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Ferric Chloride

(TNL 17351,17352)

1. Identification of the substance/preparation and of the company/undertaking

Product name: Ferric Chloride
Product code: 17351, 17352
Relevant identified uses of the substance or mixture:
Etching solution
Company name: Lawrence Art Supplies
36 Kingsthorpe Road
Hove
BN3 5HR
Tel: 01273 260260
Fax: 01273 260270
Email: artbox@lawrence.co.uk
Emergency Number: Mon - Thurs 9am-5pm, Fri 9am - 4pm (not a poison centre) 01273 260260

2. Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Acute tox.	4(oral) H302
Skin Corr/irrit.	2 H315
Eye damage/irritation	1 H318
Skin Sensitivity	1 H317

2.2. Label elements:

Label in accordance with (EC) No. 1272/2008



Signal word

Danger

Contains

Iron Trichloride, Nickel Dichloride

Hazard Statements

H318	Causes serious eye damage
H315	Causes skin irritation
H302	Harmful if swallowed
H317	May cause allergic skin reaction

Precautionary Statements (prevention)

P280	Wear protective gloves and eye/face protection
P261	Avoid breathing dust/fumes/gas/mist/vapours/spray
P272	Contaminated work clothing should not be allowed out of the workplace.
P270	Do not eat, drink or smoke when using this product
P264	Wash with plenty of water and soap thoroughly after handling

Precautionary Statements (response)

P310	Immediately call a POISON CENTER or a doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P352	IF ON SKIN (or hair): Wash with plenty of soap and water.
P301 + P330	IF SWALLOWED: rinse mouth.
P332 + P313	If skin irritation occurs: get medical advice/attention.
P362 + P364	Take Off contaminated clothing and wash before reuse.

Precautionary Statements (disposal)

P501	Dispose of contents/container to hazardous or special waste collection point.
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Labelling of special preparations (GHS):

EUH208: May produce an allergic reaction. Contains NICKEL DI CHLORIDE

According to regulation (EC) No 1272/2008 (CLP)

Hazard determining components for labelling: IRON TRICHLORIDE, NICKEL DICHLORIDE

2.3. Other hazards

According to regulation (EC) No 1272/2008 (CLP)

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

Corrodes metals in the presence of water or moisture

3. Composition/information on ingredients

3.1. Substances

Iron Trichloride

CAS-NO: 7705-08-0

EC No: 231-729-4

FeCl₃

Technical

Hazardous ingredients (GHS)

According to regulation (EC) No. 1272/2008

Iron Trichloride

Content (W/W): >=98% - <= 100%

Acute Tox. 4 (oral)

Skin Corr/irrit. 2

CAS Number: 7705-08-0

Eye Dam/irrit. 1

EC-Number: 231-729-4

H318, H315, H302

Chromium trichloride

Content (W/W): >=0% - <= 0.15%
CAS Number: 10025-73-7
EC-Number: 233-038-3

Acute Tox. 4 (oral)
Aquatic Chronic 2
H302, H411

Zinc Chloride

Content (W/W): >=0% - <= 0.15%
CAS Number: 7646-85-7
EC-Number: 231-592-0
INDEX-Number: 030-003-00-2

Acute Tox. 4 (oral)
Skin Corr/irrit. 1B
Eye Dam/irrit. 1
Aquatic Acute 1
Aquatic Chronic 1
M-Factor acute: 1
M-Factor chronic: 1
H302, H314, H400, H410

Specific concentration limit:

STOT SE 3, irritant to respiratory system: >=5%

Nickel Dichloride

Content (W/W): >=0% - <= 0.1%
CAS Number: 7718-54-9
EC-Number: 231-743-0

Acute Tox. 3 (Inhalation—dust)
Acute Tox. 3 (oral)
Skin Corr/irrit. 2
Resp. sens 1
Skin sens. 1
Muta. 2
Carc. 1A (by inhalation)
Repr. 1B (unborn child)
STOT RE 1
Aquatic Acute 1
Aquatic Chronic 1
M-Factor acute: 1
M-Factor chronic: 1
H315, H331, H301, H334, H317, H372, H341, H350i, H360D, H400, H410

For the classifications not written out in full in this section, including hazard classes and the hazard statements, the full text is listed in section 16

3.2. Mixtures

Not applicable

4. First aid measures

4.1. Description of first aid measures

Remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary.

Inhalation

Keep patient calm. Move the exposed person to fresh air at once. Get medical attention.

