

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY UNDERTAKING

1.1 Product Identifier

Chemical name Ruthenium Trichloride hydrate
C.A.S. Registry Number 14898-67-0
EINECS number 233-167-5
Molecular weight 261,47 g/mol
Chemical formula $RuCl_3 \cdot nH_2O$

1.2 Pertinent use of the substance and recommended use

Additive for electroplating baths. Catalyst.

1.3 Informations about the furniture of the safety data sheet

Name FAGGI ENRICO S.P.A.
Address Via Majorana, 101/103
 50019 Sesto Fiorentino FI

Telephone number 055311861
Fax number 055311791
Competent person responsible for the safety
data sheet lorenzo.magaldi@faggi.it
1.4 Emergency telephone number Tel. 0557947819 Centro Antiveneni di
 Firenze

1.5 Registration number

For this product is not available a registration number as a mixture or, in the case of substance, the uses of the product are excused of the registration, the annual tonnage does not require registration or the registration is envisaged for a later deadline.

2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture in accordance with Regulation (CE) n. 1272/2008

Hazard classes	Category codes	Hazard statements
Met.Corr	1	H290
Acute tox.	4	H302
Skin Corr.	1A	H314
Eye dam.	1	H318
Aquatic chronic	3	H412

2.2 Label elements

Pictograms



Warnings

DANGER

H290 May be corrosive to metals
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H412 Harmful to aquatic life with long lasting effects

Safety Advice

P273 Avoid release to the environment.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

P301+P330+P331 IN CASE OF SWALLOW: Rinse mouth. Do not induce vomit
P301+P312 IF SWALLOWED : Call a POISON CENTER or doctor/physician if you feel unwell.
P406 Store in corrosive resistant container with with a resistant inner liner.

- **Futher Informations:** NONE
- **Results of PBT** PBT : not applicable
- **PBT and vPvB evaluation** vPvB : not applicable

3. **Composition/information on ingredients**

3.1 **Substance : Palladium nitrate hydrate(II)**

CAS number 14989-67-0
EINECS number 233-167-5
CE number -
IUPAC number -

4. **FIRST-AID MEASURES**

4.1 **Description of the first-aid measures**

Inhalation Keep the victim in a warm and well ventilated place . If breathing should be stopped to practice artificial respiration
Ingestion Drink plenty of water. Do not induct vomit. Consult a doctor
Skin contact Take off immediately all contaminated clothing, and wash immediately with plenty of water and soap for at least 15 minutes. Wash contaminated clothes before re-use.
Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Do not use pomade or eyes drops

Recommendations:

- **Need for immediate medical attention** YES
- **Possibility of delayed effects subsequent the exposition** YES
- **Move the exposed individual from the area to fresh air** YES
- **Remove clothes and shoes from the individual** YES
- **Modality of manipulation of contaminated garments** With gloves
- **For lenders of first aid, wear the DPI** YES

4.2 **Main symptoms and effects both acute and delayed**

Irritation

4.3 **Indication of the possible urgency to consult immediately a doctor or of special treatments**

In case of illness consult immediately a doctor. On workplace must be present emergency showers and eyes wash devices.

5. **FIRE-FIGHTING MEASURES**

5.1 **Extinguishing media**

Extinguishing media suitable Carbon Dioxide, foam, powder and spray water
Extinguishing media unsuitable None in particular

5.2 **Special hazards arising from the substance or the mixture**

In case of fire may for hydrochloric acid.

5.3 **Special recommendations for firefighters**

General Avoid that the water used to extinguish the fire goes into sewage

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

information system, aquifers or to superficial waters

Equipment Normal garments for firefighting, as an air breathing apparatus (ref. standard EN 137) or fresh air hose breathing, protective clothing for welding (EN 469), flame resistant gloves (EN659) and fireman's boots (HOA29 or A30)

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Get away immediately from the contaminated area

6.1.2. For emergency responders

Wear:

Chemical risks Gloves conform to the standards EN420 EN374

Complete clothing complying with the UNI EN 13034: 2006 regulation

Half-masks with ABEK2P3 R filters complying with EN14387:2004 + a1:2008 regulations

6.2 Environmental precautions

Prevent product from going into sewers and water sources or soil. In case of seepage into water or sewage system or in case of seepage into the ground inform responsible authorities.

