Revision n. VIII dd 06.21.2021
Replaces revision n VII dd 01.21.2019

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

1.1 Product identifier

Commercial name	Tetrammine Palladium Chloride Solution 100 g/l
Product code	142
Registration number	A registration number is not available for this product as it is a mixture

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

Intended uses	Additive for galvanic baths for industrial use
Advised against uses	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 Ph. 0557947819 Poison Control Center of Florence

2. HAZARDS IDENTIFICATION

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

Hazard classes	Category codes	Hazard statements
Acute tox.	4	H302
Skin Corrosive	1B	H314
Skin sens.	1	H317
STOT SE	3	H335
Aquatic acute	1	H400
Aquatic chronic	1	H410

2.2 Label elements

Pictograms

Signal words **DANGEROUS**

Hazard statements

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction
H335	May cause respiratory irritation
H410	Very toxic to aquatic life with long lasting effects

	Precautionary statements	P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
		P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/if you feel unwell.
		P302+P352	IF ON SKIN: Wash with plenty of water
		P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and 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

3.2 Mixture

Product identifier	**Concentration %**	**Classification**	
		Hazard classes	**Category codes**
Ammonia	**5 ≤ C ≤ 20**	Skin corr. 1 B	H314
CAS 1336-21-6		STOT SE 3	H335
EC: 215-647-6		Aquatic acute 1	H400
n. Reach 01-2119488876-14-XXXX			
M factor acute toxicity: 1			
Palladium dichloro tetramine	**10 ≤ C ≤ 30**	Met corr. 1	H290
CAS 13815-17-3		Acute tox. 4	H302
EC: 237-489-7		Skin sens. 1	H317
N.Reach: exempt for quantity		Eye irrit. 2	H319
M factor acute toxicity: 100		Aquatic acute 1	H400
M factor chronic toxicity: 10		Aquatic chronic 1	H410

4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: If the person has fainted, keep him stable on his side during transport.

Ingestion: Drink plenty of water and stop in a well-ventilated area. Seek immediate medical attention. Do not induce vomiting.

Skin contact: Wash immediately abundantly with water and soap.

Eye contact: Wash with running water for several minutes holding the eyelids wide open and get medical attention. Do not use eye drops and ointments.

Reccomendation:

- **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 those providing first aid, wear PPE** **YES**

4.2 Most important symptoms and effects, both acute and delayed

May causes serious eye damage. It can irritate the respiratory tract. Causes severe burns. It can cause heartburn in the mouth, throat, and stomach. Harmful if swallowed.

4.3 Indication of any immediate medical attention and special treatment needed

In case of skin contact, ingestion, or inhalation, call a physician immediately.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Fire extinguisher with CO_2 or powder or water spray. Extinguish large fires with water spray or alcohol-resistant foam.

Non suitable extinguishing media: None

5.2 Special hazards arising from the substance or mixture

In case of a fire or if heated, a pressure increase will occur, and the container may burst. Possible formation of ammonia vapors.

5.3 Advice for firefighters

General information: Isolate the area by removing all people in case of fire. 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

Move away from the contaminated area immediately and keep upwind.

6.1.2. For emergency responders

Use :

Chemical risk gloves compliant with EN420 EN374 standards.
Splash goggles compliant with Directive 89/686 / CEE and standard EN166: 2001.
Complete antacid clothing compliant with the UNI EN 13034: 2006 type 6 standard.
Mask with K-type filters compliant with EN14387: 2004 + A1: 2008.

6.2 Environmental precautions

Prevent infiltration into the sewer, ground water and surface water.
In case of infiltration into bodies of water or sewers, notify the competent authorities.
In case of penetration into the ground, notify the competent authorities.

6.3 Methods and material for containment and cleaning up

6.3.1. Advice to contain a spill

Collect liquid with absorbent material (sand, universal binder, sawdust). Prevent infiltration into sewers / surface water / groundwater.

6.3.2. Advice to clean-up a spill

Use means of neutralization.

6.3.3 Any other information

Disposal of contaminated material in accordance with point 13. Provide adequate ventilation.

6.4 Reference to other sections

None

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

7.1.1. Raccomentations 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. Provide sufficient ventilation / extraction in the workplace. Avoid the formation of aerosols.

7.1.2. General recommendation on work hygiene

Do not eat, drink, or smoke in work areas; wash hands thoroughly after use and remove contaminated clothing and protective equipment before entering areas where you eat.

7.2. Conditions for 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.

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

Store in the original container protected from direct sunlight in a dry, cool, and well-ventilated area.

7.2.4. Conditions for keeping substances / mixtures intact

Open containers must be resealed and kept straight.

