Safety data sheet
According to Regulation n.1907/2006 and Regulation 878/2020
POTASSIUM CYANIDE

Revisione n. 9 – 07.06.2024
Replaces revision n. 8 – 18.01.2023

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

1.1 Product identifier

Chemical name	Potassium cyanide
Product code	POTN 01
C.A.S. Registry Number	151-50-8
EC Number	205-792-3
Molecular weight	60,5 g/mol
Raw formula	KCN
REACH registration number	01-2119486407-29-XXXX

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

Intended uses	Industrial use. Additive for electroplating.
Uses advised 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)

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Hazard classes	Category codes	Hazard statements
Metal Corrosive	1	H290
Acute Toxicity (oral)	1	H300
Acute Toxicity (dermal)	1	H310.
Acute Toxicity (inhalation)	1	H330
SPECIFIC TARGET ORGAN TOXICITY PROLONGED OR REPEATED EXPOSURE Route of exposure: oral and inhalation Affected organs: thyroid	1	H372
Aquatic Acute	1	H400
Aquatic Chronic	1	H410

2.2 Label elements

Pictograms



Signal words **DANGER**

Hazard statements

H290	May be corrosive to metals
H300	Fatal if swallowed
H310	Fatal in contact with skin
H330	Fatal if inhaled
H372	Causes damage to organs through prolonged or repeated exposure

		H400	Very toxic to aquatic life.
		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
		P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor
		P302+P352	IF ON SKIN: Wash thoroughly with soap and water.
		P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
		P403+P233	Keep container tightly closed and in a ventilated place

2.3 Other hazards

Hydrocyanic acid can cause all levels of poisoning.
Under the action of acids (including carbon dioxide) hydrogen cyanide is released, which is flammable and can form explosive gaseous mixtures together with air.
Avoid contact with acids, air humidity, water.
Does NOT contain PBT/vPvB substances in accordance with Regulation (EC) 1907/2006, attachment 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 compliance with the criteria established in Regulation (EU) 2017/2100 and Regulation (EU) 2018/605.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1

CAS Number	143-33-9
EC Number	205-599-4
INDEX Number	006-007-00-5
ATE (oral)	LD50 7.49 mg/kg bw (rat)
ATE (inhalation)	LC50 (60 min) 63 ppm (rat) OECD Guideline 403
ATE (dermal)	LD50 14.29 mg/kg bw (rabbit)
M factor (acute)	10
M Factor (chronic)	1

4 FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Inhalation is possible if aerosols, mists, dusts or fumes are formed. 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 shortage of air, give oxygen. Call a doctor immediately for first aid (keyword: poisoning with cyanide / hydrogen cyanide).

Ingestion	Rinse mouth. Immediately drink plenty of water. Induce vomiting. Call a doctor for first aid immediately (keyword: poisoning with cyanide / hydrogen cyanide)
Contact with skin	If dry, undamaged skin comes into contact with dry sodium or potassium cyanide, no cyanide poisoning has been observed so far. In case of contact with skin, wash with plenty of soap and water. With symptoms of intoxication, alarm the emergency doctor immediately (keyword: cyanide poisoning / hydrogen cyanide).
Contact with eyes	The use of special washing solutions with a high buffer capacity (e.g. borate buffer solution, diphtotherine, etc.) is recommended as part of first aid measures. Keeping the eye open, immediately rinse thoroughly with plenty of water for at least 10 minutes. With symptoms of intoxication alarm the emergency doctor immediately (keyword: intoxication with cyanide / hydrogen cyanide

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 those providing first aid, wear PPE	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

Get immediate medical attention or contact a poison control center

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media alkaline quenching powder.

Unsuitable extinguishing media	water, carbon dioxide (CO2), foam, acid quenching material, acid quenching 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

General information:	Prevent the water used to extinguish the fire from flowing into the sewer, groundwater or surface water.
Equipment:	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

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1. 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

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.

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

Do not store near: acids and acid salts.
Keep the substance in locked storage and with forced ventilation.
Use ADR approved packaging permitted for the UN number UN1680 G.I. I.
If stored in quantities exceeding 50 kg, you must be in possession of authorization for custody and conservation issued by the Toxic Gas Commission and must be kept in an authorized cabin with forced ventilation

7.3. Specific end use(s)

Industrial use. Galvanic industry

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

DNEL

Workers

Systemic effects for long-term exposure – inhalation: 0.94 mg/m3
Systemic effects for short-term exposure – inhalation: 12.5 mg/m3
Local effects for long-term exposure – inhalation: hazard unknown (no further information necessary)
Local effects for short-term exposure – inhalation: hazard unknown (no further information necessary)
Systemic effects for long-term exposure – dermal: 0.14 mg/kg body weight per day
Systemic effects for short-term exposure – dermal: 4.03 mg/kg body weight per day
Local effects for long-term exposure – dermal: hazard unknown (no further information necessary)
Local effects for short-term exposure – dermal: hazard unknown (no further information necessary)
Eye hazards: high hazard (no threshold derived)

General population.