Ingestion

Rinse mouth immediately then drink plenty of water. Get medical attention.

Skin content

Wash the skin immediately with soap and water. Get medical attention

Eye contact

Immediately wash affected eyes for at least 15 minutes under running water with eyelids open. Consult an eye specialist.

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

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or section 11.

Irritates eyes and respiratory tract. Skin irritation, allergic symptoms.

Hazards: No hazard is expected under intended use and appropriate handling.

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

Treatment: treat according to symptoms (decontamination, vital functions). No known specific antidote.

5. Fire-fighting measures

5.1. Extinguishing media

Extinguish with dry powder

Do not use water

5.2. Special hazards arising from the substance or mixture

Products of decomposition/combustion include: Chlorine can be emitted at temperatures of over 200°C

5.3. Advice for fire-fighters

Wear self contained breathing apparatus and full protective clothing.

Further information

Contaminated extinguishing water must be disposed of in accordance with official regulations. Avoid direct contact with water.

Product itself is non-combustible; fire extinguishing method for surrounding areas must be considered.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes and clothing. Avoid dust formation.

6.2. Environmental precautions:

Due to the pH-value of the product, neutralisation is generally required before discharging sewage into a treatment plant.

6.3. Methods and material for containment and cleaning up

For small amounts: Neutralise with Lime

For large amounts: Pick up in dry form. Dispose of contaminated material as advised.

For residues: Rinse away with water.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13

7. Handling and storage

7.1. Precautions for safe handling:

Keep container tightly sealed. Processing machines must be fitted with local exhaust ventilation.

Protection against fire and explosion:

The substance/product is non-combustible. Product is not explosive.

7.2. Conditions for safe storage, including any incompatibilities

Suitable materials for containers: Carbon steel (Iron)

Further information on storage conditions: protect against moisture.

8. Exposure controls/personal protection

8.1. Control parameters

Components with occupational exposure limits

7705-08-0: Iron Trichloride

TWA value 1mg/m³ (WEL/EH40 (UK))

Measured as: Iron (Fe)

STEL value 2mg/m³ (WEL/EH40 (UK))

Measured as: Iron (Fe)

10025-73-7: Chromium Trichloride

TWA value 0.5mg/m³ (WEL/EH40 (UK))

Measured as: Chromium (Cr)

7718-54-9: Nickel Dichloride

TWA value 0.1mg/m³ (WEL/EH40 (UK))

Measured as: Nickel (Ni)

Skin designation (WEL/EH40 (UK))

Measured as: Nickel (Ni)

The substance can be absorbed through the skin.

PNEC

A PNEC could not be derived as the substance showed no toxic effects in studies performed in the range of its solubility. At the present state of knowledge, no negative ecological effects are expected.

No PNEC oral derived, as accumulation in organisms is not expected.

DNEL

Worker: Long term exposure - systemic effects, dermal: 2.8mg/kg

Worker: Long and short term exposure - systemic effects, inhalation
No DNELs have been derived.

Consumer: Long term exposure - systemic effects, dermal: 1.4mg/kg

Consumer: Long and short term exposure - systemic effects, inhalation
No DNELs have been derived.

Consumer: Long term exposure - systemic effects, Oral: 0.28mg/kg

Consumer: Short term exposure - systemic effects, Oral: 20mg/kg

8.2 Exposure controls:

Personal protective equipment

Respiratory protection: Breathing protection if breathable aerosols/dust are formed. Suitable respiratory protection for lower concentrations or short term effect: Gas filter for gases/vapours of inorganic compounds (e.g EN 14387 Type B). Suitable respiratory protection for higher concentrations or long term effect: self contained breathing apparatus.

Hand protection: Wear suitable protective gloves conforming to EN 374. Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes or permeation time according to EN 374): polyvinylchloride (PVC) - 0.7mm coating thickness.
Supplementary note: the specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.
Manufacturers directions for use should be observed because of great diversity of types.

Eye protection: Tightly fitting Safety glasses/goggles. (Splash goggles) (e.g. EN166)

Body protection: Must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust)

8.3 General safety and Hygiene measures:

Wash hands and/or face at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes contaminated.