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

Use ADR-approved packaging and store them in a containment basin equal to the capacity of the packaging with greater volume in rooms without sewage drains.

7.3. Specific end use(s)

Industrial use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Ammonia (Annex XXXVIII Legislative Decree 81/06):
TWA (8h) 14 mg / m3 or 20 ppm
STEL (short term) 36 mg / m3 or 50 ppm

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Local suction 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 /CEE and 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 type 6 standards.
Respiratory protection	Mask with K-type filters.
Thermal hazards	Not available data.

8.2.3. Environmental exposure controls

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

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquid
Colour	Pale Yellow
Odour	Ammoniacal
Melting point/freezing point	Not available data
Boiling point or initial boiling point and boiling range	> 80 °C
Flammability	Not flammable

Lower and upper explosion limit	Not explosable
Flash point	Not flammable
Auto-ignition temperature	Not flammable
Decomposition temperature	Data not available
pH	8,5-9,5 at 20 °C
Kinematic viscosity	Not available
Solubility	Fully miscible in water
Partition coefficient n-octanol/water (log value)	Not applicable
Vapour pressure	Approx 830 hPa at 20 °C
Density and/or relative density	approx. 1.14 g/ml^3
Relative vapour density	Data not available
Particle characteristics	Not applicable

9.2. Other information

None.

10 STABILITY AND REACTIVITY

10.1 Reactivity

The product has alkaline properties.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Under normal conditions of use and storage no dangerous reactions are foreseeable.
It can react violently with acids and reducing agents generating heat.

10.4 Conditions to avoid

Exposure to the sun and heat.

10.5 Incompatible materials

Strong acids, reducing agents.

10.6 Hazardous decomposition prodoucts

Ammonia, ammonium chloride.

11 TOXICOLOGICAL INFORMATION

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

Acute toxicity NOEL oral 68 mg / kg
Oral LD50 350 mg / kg Rat

Skin corrosion/irritation	Corrosive
Serious eye damage/irritation	Risk of serious eye damage
Respiratory or skin sensitization	Respiratory tract irritation
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	Respiratory tract irritation
(STOT) single exposure	Not available data
(STOT) repeated exposure	Causes damage to the respiratory tract through prolonged or repeated exposure
Aspiration hazard	Irritating

11.2 Information on other hazards

None.

12 ECOLOGICAL INFORMATION

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As it is not possible to provide specific data on the mixture, the following data are provided for the substance ammonium vanadate.

12.1	**Toxicity**	LC50 Fish 0,89 mg / l / 96h EC50 Crustaceans 0,101 mg / l / 48h Chronic NOEC Crustaceans 0.79 mg / l
12.2	**Persistence and degradability**	Readily biodegradable in plants and soils.
12.3	**Bioaccumulative potential**	-0,64 Log POW
12.4	**Mobility in soil**	Not available data
12.5	**Results of PBT and vPvB assessment**	Not available data
12.6	**Endocrine disrupting properties**	No known effects
12.7	**Other adverse effects**	Not available data

13 DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Either the mixture or packages must be sent to approved facilities for the disposal of industrial wastes.

14 TRANSPORT INFORMATION

14.1	**UN number or ID number**	**ONU: 3266**
14.2	**UN proper shipping name**	Basic corrosive inorganic liquid n.o.s. (ammonia in solution)
14.3	**Transport hazard class(es)**	8
14.4	**Packing group**	II
14.5	**Environmental hazards**	YES

14.6	**Special precautions for user**	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. (CE) 1907/2006/CE Reach	YES
	Reg. (CE) 1272/2008 CLP and subsequent amendements	YES
	Reg. (CE) 2037/2000 "Substances that deplete the ozone layer"	NO
	Reg. (CE) 850/2004 "Persistent organic pollutants"	NO
	Reg. (CE) 689/2008 "Export and import of hazardous chemicals''	NO
	Substance listed in Annex I of Dir. 2012/18/EU cd Seveso	YES
	Directive 81/2008 Consolidated Act on protection of health and work safety	YES
	Directive 2014/103/UE "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 adaptation. Variation to points 2 and 14

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

Reporting, for mixtures, which methods of evaluating the information were used for the purposes of classification.

Classification		**Classification procedure**
Acute tox. 4	H302	Calculation method
Skin Corrosive 1B	H314	Calculation method
Skin sens. 1	H317	Calculation method
STOT SE 3	H335	Calculation method
Aquatic acute 1	H400	Calculation method
Aquatic chronic 1	H410	Calculation method

Adequate training for workers to guarantee the protection of human health and the environment

- Training on the chemical risk ex Directive 81/08 Title IX dangerous substances
- Training on DPI