# According to Regulation n. 1907/2006 and Regulation 878/2020

# TRIVALENT SALT AU 58% Potassium tetrakis(cyano-C)aurate (Au 58%)



Revision n. IX of 22.11.2022

Replaces revision n VIII of 09.06.2022

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

**1.1** Product identifier

Chemical name Potassium tetrakis(cyano-C)aurate

Product code 27

C.A.S. 14263-59-3 EC Number 238-145-9 Molecular weight 340,0  $[KAu(CN)_4]$ 

Commercial name Double cyanide of potassium and gold (Au 58%)

REACH registration number A REACH registration number is not available for this

substance as the annual quantity produced or imported is

less than one tonne.

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

Intended 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

**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

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
Skin Irrit.	2	H315
Eye Dam.	1	H318
Acute toxicity (inhalation) ATE 5 mg/kg bw	2	H330
Acute toxicity (dermal) ATE: 0.5 mg/kg bw	1	H310
Acute toxicity (ingestion) ATE: 5 mg/kg bw	2	H300
Aquatic Acute (M Factor: 1)	1	H400
Aquatic chronic (M Factor: 1)	1	H410

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# 2.2 Label elements Pictograms

	-		
	Signal words	DANGER	<b>\</b>
	Hazard statements		
		H290	It can be corrosive to metals
		H315	Causes skin irritation
		H318	Causes serious eye damage
		H330	Fatal if inhaled
		H310	Fatal in contact with the skin
		H300	Fatal if ingested
		H410	Very toxic to aquatic life with long lasting effects
	Additional hazard statement / identification elements (EU)	EUH032	Contact with acids liberates very toxic gas
	Precautionary statements	P270	Do not eat, drink or smoke during use
		P273	Do not disperse in the environment
		P280	Wear protective gloves / clothing / eye protection / face protection
		P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor
		P302+P352	IN CASE OF CONTACT WITH SKIN: wash thoroughly with soap and water.
		P403+P233	Keep container tightly closed and in a ventilated place
2.3	Other hazards	Hydrogen cyanide opoisoning.	an cause all levels of
		Under the action of	acids (including carbon
		dioxide) hydrogen d	cyanide is released, which is
		flammable and toge	ether with the air can form
		explosive gas mixtu	
			acids, air humidity, water.
			PBT / vPvB substances
			ition (EC) 1907/2006, annex XIII
			substances that interfere with min accordance with
		•	17/2006 art.59 paragraph 1 and
		regulation (LC) 190	77, 2000 art. 35 paragraph I arlu

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in accordance with the criteria established in Regulation (EU) 2017/2100 and Regulation (EU) 2018/605.

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substance Potassium tetrakis(cyano-C)aurate

CAS Number 14263-59-3
EC Number 238-145-9
INDEX Not available
ATE (oral) 0.5 mg/kg bw

M Factor (acute) 1 M Factor (chronic) 1

#### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

In the event of the formation of aerosols, mists, dusts or fumes, inhalation is possible. No mouth-to-mouth or mouth-to-nose resuscitation. Use artificial respiration bag or artificial respirator.

Danger of intoxication. Keep the respiratory tract clean. In case of lack of air, administrative purgon, immediately sall a destar for

lack of air, administer oxygen. Immediately call a doctor for emergency services (keyword: cyanide / hydrogen cyanide

poisoning).

Ingestion Rinse your mouth. Give plenty of water to drink immediately. Induce

vomiting. Call a doctor for first aid immediately. (keyword: cyanide /

hydrogen cyanide poisoning)

Contact with skin If dry, uninjured skin comes into contact with dry sodium or

potassium cyanide, cyanide poisoning has not been observed so far. In case of contact with skin, wash with plenty of water and soap. With symptoms of intoxication immediately alert the emergency room doctor (keyword: cyanide / hydrogen cyanide intoxication).

Contact with eyes The use of special washing solutions with high buffer capacity (e.g.

borate buffer solution, diphtoterins, etc.) are recommended as part of first aid measures. Keeping the eye open, immediately wash

thoroughly with plenty of water for at least 10 minutes.

With symptoms of intoxication immediately alert the emergency room doctor (keyword: intoxication with cyanide / hydrogen cyanide)

Recommendations:

• Need to see a doctor immediately

• Possibility of delayed effects following exposure

• 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

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How to handle contaminated clothing

YES

#### 4.2 Most important symptoms and effects, both acute and delayed

Possible signs of poisoning: It seems appropriate to differentiate between two stages:

- 1. Slight intoxication
- 2. Severe intoxication

The following symptoms do not provide sure indications of prognosis.

Central nervous system symptoms:

Initial stage: headache, dizziness, drowsiness, nausea.