9 Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Crystalline, powder
Colour	Green to black
Odour	Pungent
Odour	Not determined due to potential health hazard by inhalation.
pH value:	1
Boiling point (°C)	315°C. Literature data. Decomposes on heating
Sublimation Temperature:	304°C
Flash point	Not applicable
Evaporation rate:	Non volatile solid
Flammability	Not highly flammable
Lower explosion limit:	Not relevant
Upper explosion limit:	Not relevant
Vapour pressure	1 mbar (20°C)
Density	2.89g/cm ³ (25°C)
Relative Vapour density(air)	Not relevant (non volatile solid)
Solubility (quantative)	480g/kg (20°C)
Partitioning coefficient n-octanol/water (log Kow):	4 (24°C)
Thermal decomposition:	>200°C Chlorine
Viscosity, dynamic:	N/a, product solid
Viscosity, kinematic:	N/a, product solid

9.2. Other information

Bulk density:	Approx. 1,000kg/m ³
pKA:	Study scientifically not justified
Adsorption/water - soil:	Study scientifically not justified
Surface tension:	Based on chemical structure, surface activity is not to be expected
Angle of repose:	64°

10.Stability and reactivity

10.1. Reactivity

No hazardous reactions if stored and handled as indicated

Corrosion to metals: corrodes metals in the presence of water/moisture

10.2. Chemical stability

The product is stable if stored and handled as indicated.

10.3. Possibility of hazardous reactions

Develops hydrochloric acid (HCL) on contact with water

10.4. Conditions to avoid

Avoid moisture

10.5. Incompatible materials

Substances to avoid: Water, strong bases

10.6. Hazardous decomposition products

Hydrogen Chloride - Metal compounds, acid fumes, chlorides

11. Toxicological information

Acute toxicity

Assessment of acute toxicity: Harmful if swallowed.

Experimental/calculated data: LD50 Mouse (oral): >300 - <630mg/kg
(by inhalation): study does not need to be conducted
LD50 Rat (dermal): >2,000mg/kg (OECD Guideline 402)

No mortality was observed, the product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Irritation

Assessment of irritating effects: Irritating to skin. Risk of serious damage to eyes.

Experimental/calculated data: Skin corrosion/irritation rabbit: Irritant (BASF-Test)
Data refers to a diluted aqueous solution of the substance.
Serious eye damage/irritation rabbit: Irreversible damage (BASF-Test)
Data refers to a diluted aqueous solution of the substance.

Respiratory/skin sensitisation

Information on Nickel Dichloride

Assessment of sensitisation: Caused sensitization in humans. The substance may cause sensitisation of the respiratory tract. EU-Classification

Germ cell mutagenicity

Assessment of mutagenicity: The substance was not mutagenic in bacteria, mammalian cell culture or in studies of mammals.

Carcinogenicity

Assessment of carcinogenicity: The whole of the information assessable provides no indication of a carcinogenic effect.

Reproductive toxicity

Assessment of Reproductive toxicity: No reliable data available. Chemical structure doesn't suggest an alert for such effect.

Developmental toxicity

Assessment of teratogenicity: No indications of Developmental toxic/teratogenic effect were seen in animal studies.

Specific target organ toxicity (single exposure)

No data available

Repeated dose toxicity and specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity: The substance may cause damage to the kidneys and liver after repeated ingestion, as shown in animal studies.

Aspiration hazard

Study does not need to be conducted.

12. Ecological information

12.1 Toxicity

Assessment of aquatic toxicity:	Current knowledge indicates no negative ecological effects are expected. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. The product gives rise to pH shifts.
Toxicity to fish:	Study scientifically not justified.
Aquatic invertebrates:	Study scientifically not justified.
Microorganisms/effect on activated sludge:	EC50 (5min) approx. 500mg/l, activated sludge (aquatic)
Chronic toxicity to fish:	Study scientifically not justified.
Chronic toxicity to aquatic invertebrates:	Study scientifically not justified.
Assessment or terrestrial toxicity:	Study scientifically not justified.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H ₂ O):	N/a for inorganic substances
Assessment of stability in water:	In contact with water the substance will hydrolyse rapidly.
Information on stability in water (hydrolysis):	t _{1/2} 4.14 - 34min, (calculated, pH 7)

This product has not been fully tested. The statements have been derived from substances/products of a similar structure or composition.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:	Does not significantly accumulate in organisms
Bioaccumulation potential:	Bioconcentration factor: <20 (28d), Cyprinus carpio (OECD-Guidelines 305)

This product has not been tested. The statements have been derived from substances/products of a similar structure or composition.

