

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
Replaces revision n II of 2019.01.21

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

- 1.1 Product identifier**
Chemical name RUTHENIUM TRICHLORIDE HYDRATE
Clorotris(trifenilfosfina)rodio(I) 123
C.A.S. Registry Number 14898-67-0
EINECS Number 233-167-5
Molecular weight 261,47 (triidrato)
Brut Formula $RuCl_3 \cdot nH_2O$
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
Intended uses Industrial use
Uses advised against None in particular
Additive for galvanic baths. Catalyst.
- 1.3 Details of the supplier of the safety data sheet**
Name FAGGI ENRICO S.P.A.
Adress 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** 111 - Medical helpline operating in England, in Scotland (NHS 24) and in Wales (NHS Direct Wales).

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Hazard classes	Category codes	Hazard statements
Met. Corr.	1	H290
Acute Tox.	4	H302
Skin Corr.	1B	H314
Eye damage	1	H318
Aquatic acute	1	H400
Aquatic chronic	1	H410

2.2 Label elements

Pictograms



Signal words

DANGER

Hazard statements

H290 May be corrosive to metals
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H318 Causes serious eye damage
H410 Very toxic to aquatic life with long lasting effects

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
 Replaces revision n II of 2019.01.21

Precautionary statements	P273	Do not release into the environment
	P303 + P361 + P353	IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse the skin / take a shower
	P305 + P351 + P338	IF IN EYES: rinse thoroughly for several minutes. Remove any contact lenses if easy to do. Continue rinsing
	P301 + P330 + P331	IF SWALLOWED, rinse mouth. Do not induce vomiting
	P301 + P312	IF SWALLOWED: Call a POISON CENTER / doctor if you feel unwell
	P406	Store in corrosive resistant / container with a resistant inner liner.

2.3 Other hazards
 It does NOT contain PBT / vPvB substances according to Regulation (EC) 1907/2006, annex XIII
 It does NOT contain substances that interfere with the endocrine system in accordance with Regulation (EC) 1907/2006 art.59 paragraph 1 and in accordance with the criteria established in Regulation (EU) 2017/2100 and Regulation (EU) 2018/605.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance: Clorotris(trifenilfosfina)rodio(I)
CAS Number 14898-67-0
EC Number 233-167-5
 Index number Not applicable
 Oral STA LD50: 595 mg/kg bw (rat)
 Acute toxicity M factor 1
 Chronic toxicity M factor 1

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	Bring the injured person to fresh air. If breathing is stopped, give artificial respiration. Consult a physician.
Ingestion	Drink a lot of water. Do not induce vomiting. Consult a physician.
Contact with skin	Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and wash it before reuse.

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
Replaces revision n II of 2019.01.21

Contact with eyes Rinse with plenty of running water for at least 15 minutes Do not use eye drops or ointments. Consult a physician.

Recommendations:

- Need to see a doctor immediately YES
- Possibility of delayed effects following exposure YES
- Move the exposed individual from the place of exposure to the open air YES
- Remove the clothing and shoes of the exposed individual With gloves
- How to handle contaminated clothing YES

4.2 Most important symptoms and effects, both acute and delayed

Irritation

4.3 Indication of any immediate medical attention and special treatment needed

If you feel unwell, consult a doctor immediately. Emergency showers and eye washing systems must be available in the workplace.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media Carbon dioxide, foam, powder and water spray

Unsuitable extinguishing media None in particular

5.2 Special hazards arising from the substance or mixture

In the event of a fire, hydrochloric acid can be formed.

5.3 Advice for firefighters

General information:

Prevent the water used to extinguish the fire from flowing into the sewer, groundwater or surface water. Cool containers at risk with water.

Equipment:

Normal fire-fighting clothing, such as self-contained open-circuit compressed air breathing apparatus (EN137), flame retardant suit (EN469), flame retardant gloves (EN659) and firefighter boots (HOA29 or A30)

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Keep away from contaminated area

6.1.2. For emergency responders

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
Replaces revision n II of 2019.01.21

Wear :

Gloves for chemical risks compliant with EN420 EN374 Standards
Complete clothing compliant with the UNI EN 13034: 2006 standard
Semi-face masks with ABEK2P3 R filters conforming to EN14387: 2004 + A1: 2008

6.2 Environmental precautions

Prevent infiltration into the sewer, groundwater and surface water

6.3 Methods and material for containment and cleaning up

6.3.1. Advice in order to contain a spill

Contain spill with appropriate absorbent material (sand, sawdust)

6.3.2. Advice in order to clean-up a spill

Wash the area with plenty of water

6.3.3 Other information

None

6.4 Reference to other sections

None

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

7.1.1. Recommendations in order to manipulate the substance or the mixture in a safe manner, such as containment measures and prevention of fire and aerosol and powders formation

Keep in original sealed and labeled packaging

7.1.2. General recommendation on work hygiene

Do not eat, drink and smoke in work areas. Wash your hands after use. Remove contaminated clothing and protective equipment before entering eating areas

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and feed for animals

7.2.1. Risk management associated with explosive atmospheres, corrosive conditions, flammability hazards, incompatible substances or mixtures, evaporative conditions, potential ignition sources

Store in the original containers and close them immediately after use.

7.2.2. Control of weather conditions, ambient pressure, temperature, sunlight, humidity, and vibration

Store in a cool, dry place

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

The packages must be well closed and labeled.