6.3 Methods and materials for containment and clean-up

6.3.1. Recommendations about the methods of containment of a spill

Limiting spills with non-combustible material

Avoid powder formation

6.3.2. Recommendations about the methods of reclamation of a spill

Wash with plenty of water

6.3.3. Any other information

None

6.4 Reference to other sections

-

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

7.1.1. Recommendations that allow safe handling of the substance or mixture, such as containment and measures to prevent fine as well as aerosol and dust generation

Keep the product into original closed and labelled container

7.1.2. Advice on general occupational hygiene

Do not eat, drink or smoke in designated work areas. Wash hands after handling.

To remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1. Risk management decisions arising from explosive atmospheres, corrosive conditions, flammability hazards, incompatible materials, evaporative conditions, potential ignition sources

Store into original container and close immediately after use.

7.2.3. Containment of the effects of weather conditions, pressure, temperature, sunlight, humidity and vibrations

Store in a dry, fresh place.

7.2.4. Conditions to maintain the integrity of the substance or mixture

Containers must be well closed and labelled.

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

7.2.5. Decisions about ventilation requirements, specific design for storage rooms or vessels, quantitative limits in storage conditions, compatibility of the packaging
Use PE or PP plastic containers or other resistant material.

7.3. Specific end use
Professional uses

8. EXPOSURE CONTROL/ INDIVIDUAL PROTECTION

8.1. Controller parameters
Working exposure limits have not been established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls
Use under a fume hood. Periodically check suction flow.
Workplace showers should be available and emergency and eyewash systems.

8.2.2. Individual measures, such as personal protective equipment

Eye/face protection	Splash guard glasses complying with Dir. 89/686/CEE and EN166:2001
Skin protection (hands)	Protective gloves material complying with EN420 and E374 regulations
Skin protection (body)	Complete clothing antacid complying with UNI EN 13034: 2006 type 6 regulation
Respiratory protection	Half masks with ABEK2P3 filters white color code.
Thermal hazards	Information not available

8.2.3. Environmental exposure controls
Maintain all environments under aspiration using localized air capture systems conveying the withdrawn volumes to an abatement system and then into the atmosphere. Do not use air recycling systems. Avoid any dispose into environment

9. PROPERTIES (PHYSICAL/CHEMICAL)

9.1. Informations about the main physical and chemical properties

Aspect	Black/dark brown solid
Odour	None
Odour threshold	Undefined
pH	Not applicable
Melting point/freezing point	> 500 ° C
Initial boiling point and boiling range	Substance decompose
Flashpoint	Not flammable
Evaporation rate	Not applicable
Flammability solids/gases	Not flammable
Upper/lower flammability	Not flammable
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	3.11 g/cm ³
Solubility/Solubilities	Insoluble in water
The log octanol/water partition	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity	Not applicable
Explosive properties	Not explosive
Oxidising properties	Not oxidizing

9.2. Other informations (miscibility, solubility, fat solubility, conductivity, redox potential, radical formation potential and photocatalytic properties)

