ALFAAW00286

Iron(III) chloride, anhydrous, CP

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

产品说明: **三氯化铁，无水，CP**
Product Description: **Iron(III) chloride, anhydrous, CP**

Cat No. : **W00286**
CAS No 7705-08-0
Molecular Formula Cl3 Fe

Supplier

Avocado Research Chemicals Ltd.
(Part of Thermo Fisher Scientific)
Shore Road, Heysham
Lancashire, LA3 2XY,
United Kingdom
Office Tel: +44 (0) 1524 850506
Office Fax: +44 (0) 1524 850608

Emergency Telephone Number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

E-mail address begel.sdsdesk@thermofisher.com

Recommended Use Laboratory chemicals.
Uses advised against No Information available

SECTION 2. HAZARD IDENTIFICATION

Physical State	**Appearance**	**Odor**
Solid, powder Solid	Green Black	No information available

Emergency Overview

Causes severe skin burns and eye damage. May cause damage to organs. Harmful if swallowed. May cause an allergic skin reaction. May cause cancer by inhalation. Hygroscopic.

Classification of the substance or mixture

Acute Oral Toxicity	Category 4
Skin Corrosion/Irritation	Category 1
Serious Eye Damage/Eye Irritation	Category 1
Skin Sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity - (single exposure)	Category 2

Label Elements

Signal Word **Danger**

Hazard Statements
H314 - Causes severe skin burns and eye damage
H371 - May cause damage to organs
H302 - Harmful if swallowed
H317 - May cause an allergic skin reaction

Precautionary Statements
Prevention
P202 - Do not handle until all safety precautions have been read and understood
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor
P330 - Rinse mouth
P362 + P364 - Take off contaminated clothing and wash it before reuse
Storage
P403 - Store in a well-ventilated place
Disposal
P501 - Dispose of contents/ container to an approved waste disposal plant

Physical and Chemical Hazards
None identified. Hygroscopic.
Health Hazards
Corrosive. Causes skin and eye burns. Causes serious eye damage. May cause damage to organs. Harmful if swallowed. May cause an allergic skin reaction. May cause cancer by inhalation.
Environmental hazards
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

This product does not contain any known or suspected endocrine disruptors.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight %
Iron(III) chloride	7705-08-0	<100
Zinc chloride	7646-85-7	0-0.15
Chromic chloride	10025-73-7	0-0.15
Nickel(II) chloride	7718-54-9	0-<0.1

SECTION 4. FIRST AID MEASURES

Eye Contact
Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Inhalation
Remove to fresh air.

Ingestion
Clean mouth with water and drink afterwards plenty of water.

Most important symptoms and effects
Causes eye burns. May cause allergic skin reaction. Causes severe eye damage. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Self-Protection of the First Aider
Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Notes to Physician
Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO_2, water spray or alcohol-resistant foam.

Extinguishing media which must not be used for safety reasons
No information available.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Ensure adequate ventilation.

Environmental Precautions
See Section 12 for additional Ecological Information.

Refer to protective measures listed in Sections 8 and 13.

SECTION 7. HANDLING AND STORAGE

Handling
Ensure adequate ventilation.

Storage
Keep container tightly closed in a dry and well-ventilated place.

Specific Use(s)
Use in laboratories

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Component	China	Taiwan	Thailand	Hong Kong
Zinc chloride	TWA: 1 mg/m³ STEL: 2 mg/m³	TWA: 1 mg/m³	TWA: 1 mg/m³	TWA: 1 mg/m³ STEL: 2 mg/m³

Chromic chloride	-	TWA: 0.5 mg/m³		-
Nickel(II) chloride	-	TWA: 0.1 mg/m³	TWA: 1 mg/m³	-

Component	ACGIH TLV	OSHA PEL	NIOSH	The United Kingdom	European Union
Iron(III) chloride	TWA: 1 mg/m³	(Vacated) TWA: 1 mg/m³	REL = 1 mg/m³ (TWA)	STEL: 2 mg/m³ 15 min TWA: 1 mg/m³ 8 hr	
Zinc chloride	TWA: 1 mg/m³ STEL: 2 mg/m³	(Vacated) TWA: 1 mg/m³ (Vacated) STEL: 2 mg/m³ TWA: 1 mg/m³	IDLH: 50 mg/m³ REL = 1 mg/m³ (TWA) STEL: 2 mg/m³	STEL: 2 mg/m³ 15 min TWA: 1 mg/m³ 8 hr	
Chromic chloride		(Vacated) TWA: 0.5 mg/m³	IDLH: 25 mg/m³ REL = 0.5 mg/m³ (TWA)	STEL: 1.5 mg/m³ 15 min TWA: 0.5 mg/m³ 8 hr	
Nickel(II) chloride	TWA: 0.1 mg/m³	(Vacated) TWA: 0.1 mg/m³	IDLH: 10 mg/m³ REL = 0.015 mg/m³ (TWA)	STEL: 0.3 mg/m³ 15 min TWA: 0.1 mg/m³ 8 hr Skin	