Advanced stage: convulsions, coma.

**Pulmonary symptoms:** 

Initial stage: dyspnea, tachypnea.

Advanced stage: hypoventilation, Cheyne-Stokes breathing, apnea

Cardiovascular symptoms:

Initial stage: Hypertonia, sinus node arrhythmia, AV node arrhythmia, bradycardia.

Advanced stage: tachycardia, complex arrhythmias, cardiac arrest.

Skin symptoms:

Initial stage: Red complexion. Advanced stage: Cyanosis.

Effect on metabolism: Lactate acidosis at pH 7.1 and lactate levels up to 17 mm / liter have been

described.

#### 4.3 Indication of any immediate medical attention and special treatment needed

Therapy: Prevent reabsorption and ensure vital functions, strictly adhering to self-protection measures. Rapid antidote therapy can be life-saving and takes precedence over elimination of poison.

Therapy: Slight intoxication. 100% artificial respiration with oxygen. Based on the symptoms and the clinical picture, detailed examinations of the reports, symptomatic treatment for pulmonary edema prophylaxis and diagnostics (lung radiography) are required.

Therapy with antidote: for example, administration of sodium thiosulfate  $12.5 \, g - 100-500 \, mg / kg$  intravenously, according to the clinical findings and symptoms. Attention! The dosage applies to an adult of 70 kg. Any person poisoned by cyanide must be monitored continuously for many hours even if the patient feels well. This is to ensure that no new symptoms or previous ones remain.

Therapy: severe intoxication.

Artificial respiration with oxygen. Immediate administration of antidote.

The medicines listed below can be used for antidote therapy:

Complex trainer

- 1. Administer intravenous hydroxocobalamin (Cyanokit®) 5g (70 mg / kg for adults) over an infusion period of 20-30 minutes. This dosage can be repeated, according to the severity of the intoxication. The infusion period for repeated administration is 30 minutes up to 2 hours. Hydroxocobalamin can only be administered intravenously.
- 2. Dicobalt edetate (Kelocyanor®) 300 mg (1 vial) for adults in 1-3 minutes, intravenously. Methemoglobin trainer:
- 1. 4-dimethylaminophenol, (4-Dmap) sodium thiosulfate: the antidote is administered in the following sequence:
- to. 4-DMAP, 250 mg (3-4 mg for each kg of body weight) in 5 ml IV (vial) followed by
- b. sodium thiosulfate 12.5 g in 50 ml IV- infusion.

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> If the antidote has been administered and the diagnosis is not that of cyanide intoxication and you have methemoglobin> 30%, you can administer toluidine blue or methylene blue, to suspend the effect of the cyanide antidote. WARNING: this should be done with the utmost caution and only in the hospital, due to the renewed emission of cyanide in the blood.

#### 5. FIREFIGHTING MEASURES

#### 5.1 **Extinguishing media**

alkaline fire fighting powder. Suitable extinguishing media

Unsuitable extinguishing media water, carbon dioxide (CO2), foam, acid fire fighting

material, acid fire fighting powders.

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

In the event of a fire, hydrogen cyanide can be released.

5.3 **Advice for firefighters** 

> Prevent the water used to extinguish the fire from flowing into the sewer, groundwater or surface

water.

General information:

Normal firefighting 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**

**Equipment:** 

#### 6.1 Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

Keep away from contaminated area and keep upwind

#### 6.1.2. For emergency responders

Wear:

Semi-face masks with ABEK2P3 filters compliant with the EN14387: 2004 standard

Chemical risk gloves compliant with EN420 and EN374 standards

Splash goggles compliant with Directive 89/686 / EEC and standard EN166: 2001

Complete clothing compliant with the UNI EN 13034: 2006 type 6 standard

#### 6.2 **Environmental precautions**

Do not send the product to the following compartments:

- ground
- ground water
- sewer

In case of pollution of rivers, lakes or sewers, inform the competent authorities in accordance with local laws.

In the event of a fire, the extinguishing water must not reach the sewers, the groundwater, or the surface waters. In the event of a fire, remove the endangered containers and take them to a safe place, if it can be done safely.

#### 6.3 Methods and material for containment and cleaning up

#### 6.3.1. Advice in order to contain a spill

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Close (if possible) or cover drains

#### 6.3.2. Advice in order to clean-up a spill

#### 1. solid substance:

Collect mechanically. Collect in suitable containers. The collected material must be reused or disposed of according to regulations. To absorb the spilled substance, it is recommended to use an approved industrial vacuum cleaner.

#### 2. solution:

Absorb with liquid retaining material, for example: inert absorbent medium, diatomaceous earth or acid absorbent. Collect mechanically. Collect in suitable containers. The collected material must be reused or disposed of according to regulations.

