


SAFETY DATA SHEET	In accordance with Regulation 1907/2006 (REACH), amended by Regulation 453/2010	
	TETRASODIUM HEXACYANOFERRATE	

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

1.1. Product identifier


Name: Tetrasodium hexacyanoferrate
 Synonyms: Sodium ferrocyanide decahydrate
 CLP Annex VI, part 3, index nr. --
 EC/EINECS No.: 237-081-9
 CAS No. 13601-19-9
 Registration nr : 01-2119974598-15-0000

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


1.2.1 Intended use :

Identifiers	Use descriptors
F-1: Formulation as anti-caking agent in anti-freeze, de-icing product, for pigment synthesis, for production of citric acid	<p>Environmental release category (ERC): ERC 2: Formulation of preparations</p> <p>Process category (PROC): PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>Product Category formulated: PC 4: Anti-freeze and de-icing products</p> <p>Technical function of the substance during formulation: anti-caking agent Intermediates</p>

Identifiers	Use descriptors
IW-2: Use of substance as intermediate in synthesis of pigment	<p>Environmental release category (ERC): ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p> <p>Process category (PROC): PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at</p>

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Identifiers	Use descriptors
	<p>dedicated facilities PROC 15: Use as laboratory reagent</p> <p>Product Category used: PC 19: Intermediate</p> <p>Sector of end use: SU 9: Manufacture of fine chemicals</p> <p>Technical function of the substance during formulation: Intermediates</p>
IW-3: Use as intermediate in Cl production	<p>Environmental release category (ERC): ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)</p> <p>Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>Product Category used: PC 19: Intermediate</p> <p>Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals</p> <p>Technical function of the substance during formulation: Intermediates</p>
IW-4: Production of citric acid for fermentation industry	<p>Environmental release category (ERC): ERC 5: Industrial use resulting in inclusion into or onto a matrix</p> <p>Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>Product Category used: PC 19: Intermediate</p> <p>Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals</p>

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Identifiers	Use descriptors
	Technical function of the substance during formulation: Intermediates

Identifiers	Use descriptors
PW-5: Professional use as anti-freeze, de-icing product	Environmental release category (ERC): ERC 8d: Wide dispersive outdoor use of processing aids in open systems Process category (PROC): PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 11: Non industrial spraying Product Category used: PC 4: Anti-freeze and de-icing products Sector of end use: SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals Technical function of the substance during formulation: anti-caking agent


Identifiers	Use descriptors
C-6: Consumer use as anti-freeze, de-icing product	Environmental release category (ERC): ERC 8d: Wide dispersive outdoor use of processing aids in open systems Product Category used: PC 4: Anti-freeze and de-icing products Technical function of the substance during formulation: anti-caking agent

1.2.2 Uses advised against no additional information

1.3 Details of the supplier of the safety datasheet

Supplier : GENTROCHEMA BV
Esdoornlaan 19a, NL-4254 AT Sleeuwijk, Nederland
Tel. : +31.183.304422 Fax : +31.183.304069
E-mail : w@gentrochema.nl Website : www.gentrochema.nl

Emergency telephone nr : during office hours (08:30 - 17:00) : +31.183.304422
After office hours (*only for health professionals*) : +44.870.600.6266

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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

2.1.1. Classification according to Regulation 1272/2008 EC

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2.1.2. Classification according to Regulation 67/548/EC

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2.2 Label elements

2.2.1. Labelling according to Regulation 1272/2008 EC

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Precautionary statement(s)

2.2.1. Labelling according to Regulation 67/548/EC

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Risk phrases :

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Safety Phrases :

-

2.3. Other hazards

No additional information

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical characterization: Tetrasodium hexacyanoferrate, min. 99 % $\text{Na}_4(\text{FeCN})_6 \cdot 10 \text{H}_2\text{O}$, with non hazardous additions

Composition/information on ingredients :

EINECS nr : 237-081-9
CAS nr : 13601-19-9
Index No. ----

4. FIRST AID MEASURES


4.1 Description of first aid measures

- **General information :** No typical symptoms and effects are known.

- **After inhalation :** Remove to fresh air.

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- If not breathing give artificial respiration.
If breathing is difficult, give oxygen.
Call a physician.
Wash skin with soap and water.
Immediately flush eyes with water, keeping eyelids open.
Drink plenty of water, provided person is conscious and induce vomiting.
Call a physician.
- **After skin contact :**
 - **After eye contact :**
 - **After swallowing :**

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

Not applicable (NON hazardous substance)

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


No special protections required.

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

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7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid causing dust.

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

The substance does not fulfil the criteria for any of the hazard classes or categories set out in Annex 1 to CLP Regulation (EC) No 1272/2008 (nor is assessed to be a PBT or vPvB substance). Hence, according to article 14(4) of the REACH regulation, exposure assessment is not required.

Personal protection :

Observe usual precautions during handling of this substance.


Other information :

No additional information

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 information on basic physical and chemical properties

Appearance:	Solid, odourless, yellow crystalline powder
Odour:	odourless
Odour threshold:	Not available
PH-value :	9.2 - 9.4 (solution : 363 g/l at 20 °C)
Alkalinity or acidity :	Alkalinity
Boiling point :	Not relevant (> 400 °C)
Melting point :	> 400 °C, Loss of water observed at temperatures >50 °C
Flash point:	Not relevant (inorganic substance and solid at room temperature)
Evaporation rate:	Not relevant
Flammability :	Non flammable
Vapour pressure :	< 1.5 E-8 Pa at 25°C.
Vapour density:	Not relevant
Relative density :	1.62 at 20 °C
Solubility in water :	363 g/l at 20 °C (flask method)
Solubility in other solvents :	Alcohol- Ethanol : insoluble.
Partition coefficient n-octanol/water:	Not relevant (inorganic substance)
Auto ignition temperature:	Based on the UN N.4 Test result, Sodium Ferrocyanide was considered "not a self-heating substance".
Decomposition temperature :	> 50 °C substance will lose its crystalwater
Viscosity :	Not relevant (solid substance)
Explosive properties:	None.
Oxidising properties :	None.

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9.2. other information

ferrocyanide complexes can be degraded by photolysis, especially by sunlight, to form low concentrations of free cyanide

10. STABILITY AND REACTIVITY

10.1 Reactivity

Hazardous reaction with strong 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 sodium chromate

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 sodium chromate.


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: > 5110 mg/kg bw
Acute toxicity	dermal	No adverse effect observed LD50: > 2000 mg/kg bw
Acute toxicity	inhalation	No study available
Irritation / Corrosivity	skin	No adverse effect observed (not irritating)
Irritation / Corrosivity	eye	No adverse effect observed (not irritating)
Sensitisation	skin	No adverse effect observed (not sensitising)

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Endpoint	Route	Dose descriptor or qualitative effect characterisation; test type
Sensitisation	respiratory tract	No study available
Repeated dose toxicity	oral	No adverse effect observed NOAEL: \geq 450 mg/kg bw/day (chronic; rat)
Mutagenicity	in vitro / in vivo	No adverse effect observed (negative)
Carcinogenicity	oral	No adverse effect observed
Reproductive toxicity: developmental toxicity	oral	No adverse effect observed at highest tested dose level

12. ECOLOGICAL INFORMATION


12.1 Toxicity

Hazard assessment conclusion for the environment

Compartment	Hazard conclusion	Remarks/Justification
Freshwater	PNEC aqua (freshwater):	For 2 trophic levels (fish and invertebrates), the short-term toxicity has been determined and both the LC50 and EC50 values were $>$ 100 mg/L, respectively. No adverse effects have been observed in the studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
Marine water	PNEC aqua (marine water):	For 2 trophic levels (fish and invertebrates), the short-term toxicity has been determined and both the LC50 and EC50 values were $>$ 100 mg/L, respectively. No adverse effects have been observed in the studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
Intermittent releases to water	PNEC aqua (intermittent releases):	For 2 trophic levels (fish and invertebrates), the short-term toxicity has been determined and both the LC50 and EC50 values were $>$ 100 mg/L, respectively. No adverse effects have been observed in the studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
Sediments (freshwater)	PNEC sediment (freshwater):	No adverse effects have been observed in 2 aqueous studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
Sediments (marine water)	PNEC sediment (marine water):	No adverse effects have been observed in 2 aqueous studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
Sewage treatment	PNEC STP: 100 mg/L	Assessment factor: 10

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Compartment	Hazard conclusion	Remarks/Justification
plant		Extrapolation method: assessment factor The NOEC for STP micro-organisms is 1000 mg/L. An AF of 10 is used in accordance with the "Guidance on information requirements and chemical safety assessment, Chapter R.10".
Soil	PNEC soil:	No adverse effects have been observed in 2 aqueous studies at the highest recommended test concentrations/doses with a substance of good water solubility. Therefore, no exposure assessment for that route of exposure is deemed necessary and thus no PNECs are derived.
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 bioaccumulative potential. Therefore, exposure assessment regarding secondary poisoning is not required and thus no PNECoral is derived.

Based on all available data, the test substance does not have to be classified for the (aquatic) environment as an acute (short-term) and long-term aquatic hazard according to the CLP Regulation (Regulation 1272/2008).

12.5 Results of PBT and vPvB assessment

Not applicable (inorganic substance)

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

Not classified as hazardous goods.

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.


Water hazard class :

No additional information

additional regulations and restrictions:

REACH regulation

15.2 Chemical Safety report

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A Chemical Safety Assessment has been carried out

16. OTHER INFORMATION

relevant H& R Phrases

Not applicable.

Consulted literature: various
Version : Nr. 2.00 of 21.05.2012. (Replaces all preceding versions.)
Changes per section compared to last version : according to latest standard
Name of composer and manager in charge : Mr W. van Loon.
Printing date : 14-06-2013

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