Significant exposure of the population to the substance is considered unlikely and therefore no data are available.
Eye hazards: high hazard (no threshold derived)

PNEC

Freshwater: 1 µg/L
Marine water: 0.2 µg/L
Sewer treatment plant: 50 µg/L
Sediment (freshwater): 4 µg/kg sediment dry weight
Sediment (marine water): 0.8 µg/kg sediment dry weight
Soil: 7 µg/kg soil dry weight

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)	Gloves 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 Method DIN EN374 • Polychloroprene with natural latex coating Material thickness 0.6 mm Breakthrough time ≥ 480 min Method DIN EN374
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	Solid
Colour	White
Odour	Characteristic
Melting point/freezing point	561.7 °C
Boiling point or initial boiling point and boiling range	No data available
Flammability	Not flammable
Lower and upper explosion limit	Not explosive
Flash point	Not flammable
Auto-ignition temperature	Not flammable
Decomposition temperature	Not available data
pH	Not available data
Kinematic viscosity	Not applicable
Solubility	400 g/L @ 20 °C and pH 7
Partition coefficient n-octanol/water (log value)	Log Kow - 0.25 @ 20 °C and pH 7
Vapour pressure	Not applicable
Density and/or relative density	1.56 @ 20 °C
Relative vapour density	1.8 hPa @ 634.5 °C
Particle characteristics	Solid potassium cyanide is commercially supplied with particle size between 40 and 355 microns: therefore only a negligible fraction can reach the deep respiratory tract.

9.2. Other information

None

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

Danger of hydrogen cyanide formation in contact with acids, carbon dioxide, air humidity.

10.4 Conditions to avoid

When heated above 300°C, hydrogen cyanide vapors may form

10.5 Incompatible materials

Acids, acid salts. Over time, even the air can lead to the formation of hydrogen cyanide in a confined environment or in containers that are not hermetically closed.

10.6 Hazardous decomposition products

HCN hydrogen cyanide (hydrogen cyanide)

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity	Oral: LD50 rat: 7.49 mg / kg bw Inahalation : LC50 (60 min) 63 ppm (rat) Dermal: LD50 14.29 mg/kg bw (rabbit)
Skin corrosion / irritation	Scientifically unjustified studies
Serious eye damage/irritation	Scientifically unjustified studies
Respiratory or skin sensitization	Scientifically unjustified studies
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	No data available
STOT – repeated exposure	NOAEL (oral) (rat): 40 mg/kg bw/day NOAEC (inhalation) (rat): 9.2 ppm LOAEC (inhalation) (rat): 29.9 ppm Target organ: thyroids

11.2 Information on other hazards

It can be absorbed into the skin, particularly if the skin is sweaty or injured.

12. ECOLOGICAL INFORMATION

12.1 Toxicity	PNEC check section 8.1 Short term toxicity (fish): LC50 (4 days) 98.8 - 103.8 µg/L Short term toxicity (invertebrates): EC50 (2 days) 12.4 µg/L
12.2 Persistence and degradability	No available data
12.3 Bioaccumulative potential	Not bioaccumulative
12.4 Mobility in soil	No data available
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

This product and its packaging must be disposed of in authorized facilities. A CER code of hazardous waste must be assigned on the basis of the provisions of Directive 2008/98/EC and subsequent amendments and additions.

The packaging and labeling of waste must be identical to that of the pure product. Do not remove the labels from the packages until their final destination.
Do not reuse empty containers.
Hydrocyanic waste may only be treated and decontaminated by authorized companies with: Hydrogen peroxide and pH value 11).

14. TRANSPORT INFORMATION

14.1 UN number or ID number 1680

14.2 Official UN shipping name

ADR/RID/ADN/IMDG/ICAO-IATA: Potassium cyanide

14.3 Transport hazard class

ADR/RID/ADN/IMDG/ICAO-IATA: Class	6.1
ADR/RID/ADN/IMDG/ICAO-IATA: Label	6.1 + Mark environmental hazard
ADR: Tunnel restriction code	C/E
IMDG - EmS	F-A, S-A

14.4 Packing group I

14.5 Dangers for the environment

ADR/RID/ADN/ICAO-IATA:	dangerous for the environment
IMDG: Marine Contaminant:	YES

14.6 Special precautions for user

Transport must be carried out by vehicles authorized for the transport of dangerous goods according to the provisions of the current edition of the A.D.R. Agreement. and the applicable national provisions. Transport must be carried out in the original packaging and, in any case, in packaging which is made of materials which cannot be attacked by the contents and which are not likely to generate dangerous reactions. Those responsible for loading and unloading dangerous goods must have received appropriate training on the risks presented by the preparation and on any procedures to be adopted in the event of emergency situations.

14.7 Maritime transport in bulk according to IMO instruments

Bulk transport is not foreseen

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	YES
Legislative Decree 81/2008 Consolidated Law on health and safety at work	YES
Directive 2014/103 / EU "Adr"	YES
R.D. 09/01/1927 "Toxic gases"	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 substances subject to authorisation	NO
Reg. (CE) 1907/2006/CE Reach - Annex XVII - Restrictions in certain dangerous substances	NO

https://echa.europa.eu/it/substances-restricted-under-reach

15.2 **Chemical safety assessment**

A chemical safety assessment is not required because the annual production is below the legislative limit

16. **OTHER INFORMATION**

Changes compared to the previous edition

Chenges to sections 1-2-3-8-12-14-16

Acronim and abbreviation legend

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
GHS: Globally Harmonized System of Classification and Labeling of Substances
EINECS: European Inventory of Chemical Substances
CAS: Chemical Abstract Service
STA: Acute Toxicity Estimate
PBT: Persistent, Bioaccumulative and Toxic.
vPvB: (very persistent and very bioaccumulative). Very persistent and very bioaccumulative
LD: lethal dose
PNEC: predicted no effect concentration
DNEL: derived no effect level
TLV (ceiling value): threshold limit value
STEL: short-term exposure limit
EU-OEL: European occupational exposure limit
TWA: time-weighted average
EC: effective concentration
NOAEL: no observed adverse effect level
LC: lethal concentration
NOEC: no observed effect concentration
LOEC: lowest observed effect concentration
Bw: body weight
Koc: organic carbon-water partition coefficient

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

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

- PPE training
- Training for obtaining a license for handling toxic gases