

Safety Data Sheet

according to Regulation (EC) No 1907/2006

Iron(III) chloride solution for Bitter KIT

Revision date: 25.11.2020

Product code: 19335.xxxxx

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Iron(III) chloride solution for Bitter KIT

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

Use of the substance/mixture

For use as an etchant in metallography. Use as laboratory reagent. Intended for scientific research and development. Restricted to professional users.

Uses advised against

Any non-intended use.

1.3. Details of the supplier of the safety data sheet

Manufacturer

Company name:	MORPHISTO GmbH	
Street:	Schumannstr. 142/144	
Place:	D-63069 Offenbach	
Telephone:	+49 (0) 69 / 400 3019-60	Telefax: +49 (0) 69 / 400 3019-64
e-mail:	info@morphisto.de	
Internet:	http://www.morphisto.de	

Supplier

Company name:	MORPHISTO GmbH	
Street:	Schumannstr. 142/144	
Place:	D-63069 Offenbach	
Telephone:	+49 (0) 69 / 400 3019-60	Telefax: +49 (0) 69 / 400 3019-64
e-mail:	info@morphisto.de	
Internet:	http://www.morphisto.de	

1.4. Emergency telephone number:

Poison Information Center Mainz, Germany, Tel: +49(0)6131/19240

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Hazard categories:

Substance or mixture corrosive to metals: Met. Corr. 1

Serious eye damage/eye irritation: Eye Irrit. 2

Respiratory or skin sensitisation: Skin Sens. 1

Hazard Statements:

May be corrosive to metals.

Causes serious eye irritation.

May cause an allergic skin reaction.

2.2. Label elements

Regulation (EC) No. 1272/2008

Hazard components for labelling

Iron(III) chloride hexahydrate

Signal word: Warning

Pictograms:



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Hazard statements

H290 May be corrosive to metals.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.

Precautionary statements

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
 P302+P352 IF ON SKIN: Wash with plenty of water.
 P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
 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.
 P406 Store in a corrosion-resistant container with a resistant inner liner.

Special labelling of certain mixtures

EUH018 In use may form flammable/explosive vapour-air mixture.

2.3. Other hazards

No information available.

SECTION 3: Composition/information on ingredients
3.2. Mixtures
Hazardous components

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	GHS Classification			
10025-77-1	Iron(III) chloride hexahydrate			1 - < 5 %
	231-729-4		01-2119497998-05	
	Met. Corr. 1, Acute Tox. 4, Skin Irrit. 2, Eye Dam. 1, Skin Sens. 1; H290 H302 H315 H318 H317			
13478-10-9	Eisen(II)-chlorid			< 1 %
	231-843-4		01-2119498060-41	
	Met. Corr. 1, Acute Tox. 4, Skin Corr. 1B; H290 H302 H314			

Full text of H and EUH statements: see section 16.

SECTION 4: First aid measures
4.1. Description of first aid measures
General information

First aider: Pay attention to self-protection! Remove affected person from the danger area and lay down. Remove casualty to fresh air and keep warm and at rest. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation

Provide fresh air. In case of allergic symptoms, especially in the breathing area, seek medical advice immediately. When in doubt or if symptoms are observed, get medical advice.

After contact with skin

After contact with skin, wash immediately with plenty of water and soap. Take off immediately all contaminated clothing and wash it before reuse. Medical treatment necessary.

After contact with eyes

After contact with the eyes, rinse with water with the eyelids open for a sufficient length of time, then consult an

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ophthalmologist immediately.

After ingestion

Observe risk of aspiration if vomiting occurs. Rinse mouth thoroughly with water. Immediately call a POISON CENTER. Medical treatment necessary. Induce vomiting when the affected person is not unconscious. Never give anything by mouth to an unconscious person or a person with cramps.

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

No information available.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Co-ordinate fire-fighting measures to the fire surroundings. Suitable extinguishing media: Water spray jet, Carbon dioxide (CO₂), Foam, Extinguishing powder.

Unsuitable extinguishing media

High power water jet.