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health

Monitoring methods
BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust

Exposure Controls

Engineering Measures
Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Natural rubber Nitrile rubber Neoprene PVC	See manufacturers recommendations	-	EN 374	(minimum requirement)

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Skin and body protection Long sleeved clothing

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Particulates filter conforming to EN 143

Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Particle filtering: EN149:2001
When RPE is used a face piece Fit Test should be conducted

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls No information available.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Green Black	
Physical State	Solid, powder Solid	
Odor	No information available	
Odor Threshold	No data available	
pH	1	200 g/l aq.sol. 20°C
Melting Point/Range	No data available	
Softening Point	No data available	
Boiling Point/Range	No information available	
Flash Point	No information available	**Method -** No information available
Evaporation Rate	Not applicable	Solid
Flammability (solid,gas)	No information available	
Explosion Limits	No data available	
Vapor Pressure	No data available	
Vapor Density	Not applicable	Solid
Specific Gravity / Density	~2.9 g/cm3	
Bulk Density	No data available	
Water Solubility	No information available	
Solubility in other solvents	No information available	

Partition Coefficient (n-octanol/water)

Component	**log Pow**
Iron(III) chloride	-4
Chromic chloride	-3

Autoignition Temperature	No data available	
Decomposition Temperature	No data available	
Viscosity	Not applicable	Solid
Explosive Properties	No information available	
Oxidizing Properties	No information available	
Molecular Formula	Cl3 Fe	
Molecular Weight	162.21	

SECTION 10. STABILITY AND REACTIVITY

Stability Hygroscopic.

Hazardous Reactions No information available.
Hazardous Polymerization No information available.

Conditions to Avoid Exposure to moist air or water.

Materials to avoid No information available.

Hazardous Decomposition Products None under normal use conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Product Information

(a) acute toxicity;

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Iron(III) chloride	450 mg/kg (Rat) 316 mg/kg (Rat)		
Zinc chloride	350 mg/kg (Rat)		LC50 <= 1975 mg/m³ (Rat) 10 min
Chromic chloride	LD50 = 440 mg/kg (Rat)	LD50 > 2000 mg/kg (Rat)	31.5 mg/m³/2h (Mouse)
Nickel(II) chloride	LD50 = 175 mg/kg (Rat)		

(b) skin corrosion/irritation; Category 2

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory Based on available data, the classification criteria are not met

Skin Category 1

Component	Test method	Test species	Study result
Chromic chloride 10025-73-7 (0-0.15)	in vivo OECD Test Guideline 406	guinea pig	Sensitization

No information available

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

Component	Test method	Test species	Study result
Chromic chloride 10025-73-7 (0-0.15)	OECD Test Guideline 473	in vitro	negative

(f) carcinogenicity; Based on available data, the classification criteria are not met

Component	Test method	Test species / Duration	Study result
Chromic chloride 10025-73-7 (0-0.15)	in vivo	Rat	negative

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Nickel(II) chloride	Carc Cat. 1A		Cat. 1	Group 1

(g) reproductive toxicity; Based on available data, the classification criteria are not met

Component	Test method	Test species / Duration	Study result
Chromic chloride 10025-73-7 (0-0.15)	OECD Test Guideline 414	mouse 17 days	negative

(h) STOT-single exposure; Based on available data, the classification criteria are not met

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; Not applicable
Solid

Symptoms / effects,both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects .

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Iron(III) chloride	LC50: 20.95 - 22.56 mg/L, 96h semi-static (Pimephales promelas) LC50: = 20.26 mg/L, 96h semi-static (Lepomis macrochirus)	EC50: = 9.6 mg/L, 48h Static (Daphnia magna) EC50: = 27.9 mg/L, 48h (Daphnia magna)		
Zinc chloride	LC50: 0.4-2.2 mg/L/96h (Cyprinus carpio)	EC50: 0.2 mg/L/48h	EC50: 0.027-0.105 mg/L/72h	
Chromic chloride	LD50 = 57.4 mg/L (96h) Rainbow trout EC10 = 0.246 mg/L Salmo gairdneri	LC50 = 63.3 mg/L (48h) Daphnia magna	EC50 = 2 mg/L (96h) Selenastrum capricornutum	EC50 = 256 mg/L
Nickel(II) chloride	LC50: = 6.9 mg/L, 96h static (Cyprinus carpio) LC50: = 1.3 mg/L, 96h semi-static (Cyprinus carpio) LC50: > 100 mg/L, 96h static (Brachydanio rerio) LC50: 2.83 - 5.99 mg/L, 96h static (Poecilia reticulata) LC50: 29.76 - 43.57 mg/L, 96h semi-static (Poecilia reticulata) LC50: = 9.65 mg/L, 96h flow-through (Poecilia reticulata) LC50: = 25 mg/L, 96h flow-through (Pimephales promelas) LC50: 2.02 - 6.88 mg/L, 96h static (Pimephales promelas) LC50: 1.9 - 4 mg/L, 96h (Pimephales promelas) LC50: 6.63 - 9.15 mg/L, 96h static (Oncorhynchus mykiss) LC50: 6.7 - 9.7 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 2.02 - 6.88 mg/L, 96h static (Lepomis macrochirus) LC50: 18.1 - 25.5 mg/L, 96h flow-through (Lepomis macrochirus)	EC50: = 0.51 mg/L, 48h Static (Daphnia magna) EC50: = 6.68 mg/L, 48h (Daphnia magna)	EC50: 0.0063 - 0.0125 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: = 0.66 mg/L, 72h (Pseudokirchneriella subcapitata)	

Persistence and Degradability

Persistence Persistence is unlikely.

Degradability Not relevant for inorganic substances.

Bioaccumulative Potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Iron(III) chloride	-4	2756 - 9622 dimensionless
Zinc chloride		16000 dimensionless
Chromic chloride	-3	No data available

Mobility in soil No information available

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors
Persistent Organic Pollutant This product does not contain any known or suspected substance
Ozone Depletion Potential This product does not contain any known or suspected substance

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains. Do not flush to sewer. Solutions with low pH-value must be neutralized before discharge.

SECTION 14. TRANSPORT INFORMATION

Road and Rail Transport

UN-No UN1773
Proper Shipping Name FERRIC CHLORIDE, ANHYDROUS
Hazard Class 8
Packing Group III

IMDG/IMO

UN-No UN1773
Proper Shipping Name FERRIC CHLORIDE, ANHYDROUS
Hazard Class 8
Packing Group III

IATA

UN-No UN1773
Proper Shipping Name FERRIC CHLORIDE, ANHYDROUS
Hazard Class 8
Packing Group III

Special Precautions for User No special precautions required

SECTION 15. REGULATORY INFORMATION

International Inventories
X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Component	The	List of	TCSI	IECSC	EINECS	TSCA	DSL	PICCS	ENCS	ISHL	AICS	KECL

	Inventory of Hazardous Chemicals (2015 Edition)	dangerous goods GB 12268 - 2012										
Iron(III) chloride	X	X	X	X	231-729-4	X	X	X	X	X	X	KE-21134
Zinc chloride	X	X	X	X	231-592-0	X	X	X	X	X	X	KE-35535
Chromic chloride	-	-	X	X	233-038-3	X	X	X	X	X	X	KE-06017
Nickel(II) chloride	X	-	X	X	231-743-0	X	X	X	X	X	X	KE-25837

Component	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Nickel(II) chloride		1 tonne

National Regulations

SECTION 16. OTHER INFORMATION

Prepared By Health, Safety and Environmental Department
Creation Date 27-Feb-2023
Revision Date 15-Apr-2025
Revision Summary Initial Release.

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit
ACGIH - American Conference of Governmental Industrial Hygienists
DNEL - Derived No Effect Level
RPE - Respiratory Protective Equipment
LC50 - Lethal Concentration 50%
NOEC - No Observed Effect Concentration
PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
PNEC - Predicted No Effect Concentration
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road
OECD - Organisation for Economic Co-operation and Development
BCF - Bioconcentration factor

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
MARPOL - International Convention for the Prevention of Pollution from Ships
ATE - Acute Toxicity Estimate
VOC - (Volatile Organic Compound)

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet