Safety data sheet

Au chloride solution
According to Regulation n. 1907/2006 and Regulation 878/2020
Au chloride solution 200 g Au/l ($HAuCl_4$)

Revision n. IX of 21.11.2022
Replaces revision VIII of 01.02.2022

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

1.1 Product identifier

Chemical name	Au chloride solution 200 g Au/l
Product code	121

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

Recommended uses	Industrial use
Uses adviced against	Check section 15

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 Registration number A REACH registration number is not available as it is a mixure.

2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture according to Regulation (EC) n. 1272/2008

Hazard class	Category codes	Hazards indications
Met Corr	1	H290
AcuteTox.	4	H302
Skin Corr.	1 B	H314
Eye Dam.	1	H318
STOT SE	3	H335
STOT RE	2	H373
Aquatic Chronic	2	H411
Corrosive for the respiratory tract		EUH071

2.2 Label elements

Pictograms

Signal word **DANGER**

Hazard statements

H290	May be corrosive to metals
H302	Harmful if swallowed
H314	Causes serious skin burns and serious eye injuries
H335	Can irritate the respiratory tract

	H373	May cause damage to organs through prolonged or repeated exposure
	H411	Toxic to aquatic life with long lasting effects
	EUH071	Corrosive for the respiratory tract
Precautionary advice		
	P280	Wear protective gloves / clothing / eye protection / face protection
	P301 + P330 + P331	IF SWALLOWED: rinse mouth. DO NOT induce vomiting
	P303+P351+P338	IN CASE OF CONTACT WITH SKIN (or hair): immediately take off all 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
	P273	Avoid release to the environment

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 Mixure

Product identifier	**Concentration %**	**Classifications**	
		Hazard Classes	**Category codes**
Tetrachloroauric acid	20 ≤ C ≤ 25%	Met. corr. 1	H290
CAS: 16903-35-8		Acute tox. 4	H302
EC: 240-948-4		Skin corr 1B	H314
INDEX: not available		Eye dam 1	H318

N. REACH: exempt for quantity		STOT RE 2	H373
ATE (oral) LD50 464 mg/kg bw		Aq. Chronic 2	H411
M factor (chronic): 1			EUH071
Hydrochloric acid			
CAS 7647-01-0			
EC: 231-595-7			
INDEX: 017-002-01-X			
N. Reach 01-211948862-27-XXXX		Met corr. 1	H290
ATE: not applicable	25 ≤ C ≤ 30%	Skin. corr. 1B	H314
Specific limits:		STOT SE 3	H335
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%			

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	Keep the injured person at rest in an airy and warm environment. In case of respiratory arrest, use artificial respiration methods
Ingestion	Do not induce vomiting. Drink plenty of water and consult a doctor
Contact with skin	Immediately wash skin with plenty of water. Consult a physician
Contact with eyes	Immediately rinse the eyes with plenty of water until the irritation subsides. Do not use eye drops or ointments. Consult an ophthalmologist specialist

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
• For first aiders, wear PPE	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 bleeding mucous secretions, bronchitis, pulmonary edema, corneal necrosis, tissue necrosis, perforation of the gastrointestinal tract

4.3 Indication of any immediate medical attention and special treatment needed

Consult a physician immediately. Emergency showers and eye washing systems must be available in the workplace.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	Prevent the water used to extinguish the fire from flowing into the sewer, groundwater or surface water.

Unsuitable extinguishing media	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)

5.2 Special hazards arising from the substance or mixture

If involved in a fire it can develop hydrochloric acid, toxic for inhalation. 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.
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 contamited area and keep upwind

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 place in airtight 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

Store in original 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 Safe storage, including any incompatibilities

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

Keep the container tight and sealed until use. Keep away from acid substances.

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

Store in a cool, dry place

7.2.3. Conditions for keeping substances / mixtures intact

Open containers must be resealed and kept straight

***7.2.4* Provisions relating to ventilation, specific design of storage rooms or containers, quantitative limits in storage conditions, compatibility of packaging**

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 (related to metallic Silver species)

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.

8.2.2. Individual protection measures, such as personal protective equipment

Eye/face protection	Splash goggles compliant with Directive 89/686 / EEC and standard EN166: 2001
Skin protection (hands)	Chemical risk gloves compliant with EN420 EN374 standards
Skin protection (body)	Complete clothing compliant with the UNI EN 13034: 2006 type 6 standard
Respiratory protection	Abek P3 filter mask in case of exceeding TWA MAK limits
Thermal hazards	Splash goggles compliant with Directive 89/686 / EEC and standard EN166: 2001

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	Liquid
Color	Orange
Odor	Pungent
Melting point / freezing point	Unavailable
Boiling point or initial boiling point and boiling range	Unavailable
Flammability	Not inflammable
Lower and upper explosive limits	Not applicable
Flash point	Not applicable
Self-ignition temperature	Not applicable
Decomposition temperature	Not applicable
pH	<1
Cinematic viscosity	Undefined
Solubility	Fully miscible in water
Production coefficient n-octanol / water (logarithmic value)	Not applicable
Vapor pressure	Not applicable
Density and / or relative density	3.9 g / cm3
Relative vapor density	12.6 KPa
Characteristics of the particles	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 can react with oxidizing products (peroxides, permanganates, chromates, persulfates ...) generating toxic gases. Reacts with metals generating hydrogen with production of heat; danger of explosion. It can produce chlorine from light or other catalysts. Reacts violently with bases and amines.

10.4 Conditions to avoid

Exposure to heat and sunlight

10.5 Incompatible materials

Strong bases, metals

10.6 Hazardous decomposition products

It does not decompose but can develop hydrochloric acid vapors

11 TOXICOLOGICAL INFORMATION

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

Acute toxicity	LC50 rat (5 min) (inhalation): 45.6 mg / m3
Skin corrosion / irritation	Corrosive to the skin
Serious eye damage/irritation	Risk of serious eye damage.
Respiratory or skin sensitization	Rabbit 0.5 ml Cat. 1 (irreversible effects on the eyes)
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Carcinogenicity	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT – single exposure	Based on available data, the classification criteria are not met
STOT – repeated exposure	It can irritate the lungs and respiratory tract

11.2 Information on other hazards

None

12 ECOLOGICAL INFORMATION

12.1	**Toxicity**	EC50 (freshwater algae 0.73 mg / l
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**	3264
14.2	**UN proper shipping name**	Liquid, inorganic, corrosive, acid, n.o.s. (hydrochloric acid)
14.3	**Transport hazard class(es)**	8

14.4	**Packing group**	THE
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
Directive 2014/103 / EU "Adr"	YES
Reg. (CE) 1907/2006/CE Reach art. 59 – Candidate List of Substances of Very High Concern (SVHC)	NO
Reg. (CE) 1907/2006/CE Reach - Annex XIV – Authorisation List	NO
Reg. (CE) 1907/2006/CE Reach - Annex XVII – Restriction List https://echa.europa.eu/it/substances-restricted-under-reach	Restricted use. Item 3 - 75 (see link)

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	Calculation method
AcuteTox.	4	Calculation method
Skin Corr.	1 A	Calculation method
Eye Dam.	1	Calculation method
STOT SE	3	Calculation method

STOT RE	2	Calculation method
Aquatic Chronic	2	Calculation method
EUH071	1	Calculation method

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

- Chemical Risk Training pursuant to Legislative Decree 81/08 Title IX dangerous substances
- DPI training