Safety data sheet
According to Regulation n. 1907/2006 and Regulation 878/2020
RU IN HYDROCHLORIC SOLUTION

Revision n. IX of 2021.10.25
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 IN HYDROCHLORIC SOLUTION
Clorotris(trifenilfosfina)rodio(I)	89

1.2 Relevant identified uses of the substance or mixture and uses advised against

Intended uses	Industrial use
Uses adviced against	None in particular

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).

1.5 REACH registration number

For this product a registration number is not available as it is a mixure

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
STOT SE	3	H335
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
H335	Can irritate respiratory tract
H410	Very toxic to aquatic life with long lasting effects

Precautionary statements	P234	Keep in original sealed container
	P280	Wear protective gloves / clothing. Protect eyes / face
	P303+P361+ P353	IN CASE OF CONTACT WITH SKIN (or hair): immediately take off contaminated clothing. Rinse the skin / take a shower
	P305+P351+ P338	IN CASE OF CONTACT WITH THE 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 vomit.
	P304+P340	IN CASE OF INHALATION: transport the injured person to fresh air and keep him in a position that favors INHALATION.

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

3.2 Mixure

Product identificator	**Concentration**	**Classification**	
		Hazard classes and category codes	**Indications of danger**
Hydrochloric acid		Met. Corr. 1	H290
CAS 7647-01-0	5% < C < 15 %	Skin Corr. 1 B	H314
EINECS 231-595-7		STOT SE 3	H335
INDEX 017-002-01-X			
N. Reach 01-211948862-27-XXXX			

Specific Conc. Limits:
Skin Corr. 1B; H314: C ≥ 25 %
Skin Irrit. 2; H315: 10 % ≤ C < 25 %
Eye Irrit. 2; H319: 10 % ≤ C < 25 %
STOT SE 3; H335: C ≥ 10 %

Ruthenium trichloride	20% < C < 50%	Met. Corr. 1	H290
CAS 10049-08-8		Acute Tox. 4	H302
CE 233-167-5		Skin Corr. 1B	H314
INDEX: not available		Eye Dam. 1	H318
N. Reach: exempt for quantity		Aquatic acute 1	H400
ATE LC50 rat (inhalation): 45.6 mg / m3		Aquatic Chronic 1	H410
M factors: 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.
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	YES
• How to handle contaminated clothing	With gloves
	YES

4.2 Most important symptoms and effects, both acute and delayed

Eye, nose and throat irritation, chest pain, choking, skin irritation, corneal burns, skin burn (after severe exposure), nausea, vomiting. Abundant and haemorrhagic mucous secretions, bronchitis, pulmonary edema, corneal necrosis, tissue necrosis, gastrointestinal tract perforation

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 particolar

5.2 Special hazards arising from the substance or mixture

In the event of a fire, hydrochloric acid can be formed. The product reacts with metals to develop hydrogen, which is highly flammable.

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

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) and keep in hermetic sealed container

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. Raccomentations in order to manipulate the substance or the mixture in a safe manner, such as containement measures and prevention of fire and aereosol and powders formation

Keep in original closed and labeled container

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 bases, strong oxidants and metals

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. Keep the packages in a containment basin

7.3. Specific end use(s)

Industrial use

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters (values relative to hydrochloric acid)

8-hour limit value: 5 ppm mg / m3 Legislative Decree 81/08
Short term limit value: 10 ppm 15 mg / m3 Legislative Decree 81/08

8.2. Exposure controls

8.2.1. Appropriate engineering controls

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 recirculating air 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	Dark brown
Odour	Pungent
Melting point/freezing point	-46,2° C
Boiling point or initial boiling point and boiling range	57°C
Flammability	Not inflammable
Lower and upper explosion limit	Not explosive
Flash point	Not inflammable
Auto-ignition temperature	Not inflammable
Decomposition temperature	Unavailable
pH	<1
Kinematic viscosity	Undefined
Solubility	Fully miscible in water
Partition coefficient n-octanol/water (log value)	Not applicable
Vapour pressure	12.6 KPa
Density and/or relative density	1.35 g / ml
Relative vapour density	Unavailable
Particle characteristics	Not applicable

9.2. Other information

None

10. STABILITY AND REACTIVITY

10.1 **Reactivity**
Hydrochloric acid is a strong acid with corrosive action with numerous metals. It can produce corrosive vapors.

10.2 **Chemical stability**
Stable under normal storage conditions

10.3 **Possibility of hazardous reactions**
Hydrochloric acid is a strong acid with corrosive action with numerous metals. It can produces corrosive vapors.

10.4 **Conditions to avoid**
Exposure to heat and sunlight.

10.5 **Incompatible materials**
Strong bases, oxidizing agents, metals

10.6 **Hazardous decomposition products**
It does not decompose but can develop hydrochloric acid vapors

11. TOXICOLOGICAL INFORMATION (values relative to Hydrochloric acid)

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

Acute toxicity	LC50 rat (inhalation): 45.6 mg / m3
Skin corrosion / irritation	Corrosive to the skin
Serious eye damage/irritation	Risk of serious eye damage. Rabbit 0.5 ml Cat. 1 (irreversible effects on the eyes)
Respiratory or skin sensitization	Based on the available data, the classification criteria are not met
Germ cell mutagenicity	Based on the available data, the classification criteria are not met
Carcinogenicity	Based on the available data, the classification criteria are not met

Reproductive toxicity	Not toxic for reproduction
STOT – single exposure	No data available
STOT – repeated exposure	No data available
Aspiration hazard	Corrosive for respiratory tract

11.2 Information on other hazards

None

12. ECOLOGICAL INFORMATION (values relative to Hydrochloric acid)

12.1	**Toxicity**	Fish, acute LC50 pH 3.25 normalized to 20.5 mg / l / 96h Invertebrates: EC50 pH 4.7 normalized to 0.73 mg / l / 72h
12.2	**Persistence and degradability**	It is not biodegradable and dissociates in water. Adsorption / desorption in the soil is impossible
12.3	**Bioaccumulative potential**	Insignificant given the high solubility in water
12.4	**Mobility in soil**	It does not reach sediment / soil and therefore cannot be ingested by birds or mammals
12.5	**Results of PBT and vPvB assessment**	Not applicable
12.6	**Endocrine disrupting properties**	No known effects
12.7	**Other adverse effects**	No known effects

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**	1760
14.2	**UN proper shipping name**	corrosive liquid, n.o.s. (hydrochloric acid)
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**	

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
Directive 2014/103 / EU "Adr"	YES

15.2 **Chemical safety assessment**

A chemical safety assessment was not carried out

16. **OTHER INFORMATION**

Changes compared to the previous edition

Regulatory update

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

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

Indication, for mixtures, of which methods of evaluation of the information have been used for the purposes of classification

Classification		**Classification procedure**
Met. Corr.1	H290	Calculation
Acute Toxic 4	H302	Calculation
Skin Corr. 1B	H314	Calculation
STOT SE 3	H335	Calculation
Aquatic Chronic 1	H410	Calculation

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