#### 6.3.3 Other information

The substance, the packaging, the fire extinguishing water and the remains of any fire must be sent to an appropriate disposal facility, in compliance with waste regulations.

#### 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

Avoid the formation of dust and keep away from incompatible materials (acids, acid salts, aluminum). Use only under a suction hood. Keep fire extinguishers and means of containment such as inert absorbent media, diatomaceous earth or absorbent for acids nearby.

#### 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

The product itself does not burn but if involved in a fire it can release toxic gases. Suitable containers: plastic.

In case of release of hydrogen cyanide: The formation of flammable or explosive dust / air mixtures is possible.

Keep suitable fire extinguishers and plenty of water near the substance.

Open the containers under suction and close them immediately after use.

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

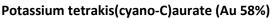
Keep in a locked and ventilated place. Protect against solar radiation and the action of heat.

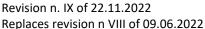
#### 7.2.3. Conditions to maintain the integrity of the substance or mixture

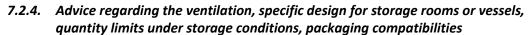
Store in original containers. Keep the containers tightly closed and store them in a dry and well ventilated, clean, dry, closable place.

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Do not store near: acids and acid salts.

Keep the substances in a locked deposit with forced ventilation.

Use ADR approved packaging

#### 7.3. Specific end use(s)

Industrial use

#### **EXPOSURE CONTROLS/PERSONAL PROTECTION** 8.

#### 8.1. **Control parameters**

(such as Potassium Cyanide CAS 151-50-8 EC 205-792-3)

Control parameters: 5 mg / m3 Permitted limit value (OEL (IT))

Remarks: Source for limit values: ACGIH

Control parameters: Skin designation: (OEL (IT))

It can be absorbed through the epidermis. Suitable measurement procedures are:

Potassium cyanide: OSHA method ID120

NIOSH method 7904

Hydrogen cyanide: OSHA method ID120

#### 8.2. **Exposure controls**

Provide appropriate air extraction / evacuation in the workplace and on the operating machine.

Provide for the installation of an emergency shower and an eye shower.

#### 8.2.1. Appropriate engineering controls

It is possible to evaluate the installation of a detector of diffuse emissions of hydrogen cyanide in the workplace.

#### 8.2.2. Individual protection measures, such as personal protective equipment

**Eye/face protection** Goggles with side shields compliant with Directive

89/686 / EEC and with standard EN166: 2001

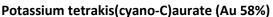
Skin protection (hands) Glove material:

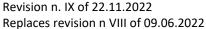
> • Natural latex (NR) Material thickness 0.5 mm Breakthrough time ≥ 480 min Method DIN EN374

- Nitril Material thickness 0.11 mm
- Breakthrough time ≥ 480 min Method DIN EN374
- Nitril Material thickness 0.33 mm Breakthrough time ≥ 480 min MethodDIN EN374
- Polychloroprene with natural latex coating Material thickness 0.6 mm Breakthrough time ≥ 480 min Method DIN EN374

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**Skin protection (body)**Complete clothing compliant with the UNI EN

13034: 2006 type 6 standard

When cleaning: rubber or plastic boots

**Respiratory protection** When hydrogen cyanide occurs:

Wear self-contained breathing apparatus. Observe the maximum times of use of respiratory protection.

In case of dust / aerosol:

Respirator with combined filter B-P3
Respirator with combined filter ABEK-P3

**Thermal hazards** The substance does not present thermal hazards

#### 8.2.3. Environmental exposure controls

Prevent the spillage of solutions containing cyanide in groundwater, soil, sewers. Provide for closing the manholes while moving the solutions. Do not store in areas with sewage drains.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties

Physical state Crystalline solid

Colour White

Odour None when dry. If wet, it smells of

bitter almonds

Melting point/freezing point

Not available

Boiling point or initial boiling point and

Not applicable

boiling range

Flammability

Lower and upper explosion limit

Flash point

Auto-ignition temperature

Not flammable

Not applicable

Not flammable

Decomposition temperature Decomposes at temperatures above

300°C

pH 10 (100 g/l in water)

Kinematic viscosity Not applicable

Solubility 10 g / l in water at 20 ° C

Partition coefficient n-octanol/water (log

value)

