1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1. Product identifier

Name:	Tripotassium hexacyanoferrate.
Synonyms :	Potassium ferricyanide.
CLP Annex VI, part 3, index nr.	--
EC/EINECS No. :	237-323-3
CAS No.	13746-66-2
Registration nr :	01-2120787462-46-0000

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

1.2.1 Intended use :

F-1 Formulation or re-packaging

Contributing activity/technique for the environment:
- ERC2: Formulation into mixture

Contributing activity/technique for the workers:
- PROC 4: Chemical production where opportunity for exposure arises
- PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities
- PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product Category formulated: PC 14: Metal surface treatment products; PC 21: Laboratory chemicals

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Substance supplied to that use: as such; in a mixture
Related assessment: use assessed in a joint CSR (Exposure scenario 1)

Uses at industrial sites

IW-1 Chemical synthesis of a polymer additive

Contributing activity/technique for the environment:
- ERC6a: Use of intermediate

Contributing activity/technique for the workers:
- PROC 4: Chemical production where opportunity for exposure arises

Sector of end use: SU 9: Manufacture of fine chemicals
Technical function of the substance: intermediate (precursor)

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Substance supplied to that use: as such
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR (Exposure scenario 2)

IW-2 Use at industrial site for metal/surface treatment or laboratory chemical

Contributing activity/technique for the environment:
- ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
- ERC5: Use at industrial site leading to inclusion into/onto article

Contributing activity/technique for the workers:
- PROC 2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
- PROC 4: Chemical production where opportunity for exposure arises
- PROC 7: Industrial spraying
- PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities
- PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
- PROC 10: Roller application or brushing
- PROC 13: Treatment of articles by dipping and pouring
- PROC 15: Use as laboratory reagent

Product Category used: PC 14: Metal surface treatment products; PC 15: Non-metal-surface treatment products; PC 21: Laboratory chemicals
Sector of end use: SU 9: Manufacture of fine chemicals; SU 14: Manufacture of basic metals, including alloys
Technical function of the substance: hardener; plating agent

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Substance supplied to that use: as such; in a mixture
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR (Exposure scenario 3)

IW-3 Use as intermediate in production of pharmaceuticals

Contributing activity/technique for the environment:
- ERC6a: Use of intermediate

Contributing activity/technique for the workers:
- PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions
- PROC 4: Chemical production where opportunity for exposure arises
- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

Product Category used: PC 29: Pharmaceuticals
Sector of end use: SU 9: Manufacture of fine chemicals
Technical function of the substance: intermediate (precursor)

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Substance supplied to that use: as such; in a mixture
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR but not a lead's own use (Exposure scenario 4)

IW-4 Use as photo chemical

Contributing activity/technique for the environment:
- ERC5: Use at industrial site leading to inclusion into/onto article
- ERC6a: Use of intermediate
- ERC6b: Use of reactive processing aid at industrial site (no inclusion into or onto article)

Contributing activity/technique for the workers:
- PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions
- PROC 4: Chemical production where opportunity for exposure arises
- PROC 5: Mixing or blending in batch processes
- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

Product Category used: PC 30: Photo-chemicals
Sector of end use: SU 9: Manufacture of fine chemicals
Technical function of the substance: photochemical

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Substance supplied to that use: as such; in a mixture
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR but not a lead's own use (Exposure scenario 5)

Uses by professional workers

PW-1 Laboratory chemical

Contributing activity/technique for the environment:
- ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
- ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
Contributing activity/technique for the workers:
- PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities
- PROC 9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
- PROC 15: Use as laboratory reagent

Product Category used: PC 21: Laboratory chemicals
Sector of end use: SU 9: Manufacture of fine chemicals; SU 24: Scientific research and development
Technical function of the substance: intermediate (precursor)

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR (Exposure scenario 6)

PW-2 Professional use in surface treatment

Contributing activity/technique for the environment:
- ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
Contributing activity/technique for the workers:
- PROC 4: Chemical production where opportunity for exposure arises
- PROC 8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
- PROC 10: Roller application or brushing
- PROC 11: Non industrial spraying

Product Category used: PC 14: Metal surface treatment products; PC 15: Non-metal-surface treatment products
Sector of end use: SU 9: Manufacture of fine chemicals
Technical function of the substance: hardener; plating agent

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR (Exposure scenario 7)

PW-3 Use as photo chemical

Contributing activity/technique for the environment:
- ERC8b: Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
Contributing activity/technique for the workers:
- PROC 3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment conditions
- PROC 5: Mixing or blending in batch processes
- PROC 8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