5.2. Special hazards arising from the substance or mixture

The product itself does not burn. The product itself is not explosive, but can form explosive air/vapour mixtures. Can be released in case of fire: Carbon monoxide (CO). Carbon dioxide (CO₂). Hydrogen chloride (HCl).

5.3. Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. Full protection suit.

Additional information

Use water spray jet to protect personnel and to cool endangered containers. Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Provide adequate ventilation. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Use personal protection equipment. See section 8.

6.2. Environmental precautions

Do not allow uncontrolled discharge of product into the environment. Explosion risk. Clean contaminated articles and floor according to the environmental legislation.

6.3. Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Treat the recovered material as prescribed in the section on waste disposal. Rinse with water.

6.4. Reference to other sections

Safe handling: see section 7

Personal protection equipment: see section 8

Disposal: see section 13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Wear personal protection equipment (refer to section 8). If handled uncovered, arrangements with local exhaust ventilation have to be used. Use extractor hood (laboratory). Do not breathe gas/fumes/vapour/spray. Always close containers tightly after the removal of product.

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Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Wear anti-static footwear and clothing. Vapours can form explosive mixtures with air.

Further information on handling

When using do not eat, drink, smoke, sniff. Wash hands before breaks and after work. Draw up and observe skin protection programme.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep container tightly closed. Keep cool. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Unsuitable container/equipment material: Metal.

Hints on joint storage

Do not store together with: Oxidizing agent. Pyrophoric or self-heating substances. Food and fodder Infectious substances. Radioactive substances. Explosive substances. Self-reactive substances and mixtures. Substances which in contact with water, emit flammable gases. Ammonium nitrate.

Further information on storage conditions

Store in a well-ventilated place. Keep container tightly closed. Protect from sunlight. Store in a well-ventilated place. Protect against: UV-radiation/sunlight. @AllgK121501. Take precautionary measures against static discharges. Provide for retaining containers, eg. floor pan without outflow.

7.3. Specific end use(s)

For use as an etchant in metallography. Use as laboratory reagent. Intended for scientific research and development. Restricted to professional users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL/DMEL values

CAS No	Substance	Exposure route	Effect	Value
10025-77-1	Iron(III) chloride hexahydrate			
Worker DNEL, long-term		dermal	systemic	2,8 mg/kg bw/day

Additional advice on limit values

To date, no national critical limit values exist.

8.2. Exposure controls



Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment. Ensure adequate ventilation. If handled uncovered, arrangements with local exhaust ventilation have to be used. Use extractor hood (laboratory). Do not breathe gas/fumes/vapour/spray.

Protective and hygiene measures

Use personal protection equipment. Remove contaminated, saturated clothing immediately. Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat, drink, smoke, sniff. Street clothing should be stored separately from work clothing. Always close containers tightly after the removal of product.

Eye/face protection

Suitable eye protection: goggles.DIN EN 166.

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Hand protection

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Pull-over gloves of rubber. EN ISO 374

Suitable material:

penetration time (maximum wearing period): ≥ 8 hours.

Thickness of glove material:

NR (Natural rubber (Caoutchouc), Natural latex). 0,5mm.

CR (polychloroprenes, Chloroprene rubber). 0,5mm.

NBR (Nitrile rubber). 0,35 mm.

FKM (fluororubber). 0,4 mm.

PVC (Polyvinyl chloride). 0,5 mm.

Butyl rubber. 0,5mm.

Before using check leak tightness / impermeability.

Skin protection

Use of protective clothing. Lab apron.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Respiratory protection necessary at: generation/formation of aerosols, exceeding exposure limit values.

Suitable respiratory protective equipment: particulates filter device (DIN EN 143). P2/ P3.

Observe the wear time limits according GefStoffV in combination with the rules for using respiratory protection apparatus (BGR 190).