7.2.4. Advice regarding the ventilation, specific design for storage rooms or vessels, quantity limits under storage conditions, packaging compatibilities

Use PE and PP plastic packaging or other resistant materials.

7.3. Specific end use(s)

Industrial use

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

For this substance, the occupational and biological exposure limit values corresponding to the relative Community limit values referred to in Directives 98/24 / EC and 2004/37 / EC have not been established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
 Replaces revision n II of 2019.01.21

Ventilation systems. Emergency showers and eye washing system near the work area.
 Periodically check the range of the extractor hood.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection	Protective goggles for eyes compliant with Directive 89/686 / EEC and with standard EN166: 2001
Skin protection (hands)	Chemical risk gloves compliant with EN420 EN374 standards
Skin protection (body)	Complete antacid clothing compliant with the UNI EN 13034: 2006
Respiratory protection	Semi-face masks with ABEK2P3 R filters conforming to EN14387: 2004 + A1: 2008
Thermal hazards	Info not available

8.2.3. Environmental exposure controls

Maintain suction in all environments using localized collection systems and ambient air exchange. Convey the aspirated volumes to an abatement system and then into the atmosphere. Do not use air recirculation suction systems. Avoid any spillage into the environment.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Solid
Colour	black / dark brown
Odour	None
Melting point/freezing point	450 ° C
Boiling point or initial boiling point and boiling range	Not available
Flammability	Not inflammable
Lower and upper explosion limit	Not explosive
Flash point	Not inflammable
Auto-ignition temperature	Not inflammable
Decomposition temperature	Not available
pH	Not available
Kinematic viscosity	Not applicable

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
 Replaces revision n II of 2019.01.21

Solubility	140 g / L at 20 ° C and pH 0.6
Partition coefficient n-octanol/water (log value)	Log Kow: 8 to 20 ° C
Vapour pressure	Not applicable
Density and/or relative density	2.9 g / cm ³
Relative vapour density	Not applicable
Particle characteristics	D <100 µm: 56.7%.

9.2. Other information

None

10. STABILITY AND REACTIVITY

10.1 Reactivity

No relevant information

10.2 Chemical stability

Stable under normal storage conditions

10.3 Possibility of hazardous reactions

None in particular

10.4 Conditions to avoid

Exposure to heat and sunlight.

10.5 Incompatible materials

Metals

10.6 Hazardous decomposition products

In case of strong heating it can develop vapors of hydrochloric acid

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity	Oral LD50: 595 mg / kg bw rat: Acute tox. 4
Skin corrosion / irritation	Corrosive to the skin
Serious eye damage/irritation	Risk of serious eye damage.
Respiratory or skin sensitization	Not applicable
Germ cell mutagenicity	Not mutagenic
Carcinogenicity	Data not available
Reproductive toxicity	Data not available
STOT – single exposure	No data available

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
 Replaces revision n II of 2019.01.21

	STOT – repeated exposure	NOAEL oral: 407 mg / kg bw (rat)	
	Aspiration hazard	Corrosive for respiratory tract	
11.2	Information on other hazards		
	None		
12.	ECOLOGICAL INFORMATION		
12.1	Toxicity	LC50 (fish)> 0.94 mg / l	
12.2	Persistence and degradability	EC10 (alga) 0.233 mg / l	
12.3	Bioaccumulative potential	Not applicable	
12.4	Mobility in soil	Not applicable	
12.5	Results of PBT and vPvB assessment	Data not available	
12.6	Endocrine disrupting properties	Not classified	
12.7	Other adverse effects	None	
13.	DISPOSAL CONSIDERATIONS		
13.1.	Waste treatment methods		
	The substance and its packaging must be disposed of as hazardous waste by authorized companies.		
14.	TRANSPORT INFORMATION		
14.1	UN number or ID number	1759	
14.2	UN proper shipping name	Corrosive solid, n.o.s.	
14.3	Transport hazard class(es)	8	
14.4	Packing group	II	
14.5	Environmental hazards	Yes	
14.6	Special precautions for user	Use approved packaging	
14.7	Maritime transport in bulk according to IMO instruments	Not applicable	
15.	REGULATORY INFORMATION		
15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture		Applicability
	Reg. (EC) 1907/2006 / EC Reach		YES
	Reg. (EC) 1272/2008 CLP and subsequent changes and additions		YES
	Reg. (CE) 2037/2000 "Substances that deplete the ozone layer"		NO
	Reg. (EC) 850/2004 "Persistent organic pollutants"		NO
	Reg. (EC) 689/2008 "export and import of dangerous chemicals"		NO
	Substance listed in Annex I of Dir. 2012/18 / EU so-called Seveso		NO
	Legislative Decree 81/2008 Consolidated Law on health and safety at work		YES

Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RUTHENIUM TRICHLORIDE HYDRATE



Revision n. III of 2021.11.21
Replaces revision n II of 2019.01.21

Directive 2014/103 / EU "Adr"

YES

15.2 Chemical safety assessment

A chemical safety assessment was not carried out

16. OTHER INFORMATION

16.1 Changes compared to the previous edition

Regulatory update

16.2 Acronim and abbreviation legend

ADR : Agreement concerning the International Carriage of Dangerous Goods by Road

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstract Service

16.3 Main references and data sources

ECHA's data bank on registered substances and soon to be registered substances:

<http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>

16.5 Adequate training for workers in order to ensure the protection of human health and the environment

Training on Chemical Risk pursuant to Legislative Decree 81/08 Title IX dangerous substances

DPI training