Product Category used: PC 30: Photo-chemicals
Sector of end use: SU 9: Manufacture of fine chemicals
Technical function of the substance: photochemical

use registered according to REACH Article 10; total tonnage manufactured/imported >=10 tonnes/year per registrant
Subsequent service life relevant for that use: no
Related assessment: use assessed in a joint CSR but not a lead's own use (Exposure scenario 8)

1.2.2 Uses advised against — no additional information

1.3 Details of the supplier of the safety datasheet

Supplier :

GENTROCHEMA BV
Lage Ham 190, NL-5102 AE Dongen, The Netherlands
Tel. : +31.162.249020

E-mail: info@gentrochema.nl **Website : www.gentrochema.nl**

Emergency telephone nr : during office hours (08:30 - 17:00) : +31.162.249020
After office hours (*only for health professionals*) : +44.(0)844.892.01
England and Wales

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1. Classification according to Regulation 1272/2008 EC

Eye Irritation 2, H319
Aquatic Chronic 2, H411

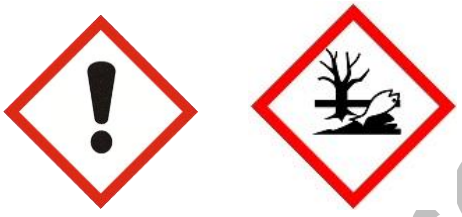
2.2 Label elements

2.2.1. Labelling according to Regulation 1272/2008 EC

Product identifier : Tripotassium hexacyanoferrate

Index Nr : ----

Hazard Pictogram(s):



Signal word : Warning

Hazard Statement(s):

H411 : Toxic to aquatic life with long lasting effects.
H319: Causes serious eye irritation.
EUH032: Contact with acids liberates very toxic gas

Precautionary statement(s)

P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P273: Avoid release to the environment.
P391: Collect spillage.

2.3. Other hazards

No additional information

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical characterization: Tripotassium hexacyanoferrate, min. 99 % $K_3(FeCN)_6$, with non hazardous additions

Composition/information on ingredients :

EINECS nr : 237-323-3
CAS nr : 13746-66-2
Index No. ----

4. FIRST AID MEASURES

4.1 Description of first aid measures

- General information : In case of eye contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

- After inhalation : Remove to fresh air.
If not breathing give artificial respiration.
If breathing is difficult, give oxygen.
Call a physician.

- After skin contact : Flush skin with water.

- After eye contact : Check for and remove any contact lenses. Immediately flush eyes with copious amounts of water, keeping eyelids open. If eye irritation persists: Get medical advice/attention

- After swallowing : Drink plenty of water, provided person is conscious and induce vomiting. Call a physician.

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

Causes serious eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

No additional information

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Non-suitable extinguishing media: Not known

5.2 Special hazards arising from the substance

development of toxic and irritating decomposition products.

5.3 Advice for fire-fighters

Wear self contained breathing apparatus if necessary.
Contact with acids liberates very toxic gas (Hydrogen Cyanide)

5.4 Further information

Product is not combustible.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid causing dust. Ensure adequate ventilation.

6.2 Environmental precautions

Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Pick up spilled product, keep in a closed container and hold for waste disposal.

6.4 Reference to other sections

For safe use: refer to section 7
For personal protection: refer to section 8.
For disposal: refer to section 13

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid causing dust. Avoid contact with skin and eyes.

7.2 Conditions for safe storage, including any incompatibilities

Avoid exposure to sun light.
Other information: For quality reasons; Store in a cool dry place.

7.3 Specific end uses

No additional information

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

SEE EXPOSURE SCENARIOS (ES) ATTACHED

8.2 Exposure controls

Do not breathe dust.
Avoid contact with skin or eyes.
Wash thoroughly after handling.
Only use in a well-ventilated place.
Safety shower and eye bath should be present.

Personal protection :

- Hand protection :	Use chemical resistant gloves. See standard : EN-374-3:2003.
- Eye/face protection :	Use tight fitting goggles. See standard: EN 166:2001.
- Skin/body protection :	Wear appropriate protective clothing.
- Respiratory protection :	Wear appropriate respirator, Filter P2 (white).