Environmental exposure controls

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state:	Liquid
Colour:	brown
Odour:	odourless
pH-Value (at 20 °C):	<2

Changes in the physical state

Melting point:	not determined
Initial boiling point and boiling range:	100 °C
Flash point:	not determined
Sustaining combustion:	Not sustaining combustion

Flammability

Solid:	not applicable
Gas:	not applicable

Explosive properties

Vapours can form explosive mixtures with air.

Lower explosion limits:	not determined
Upper explosion limits:	not determined

Auto-ignition temperature

Solid:	not applicable
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Gas:	not applicable
Decomposition temperature:	not determined
Oxidizing properties	
Not oxidising.	
Vapour pressure: (at 20 °C)	23 hPa
Vapour pressure: (at 50 °C)	123 hPa
Density:	1,01 g/cm ³
Water solubility:	easily soluble
Solubility in other solvents	
not determined	
Partition coefficient:	not determined
Vapour density:	not determined
Evaporation rate:	not determined
Solvent content:	97,41 %

9.2. Other information

Solid content:	2,59 %
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SECTION 10: Stability and reactivity**10.1. Reactivity**

Corrosive to metals. Hazardous decomposition products: >200°C:Hydrogen chloride (HCl).
Information is given in subsection 10.3.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Violent reaction with: Alkali metals. Ethylene oxide Allyl chloride Aluminium. Alkalis (alkalis). metals.

10.4. Conditions to avoid

Risk of explosion by shock, friction, fire or other sources of ignition (R2). Remove all sources of ignition. Keep away from: Heat. Ignition.

10.5. Incompatible materials

Keep away from: Metal. Protect against: Contact with air/oxygen.

10.6. Hazardous decomposition products

Resulting from the use of the product: Chlorine.
Decomposition products in case of fire: see section 5.

SECTION 11: Toxicological information**11.1. Information on toxicological effects**

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Acute toxicity

CAS No	Chemical name					
	Exposure route	Dose		Species	Source	Method
10025-77-1	Iron(III) chloride hexahydrate					
	oral	LD50 mg/kg	1160	Rat	MSDS external	
13478-10-9	Eisen(II)-chlorid					
	oral	LD50 mg/kg	> 450	Gigiena i Sanitariya	GESTIS	
	dermal	LD50 mg/kg	>2000	Rat	External MSDS	

Additional information on tests

The mixture is classified as hazardous according to regulation (EC) No 1272/2008 [CLP].

SECTION 12: Ecological information

12.1. Toxicity

The product is not: Ecotoxic.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h] [d]	Species	Source	Method
10025-77-1	Iron(III) chloride hexahydrate					
	Acute fish toxicity	LC50	23 mg/l	96 h	Oryzias latipes (48h)	MSDS external
	Acute crustacea toxicity	EC50 mg/l	29,74	48 h	Daphnia magna	MSDS external
13478-10-9	Eisen(II)-chlorid					
	Acute fish toxicity	LC50	5 mg/l	96 h	Morone saxatilis	GESTIS

12.2. Persistence and degradability

The product has not been tested.

12.3. Bioaccumulative potential

The product has not been tested.

12.4. Mobility in soil

The product has not been tested.

12.5. Results of PBT and vPvB assessment

The product has not been tested.

12.6. Other adverse effects

No information available.

Further information

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal recommendations

Do not allow to enter into surface water or drains. Do not allow to enter into soil/subsoil. Dispose of waste according to applicable legislation. Observe Waste Directive 2008/98/EC. Product residues must be disposed of in accordance with national and regional regulations. Leave chemicals in original containers. Do not mix with other wastes. Uncleaned containers must be treated according to the product. Find out more about take-back systems for chemicals and packaging at www.Retrologistik.de or use the address to contact us if you have any questions.

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Contaminated packaging

Non-contaminated packages may be recycled. Handle contaminated packages in the same way as the substance itself.