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

- None
- 10. STABILITY AND REACTIVITY**
- 10.1 Reactivity**
No particular information
- 10.2 Chemical stability**
The product is stable in normal store condition
- 10.3 Possibility of hazardous reactions**
None in particular
- 10.4 Conditions to avoid**
Heat and sun light exposure
- 10.5 Incompatible materials**
Metal
- 10.6 Hazardous decomposition products**
In case of hard heating may form Hydrochloride acids
- 11. TOXICOLOGICAL INFORMATION**
- 11.1 Informations about toxicological effects**
- | | |
|--|----------------------------------|
| Acute toxicity | Not toxic |
| Skin corrosion/irritation | Corrosive for skin |
| eye damage/irritation | Risk of heavy eye damage |
| Sensitization | Not sensitizing |
| Germ cell mutagenicity | Not mutagenic |
| Carcinogenity | Not carcinogenic |
| Reproductive toxicity | Not toxic for reproduction |
| Specific target organ toxicity (STOT) - single exposure | No data available |
| Specific target organ toxicity (STOT) – repeated exposure | No data available |
| Aspiration hazard | corrosive for respiratory tracts |
- 11.2 Specific target organ toxicity**
Skin, eyes, respiratory tracts
- 11.3 Symptoms related to the physical, chemical and toxicological characteristic**
Corrosion of the skin, eyes and respiratory tract
- 11.4. Delayed, immediate and chronic effects from short and long term exposure**
Irritant
- 11.5. Interactive effects**
There are no interactive effects known
- 11.6. In the absence of specific data**
-
- 11.7. Other information**
None
- 12. ECOLOGICAL INFORMATIONS**
- | | |
|--------------------------------------|-------------------|
| Toxicity | No available data |
| Persistence and degradability | Not applicable |
| Bioaccumulation potential | Not applicable |
| Mobility in soil | No available data |
| Results of PBT e vPvB | No classified |
| Other adverse effects | None |
- 13. DISPOSAL CONSIDERATIONS**
- 13.1. Waste treatment methods**
This product and its packaging must be disposed as dangerous wastes with authorized companies.

Safety data sheet
RUTHENIUM TRICHLORIDE HYDRATE



Rev. n. I DD 01.06.201

- 14. TRANSPORT INFORMATIONS**
- | | |
|---|-------------------------|
| ONU number | 1759 |
| Name | Corrosive solid, n.o.s. |
| Hazard class referred to transport | 8 |
| Pack Group | I |
| Environmental Hazards | NO |
| Special precautions for user | Use approved packaging |
- 15. REGULATORY INFORMATION**
- | 15.1 | Legislation | Applicability |
|-------------|--|----------------------|
| | <i>Reg. (CE) 1907/2006/CE Reach</i> | YES |
| | <i>Reg. (CE) 1272/2008 CLP and subsequent amendments and addenda</i> | YES |
| | <i>Reg. (CE) 2037/2000 "Substances that deplete the ozone layer"</i> | NO |
| | <i>Reg. (CE) 850/2004 "The persistent organic pollutants"</i> | NO |
| | <i>Reg. (CE) 689/2008 "The export and import of dangerous chemicals"</i> | NO |
| | <i>Substance listed in Annex I 2012/18/UE cd Seveso</i> | NO |
| | <i>D.lgs 81/2008 Uniform Occupational Health and Safety Code</i> | YES |
| | <i>Directive 2014/103/UE "Adr"</i> | YES |
| 15.2 | Chemical Safety Assessment | |
| | A chemical safety assessment has not been carried out | |
- 16. OTHER INFORMATIONS**
- 16.1 Changes as compared to the previous version**
Deleted the classification referred to the Directive 67/548/CEE
- 16.2 Legend to abbreviations and acronyms**
ADR: European Agreement on the international carriage of goods by road
GHS: Globally Harmonised System of Classification and Labelling
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstract Service
- 16.3 Key literature references and sources of the data on this MSDS:**
<http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
platform ESIS <http://esis.jrc.ec.europa.eu>
Safety data sheets of the suppliers of substances used in the formulation
- 16.5 Advice on any training appropriate for workers to ensure protection of human health and the environment**
- Training session on Chemical Risk pursuant to Legislative Decree 81/08 Title IX substances dangerous
 - Training sessions on DPI
- 16.6 Other informations**
Not available