Other information :

Working clothes should not be taken home.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 information on basic physical and chemical properties

Appearance:	Solid, odourless, ruby-red crystal powder
Odour:	Odourless
Odour threshold:	Not determined
PH-value :	Not determined
Alkalinity or acidity :	Not determined
Boiling point :	Boiling point could not be determined.(it decomposes)
Melting point :	Melting point could not be determined.(it decomposes)
Flash point:	Not applicable.
Evaporation rate:	Not relevant
Flammability :	Non flammable
Vapour pressure :	No vapour pressure is derived because the melting point is > 300 ºC
Vapour density :	Not available.
Specific gravity/Density :	1.8934 g/cm3
Solubility in water :	363 g/l at 20ºC
Solubility in other solvents :	Alcohol- Ethanol : limited
Partition coefficient n-octanol/water:	Not available.
Auto ignition temperature:	No self ignition observed under test conditions.
Decomposition temperature :	No decomposition temperature is reported
Viscosity :	Not applicable
Explosive properties:	None
Oxidising properties :	None

9.2. other information

No additional information.

10. STABILITY AND REACTIVITY

10.1 Reactivity

Hazardous reaction with acids.
Stable under circumstances as advised in section 7.

10.2 Chemical stability

Avoid exposure to sun light.

10.3 Possibility of hazardous reactions

Do not mix with acids, oxidisers, nitrite and nitrate salts.
Reacts violently with ammonia and chromic acid.

10.4 Conditions to avoid

Avoid exposure to sun light.

10.5 Incompatible materials

Do not mix with acids, oxidisers, nitrite and nitrate salts.
Reacts violently with ammonia and chromic acid.

10.6. Hazardous decomposition products

Hydrogen Cyanide (HCN)

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Endpoint	Route	Dose descriptor or qualitative effect characterisation; test type
Acute toxicity	oral	no adverse effect observed (LD50): 5110mg/kg bw
Acute toxicity	dermal	no adverse effect observed (LD50): 2000mg/kg bw
Acute toxicity	inhalation	no study available
Irritation / Corrosivity	skin	no adverse effect observed (not irritating)
Irritation / Corrosivity	resp. tract	no study available
Irritation / Corrosivity	eye	adverse effect observed (irritating)
Sensitisation	skin	no adverse effect observed (not sensitising)
Sensitisation	resp. tract	no study available
Repeated dose toxicity	oral	no adverse effect observed (NOAEL): 450mg/kg bw/day (chronic; rat [common rodent species])
Repeated dose toxicity	dermal (systemic effects)	no study available
Repeated dose toxicity	dermal (local effects)	no study available

Repeated dose toxicity	inhalation (systemic effects)	no study available
Repeated dose toxicity	inhalation (local effects)	no study available
Mutagenicity	in vitro / in vivo	In vitro: no adverse effect observed (negative) In vivo: no study available
Carcinogenicity	oral	no adverse effect observed (NOAEL): 450mg/kg bw/day (chronic; rat [common rodent species])
Carcinogenicity	dermal	no study available
Carcinogenicity	inhalation	no study available
Reproductive toxicity: effects on fertility	oral	no study available
Reproductive toxicity: effects on fertility	dermal	no study available
Reproductive toxicity: effects on fertility	inhalation	no study available
Reproductive toxicity: developmental toxicity	oral	no adverse effect observed (NOAEL): 1000mg/kg bw/day (subacute; rat [common rodent species])
Reproductive toxicity: developmental toxicity	dermal	no study available
Reproductive toxicity: developmental toxicity	inhalation	no study available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Hazard assessment conclusion for the environment

Compartment	Hazard conclusion	Remarks/Justification
Freshwater	PNEC aqua (freshwater): 1.7 µg/L	Assessment factor: 1000 Extrapolation method: assessment factor PNEC aqua (freshwater): A 96h-LC50 value for fish is available for Potassium