12.4. Mobility in soil

Assessment transport between environmental compartments:	Absorption in soil: Study scientifically not justified.
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12.5 Results of PBT and vPvB assessment

According to Annex XIII of regulation (EC) No. 1907/2006 concerning the registration, evaluation, authorisation and restriction of chemicals (REACH): The product does not fulfil the criteria for PBT (persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification.

12.6. Other adverse effects

The substance is not listed in regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information

Absorbable organically-bound halogen (AOX):
The substance may have a halogenizing effect and therefore contribute to the OBH.

Other ecotoxicological advice:
Inhibition of degradation activity in activated sludge is not anticipated during the correct introduction of low concentrations. Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants.

13. Disposal considerations

13.1. Waste treatment methods

May be fed into a biological purification plant.

Local regulations on waste-water treatment must be followed.

The UK Environmental Protection (Duty of care) Regulations (EP) and amendments should be noted (UK)

This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (UK)

Contaminated packaging: Should be emptied as thoroughly as possible and then can be recycled once thoroughly cleaned.

14. Transport information

Land transport

ADR

UN Number: UN1773
UN Proper Shipping name: Ferric Chloride, Anhydrous
Transport hazard class(es): 8
Packing group: III
Environmental hazards: No
Precautions for user: Tunnel code E

RID

UN Number: UN1773
UN Proper Shipping name: Ferric Chloride, Anhydrous
Transport hazard class(es): 8
Packing group: III
Environmental hazards: No
Precautions for user: None known

Inland waterway transport

ADN

UN Number: UN1773
UN Proper Shipping name: Ferric Chloride, Anhydrous
Transport hazard class(es): 8
Packing group: III
Environmental hazards: No
Precautions for user: None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

UN Number: UN1773
UN Proper Shipping name: Ferric Chloride, Anhydrous
Transport hazard class(es): 8
Packing group: III
Environmental hazards: No Marine pollutant: No
Precautions for user: None known

Air transport

IATA/ICAO

UN Number:	UN1773
UN Proper Shipping name:	Ferric Chloride, Anhydrous
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	No Mark as dangerous for the environment is needed
Precautions for user:	None known

14.1. UN Number

See corresponding entries for 'UN Number' for the respective regulations in the tables above.

14.2. UN proper shipping name

See corresponding entries for 'UN proper shipping Name' for the respective regulations in the tables above.

14.3. Transport hazard class(es)

See corresponding entries for 'Transport hazard class(es)' for the respective regulations in the tables above.

14.4. Packing group

See corresponding entries for 'Packing group' for the respective regulations in the tables above.

14.5. Environmental hazards

See corresponding entries for 'Environmental hazards' for the respective regulations in the tables above.

14.6. Special precautions for user

See corresponding entries for 'precautions for user' for the respective regulations in the tables above.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC code

Regulation:	Not evaluated
Shipment approved	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship type	Not evaluated

Further information

This product is subject to the most recent edition of 'The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations' and their amendments (UK)

15. Regulatory information

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

The data should be considered when making any assessment under the control of substances hazardous of health regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (UK)

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

15.2. Chemical safety assessment

Chemical Safety Assessment performed

16. Other information

Assessment of the hazard classes according to UN GHS criteria

Acute Tox. 4 (oral)

Skin Corr/Irrit. 2

Eye Dam/Irrit. 1

Skin Sens. 1

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3.

Acute Tox.	Acute toxicity
Skin Corr/Irrit.	Skin corrosion/irritation
Eye Dam/Irrit	Serious eye damage/eye irritation
Skin Sens.	Skin sensitisation
Aquatic Chronic	Hazardous to the aquatic environment-Chronic
Aquatic Acute	Hazardous to the aquatic environment-Acute
Resp Sens.	Respiratory sensitisation
Muta.	Germ cell mutagenicity
Carc	Carcinogenicity
Repr.	Reproductive toxicity
STOT RE	Specific target organ toxicity-repeated exposure
STOT SE	Specific target organ toxicity-Single exposure
H318	Causes serious eye damage
H315	Causes skin irritation
H302	Harmful if swallowed
H317	May cause an allergic skin reaction
H411	Toxic to aquatic life with long lasting effects.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects.
H331	Toxic if inhaled
H301	Toxic if swallowed
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H372	Causes damage to organs through prolonged or repeated exposure.
H341	Suspected of causing genetic defects.
H350i	May cause cancer by inhalation.
H360D	May damage the unborn child.

The data contained in the safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any propriety rights and existing laws and legislation are observed.