SECTION 14: Transport information
Land transport (ADR/RID)

14.1. UN number: UN 2582
14.2. UN proper shipping name: FERRIC CHLORIDE SOLUTION
14.3. Transport hazard class(es): 8
14.4. Packing group: III
 Hazard label: 8



Classification code: C1
 Limited quantity: 5 L
 Excepted quantity: E1
 Transport category: 3
 Hazard No: 80
 Tunnel restriction code: E

Inland waterways transport (ADN)

14.1. UN number: UN 2582
14.2. UN proper shipping name: FERRIC CHLORIDE SOLUTION
14.3. Transport hazard class(es): 8
14.4. Packing group: III
 Hazard label: 8



Classification code: C1
 Limited quantity: 5 L
 Excepted quantity: E1

Marine transport (IMDG)

14.1. UN number: UN 2582
14.2. UN proper shipping name: FERRIC CHLORIDE SOLUTION
14.3. Transport hazard class(es): 8
14.4. Packing group: III
 Hazard label: 8



Special Provisions: 223
 Limited quantity: 5 L
 Excepted quantity: E1
 EmS: F-A, S-B

Air transport (ICAO-TI/IATA-DGR)

14.1. UN number: UN 2582

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14.2. UN proper shipping name: FERRIC CHLORIDE SOLUTION

14.3. Transport hazard class(es): 8

14.4. Packing group: III

Hazard label: 8



Special Provisions: A3 A803

Limited quantity Passenger: 1 L

Passenger LQ: Y841

Excepted quantity: E1

IATA-packing instructions - Passenger: 852

IATA-max. quantity - Passenger: 5 L

IATA-packing instructions - Cargo: 856

IATA-max. quantity - Cargo: 60 L

14.5. Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

14.6. Special precautions for user

Warning: strongly corrosive.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

SECTION 15: Regulatory information
15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
EU regulatory information

Information according to 2012/18/EU (SEVESO III): Not subject to 2012/18/EU (SEVESO III)

Additional information: 16

National regulatory information

Employment restrictions: Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC). Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Water hazard class (D): 1 - slightly hazardous to water

Skin resorption/Sensitization: Causes allergic hypersensitivity reactions.

15.2. Chemical safety assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information
Changes

Rev.1,00; 25.11.2020; Initial release.

Abbreviations and acronyms

CLP: Classification, labelling and Packaging

REACH: Registration, Evaluation and Authorization of Chemicals

GHS: Globally Harmonised System of Classification, Labelling and Packaging of Chemicals

UN: United Nations

CAS: Chemical Abstracts Service

DNEL: Derived No Effect Level

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DMEL: Derived Minimal Effect Level
 PNEC: Predicted No Effect Concentration
 ATE: Acute toxicity estimate
 LC50: Lethal concentration, 50%
 LD50: Lethal dose, 50%
 LL50: Lethal loading, 50%
 EL50: Effect loading, 50%
 EC50: Effective Concentration 50%
 ErC50: Effective Concentration 50%, growth rate
 NOEC: No Observed Effect Concentration
 BCF: Bio-concentration factor
 PBT: persistent, bioaccumulative, toxic
 vPvB: very persistent, very bioaccumulative
 ADR: Accord européen sur le transport des marchandises dangereuses par Route
 (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 RID: Regulations concerning the international carriage of dangerous goods by rail
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
 (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation
 intérieures)
 IMDG: International Maritime Code for Dangerous Goods
 EmS: Emergency Schedules
 MFAG: Medical First Aid Guide
 IATA: International Air Transport Association
 ICAO: International Civil Aviation Organization
 MARPOL: International Convention for the Prevention of Marine Pollution from Ships
 IBC: Intermediate Bulk Container
 SVHC: Substance of Very High Concern
 For abbreviations and acronyms, see table at <http://abbrev.esdscom.eu>

Classification for mixtures and used evaluation method according to Regulation (EC) No. 1272/2008 [CLP]

Classification	Classification procedure
Met. Corr. 1; H290	On basis of test data
Eye Irrit. 2; H319	Calculation method
Skin Sens. 1; H317	Calculation method

Relevant H and EUH statements (number and full text)

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
EUH018	In use may form flammable/explosive vapour-air mixture.

Further Information

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights. The receiver of our product is singularly responsible for adhering to existing laws and regulations. The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

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(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)