores. Also blocks cell membrane-located capsaicin-activated cation channels (IC<sub>50</sub> = 14 nM) and voltage-sensitive Ca<sup>2+</sup> channels to inhibit neurotransmitter release.

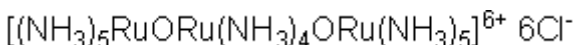
**Physical and Chemical Properties:**

Batch Molecular Formula: H<sub>42</sub>N<sub>14</sub>O<sub>2</sub>Ru<sub>3</sub>Cl<sub>6</sub>.2½H<sub>2</sub>O

Batch Molecular Weight: 831.39

Physical Appearance: Bright yellow solid

**Batch Molecular Structure:**



**Storage:** Store at RT

**Solubility & Usage Info:**

water to 10 mM

**Stability and Solubility Advice:**

Some solutions can be difficult to obtain and can be encouraged by rapid stirring, sonication or gentle warming (in a 45-60°C water bath).

Information concerning product stability, particularly in solution, has rarely been reported and in most cases we can only offer a general guide. Our standard recommendations are:

**SOLIDS:** Provided storage is as stated on the product label and the vial is kept tightly sealed, the product can be stored for up to 6 months from date of receipt.

**SOLUTIONS:** We recommend that stock solutions, once prepared, are stored aliquoted in tightly sealed vials at -20°C or below and used within 1 month. Wherever possible solutions should be made up and used on the same day.

**References:**

**Szallasi and Blumberg** (1999) Vanilloid (capsaicin) receptors and mechanisms. *Pharmacol.Rev.* **51** 159. PMID: 10353985.

**Xu et al** (1999) Ruthenium red modifies the cardiac and skeletal muscle Ca<sup>2+</sup> release channels (ryanodine receptors) by multiple mechanisms. *J.Biol.Chem.* **274** 32680. PMID: 10551824.

**Amann and Maggi** (1991) Ruthenium red as a capsaicin antagonist. *Life Sci.* **49** 849. PMID: 1715010.

**Bernardi et al** (1984) Pathway for uncoupler-induced calcium efflux in rat liver mitochondria: inhibition by ruthenium red. *Biochemistry* **23** 1645. PMID: 6202317.

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