Not applicable

Vapour pressure

Density and/or relative density

Relative vapour density

Particle characteristics

Not applicable

Not available

#### 9.2. Other information

None

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10.		STABILITY AND REACTIVITY		
	10.1	Reactivity		
		Danger of hydrocyanic acid formation in contact with acids, carbon dioxide, air		
		humidity		
	10.2	Chemical stability		
		The product is stable under normal storage conditions		
	10.3	Possibility of hazardous reactions		
		•	possibility of hydrocyanic acid formation.	
	10.4	Conditions to avoid		
		Under the action of acids (including carbon dioxide) hydrogen cyanide is released,		
		which is flammable and together with the air can form explosive gas mixtures. Keep		
	40.5	away from acid salts.		
	10.5	Incompatible materials		
			air can lead to the formation of hydrogen	
	10.6	Hazardous decomposition products	in containers that are not hermetically closed.	
	10.6	HCN hydrogen cyanide (hydrogen cya	nido)	
11.		TOXICOLOGICAL INFORMATION	iniue)	
11.	11.1		ined in Regulation (EC) No 1272/2008	
		Acute toxicity	LD50 oral rat: 7.49 mg / kg bw	
		, , , , , , , , , , , , , , , , , , , ,	Rat inhalation LC50: 103 mg / m3	
			LD50 dermal rat: 14.29 mg / kg bw	
		Skin corrosion / irritation	The irritating effect on the skin cannot be	
		•	determined as a result of acute dermal toxicity	
		Serious eye damage/irritation	The irritating effect on the eyes cannot be	
			determined as a result of acute dermal toxicity	
		Respiratory or skin sensitization	No data are available	
		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	DNEL workers: 9.4 mg / m3 for 8 hours	
			Target organ: thyroid gland.	
			NOAEL: 1.35 mg/kg bw/die	
	11.2	Information on other borous	Target organ: thyroid gland.	
	11.2	Information on other hazards		
12.		It can be absorbed into the skin, particularly if the skin is sweaty or injured.  ECOLOGICAL INFORMATION		
14.	12.1	<b>Toxicity</b> EC acute (fish) 15.8 μg/L		
	16.1	TOMERY	EC acute (1311) 13.8 μg/L EC chronic (fish) 2 μg/L	
			Le cinomic (11311) 2 μg/ L	

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	12.2	Persistence and degradability	Quickly degraded both anaerobically	aerobically and
	12.3	Bioaccumulative potential	BCF (aquatic species): 3 BCF (terrestrial species	
	12.4	Mobility in soil	KOC: 2.84 L/kg	5). 3.102 L/ kg ww
	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.	12.7	DISPOSAL CONSIDERATIONS	TVO KITOWIT CITECUS	
13.	13.1.	Waste treatment methods		
		This product and its packaging must be disp	osed of in authorized facil	ities. An CER
		code of hazardous waste must be assigned		
		2008/98 / EC and subsequent amendments	·	
		The packaging and labeling of waste must be	e identical to that of the p	ure product. Do
		not remove the labels from the packaging u	ıntil their final destination.	
		Do not reuse empty containers.		
		Cyanide waste can only be treated and dec	ontaminated by authorized	d companies
14.		TRANSPORT INFORMATION	4500	
	14.1	UN number or ID number	1588	
	14.2	UN proper shipping name	Inorganic cyanides, solid,	n.o.s.
	14.3	Transport hazard class(es)	6.1 toxic	
	14.4	Packing group	II	
	14.5	Environmental hazards	Dangerous for the enviro	nnement
	14.6	Special precautions for user	Approved packaging	
	14.7	Maritime transport in bulk according to	N.A.	
		IMO instruments		
15.		REGULATORY INFORMATION		
	<i>15.1</i>	Safety, health and environmental regulation	ons/legislation specific	
		for the substance or mixture		Applicability
		Reg. (EC) 1907/2006 / EC Reach	h	YES
		Reg. (EC) 1272/2008 CLP and subsequent of		YES
		Reg. (CE) 2037/2000 "Substances that depl Reg. (EC) 850/2004 "Persistent organic pol		NO NO
		Reg. (EC) 689/2008 "export and import of		NO
		Substance listed in Annex I of Dir. 2012/18	~	YES
		Legislative Decree 81/2008 Consolidated L	-	123
		safety at work		YES
		Directive 2014/103 / EU "Adr"		YES
		R.D. 09/01/1927 "Toxic gases"		NO
		Reg. (CE) 1907/2006/CE Reach art. 59 – Ca	ndidate List of	NO
		Substances of Very High Concern (SVHC)		
		Reg. (CE) 1907/2006/CE Reach - Annex XIV		NO
		Reg. (CE) 1907/2006/CE Reach - Annex XV	II – Restriction List	Limited use
		https://echa.europa.eu/it/substances-rest	tricted-under-reach	Item 75
				(check link)
				Pag 10 di 1

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	<b>15.2</b>	Chemical safety assessment
		A chemical safety assessment was not carried out
<b>16.</b>		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: <a href="http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances">http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances</a>

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

• Training for obtaining a license for handling toxic gases