		ferricyanide: >100 mg/L. A 48h-EC50 value for invertebrates is available for Potassium ferricyanide: 59 mg/L. A 72h-ErC50 value for aquatic algae is available for Potassium ferricyanide: 1.7 mg/L. The lowest acute effect concentration for aquatic algae is used with an assessment factor of 1000 according to Table R.10-4 in Guidance Document R.10.
Marine water	PNEC aqua (marine water): 0.17 µg/L	Assessment factor: 10000 Extrapolation method: assessment factor PNEC aqua (marine water): A 96h-LC50 value for fish is available for Potassium ferricyanide: >100 mg/L. A 48h-EC50 value for invertebrates is available for Potassium ferricyanide: 59 mg/L. A 72h-ErC50 value for aquatic algae is available for Potassium ferricyanide: 1.7 mg/L. The lowest acute effect concentration for aquatic algae is used with an assessment factor of 10000 according to Table R.10-5 in Guidance Document R.10.
Sediments (freshwater)	no exposure of sediment expected	The anion Fe(CN)6 3- has low potential for adsorption to sediment and low bioaccumulation potential. Therefore, no exposure of sediment is expected.
Sediments (marine water)	no exposure of sediment expected	The anion Fe(CN)6 3- has low potential for adsorption to sediment and low bioaccumulation potential. Therefore, no exposure of sediment is expected.
Sewage treatment plant	PNEC STP: 100 mg/L	Assessment factor: 10 Extrapolation method: assessment factor PNEC STP: The NOEC for STP microorganisms was 1000 mg/L, based on read-across data from the target substance's analogue sodium ferrocyanide. To determine the PNEC, an assessment factor of 10 was applied to this concentration, resulting in a PNEC for STP of 100 mg/L.
Soil	no exposure of soil expected	The anion Fe(CN)6 3- has low potential for adsorption to soil and low bioaccumulation potential. Therefore, no exposure of soil is expected.
Air	no hazard identified	There is no data to derive a PNEC in air, and no regulatory requirement. Therefore, the PNEC air is not derived.
Secondary poisoning	no potential for bioaccumulation	The substance is not classified as H373, H372, H360, H361 or H362 under the CLP Regulation, nor has it bio accumulative potential (or low biodegradability). Therefore, exposure assessment regarding secondary poisoning is not required and thus no PNECoral is derived.

Conclusion on environmental classification

As the L(E)C50 values are above 1 mg/L, the substance does not need to be classified for acute aquatic hazard in accordance with the CLP Regulation (the lowest L(E)C50 value is 1.7 mg/L).

Based on the 72h-ErC10 value obtained in the algae study (0.67 mg/L) and as the substance should be regarded as not rapidly degradable according to the CLP Regulation, the substance should be classified in Category 2 for long-term aquatic hazard (H411).

12.5 Results of PBT and vPvB assessment

Not relevant
No data available.

13. DISPOSAL CONSIDERATIONS

Product/packing : Observe all federal, state and local environmental regulations.
See directives 75/442/EEC and 2006/12/EC.

14. TRANSPORT INFORMATION

ADR

14.1	**UN number**	3077
14.2	**Proper shipping name**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tripotassium hexacyanoferrate)
14.3	**Transport hazard class(es)**	9
14.4	**Packing group**	III
14.5	**Environmental hazards**	
	Marine pollutant	Yes
	Marking of packages	Single packagings or inner packagings containing a net mass of 5 kg or less are excepted from the provisions for the carriage. Symbol (fish and tree) on single packagings or inner packagings with a net mass of more than 5 kg.
14.6	**Additional information**	
	Label	9
	Tunnel restriction code	(-)
	Hazard identification number	90
	Transport category	3
	Limited quantity (LQ)	5 kg
	Exempted quantity	E1

14.7 **Transport in bulk according to Annex II of Marpol and the IBC Code:** Not applicable

IMDG

14.1	**UN number**	3077
14.2	**Proper shipping name**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tripotassium hexacyanoferrate)
14.3	**Transport hazard class(es)**	9
14.4	**Packing group**	III
14.5	**Environmental hazards**	
	Marine pollutant	Yes
	Marking of packages	Single packagings or inner packagings containing a net mass of 5 kg or less are excepted from the provisions for the carriage. Symbol (fish and tree) on single packagings or inner packagings with a net mass of more than 5 kg.
14.6	**Additional information**	
	Label	9

Limited quantity (LQ)	5 kg
Exempted quantity	E1
Segregation	–
Emergency Schedules (EmS)	
– **Fire schedule**	F - A
– **Spillage schedule**	S - F

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

ICAO-IATA

14.1 UN number	3077
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (tripotassium hexacyanoferrate)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazards	
Marine pollutant	Yes
Marking of packages	Single packagings or inner packagings containing a net mass of 5 kg or less are excepted from the provisions for the carriage. Symbol (fish and tree) on single packagings or inner packagings with a net mass of more than 5 kg.
14.6 Additional information	
Label	9
Limited quantity (LQ)	30 kg
Exempted quantity	E1

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

State regulations

Observe all federal, state and local regulations.

additional regulations and restrictions:

REACh regulation

15.2 Chemical Safety report

A CSA has been carried out

16. OTHER INFORMATION

Consulted literature:	various
Version :	Nr. 4.01 of 01.04.2020. (Replaces all preceding versions.)
Changes per section compared to last version :	#1.3, #2 (environmental hazardous added), #12, #14
Name of composer and manager in charge :	Mr W. van Loon.
Printing date :	05-06-2020

Used abbreviations

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA : International Air Transport Association
ICAO: International Civil Aviation Organization
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent