Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 15.01.2020 *Version number 7* *Revision: 15.01.2020*

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

· **Date of compilation:** *08.03.2006*
· **1.1 Product identifier**

· **Trade name: Iron trichloride solution 40%**
· **1.2 Relevant identified uses of the substance or mixture and uses advised against** *no data available*

· **Application of the substance / the preparation:** *Chemicals for various applications*

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer / Supplier:**
Bungard Elektronik GmbH & Co. KG
Rilkestraße 1
51570 Windeck
Germany
Telefon +49 2292/9 2828-0
Telefax +49 2292/9 2828-29
· **E-mail address of the competent person responsible for the Safety Data Sheet:** *info@bungard.de*

· **Informing department:** *Department of dangerous Goods*
· **1.4 Emergency telephone number:**
For Germany: Giftinformationszentrum Universitätsklinik Mainz
Phone: +49 6131 / 19 24 0

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SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS05 corrosion

Met. Corr.1 H290 May be corrosive to metals.
Eye Dam. 1 H318 Causes serious eye damage.

GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Skin Irrit. 2 H315 Causes skin irritation.
· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
· **Hazard pictograms**

GHS05 GHS07

· **Signal word** *Danger*

· **Hazard-determining components of labelling:**
Iron trichloride
· **Hazard statements**
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H315 Causes skin irritation.

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H318 Causes serious eye damage.

· **Precautionary statements**

P280	*Wear protective gloves/protective clothing/eye protection/face protection.*
P234	*Keep only in original container.*
P264	*Wash thoroughly after handling.*
P305+P351+P338	*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P301+P312	*IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.*
P332+P313	*If skin irritation occurs: Get medical advice/attention.*
P302+P352	*IF ON SKIN: Wash with plenty of water.*

· **2.3 Other hazards**

· **Results of PBT and vPvB assessment**

· **PBT:** *Not applicable.*

· **vPvB:** *Not applicable.*

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SECTION 3: Composition/information on ingredients

· **3.2 Chemical characterisation: Mixtures**

· **Description:** *Aqueous solution*

· **Dangerous components:**

CAS: 7705-08-0 *EINECS: 231-729-4* *Reg.nr.: 01-2119497998-05-XXXX*	*Iron trichloride* *Met. Corr.1, H290; Eye Dam. 1, H318; Acute Tox. 4, H302; Skin Irrit. 2, H315*	*25 - 50%*
CAS: 7647-01-0 *EINECS: 231-595-7* *Index number: 017-002-01-X*	*Hydrochloric acid* *Met. Corr.1, H290; Skin Corr. 1B, H314; STOT SE 3, H335*	*≤ 2.5%*

· **Additional information:** *For the wording of the listed risk phrases refer to section 16.*

SECTION 4: First aid measures

· **4.1 Description of first aid measures**

· **General information:**

Immediately remove any clothing contaminated by the product.
Take affected persons into the open air.
Do not leave affected persons unsupervised.
Symptoms of poisoning may occur after several hours. Medical observation for at least 48 hours after the accident is recommended.
Personal protection for the person providing first aid.

· **After inhalation:**

Supply fresh air; consult doctor in case of symptoms.
In case of unconsciousness bring patient into stable side position for transport.

· **After skin contact:**

Wash with plenty of soap and water.
Seek medical treatment.

· **After eye contact:**

Rinse opened eye for several minutes under running water.
Use eye protection.
Remove contact lenses, if present and easy to do.
Call a doctor immediately.

· **After swallowing:**

Rinse out mouth and then drink plenty of water.
Do NOT induce vomiting.
Call a doctor immediately.

· **4.2 Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

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· **4.3 Indication of any immediate medical attention and special treatment needed** symptomatic treatment

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SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents**
Product does not burn - take extinguishing measures according to fire conditions.
· **For safety reasons unsuitable extinguishing agents** depending on conditions of fire
· **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire:
Hydrogen chloride (HCl)
Chlorine
· **5.3 Advice for firefighters**
· **Protective equipment:**
Wear self-contained breathing apparatus.
Wear full protective suit.
· **Additional information**
Cool endangered containers with water spray jet.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
If without risk possible, move drums with material away from dangerous area.

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SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Use breathing protection against the effects of fumes/dust/aerosol.
Avoid contact with skin and eyes.
Danger of slipping on leaked/spilled product.
· **6.2 Environmental precautions:**
Damp down gases/fumes/haze with water spray jet.
Do not allow to enter drainage system, surface or ground water.
Inform respective authorities in case of a large amount of product reaches water or sewage system.
· **6.3 Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.
Send for recovery or disposal in suitable containers.
Dispose of the material collected according to regulations.
· **6.4 Reference to other sections**
See Section 8 for information on personal protection equipment.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Do not breathe vapour/spray.
Open and handle container with care.
Avoid contact with skin and eyes.
· **Information about protection against explosions and fires:**
The product is not flammable.
Protect from heat.

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· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and containers:**
Observe all local and national regulations for storage of water polluting products.
Use only containers specifically permitted for this substance/product.
Provide acid-resistant floor.
Prevent any penetration into the ground.
Suitable material for containers:
Polyethylene
Polypropylene
PVC
Use acid-proof containers.
· **Information about storage in one common storage facility:**
Store away from oxidising agents.
Store away from metals.
Do not store together with alkalis (caustic solutions).
· **Further information about storage conditions:**
Store container in a well ventilated position.
Protect from overexposure to light.
Store in cool, dry conditions in well sealed containers.
Protect from heat and direct sunlight.
Protect from frost.
· **7.3 Specific end use(s)** No further relevant information available.

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SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **8.1 Control parameters**

· **Components with critical values that require monitoring at the workplace:**	
7705-08-0 Iron trichloride (25 - 50%)	
WEL (Great Britain)	Short-term value: 2 mg/m³ Long-term value: 1 mg/m³ as Fe
7647-01-0 Hydrochloric acid (≤2.5%)	
WEL (Great Britain)	Short-term value: 8 mg/m³, 5 ppm Long-term value: 2 mg/m³, 1 ppm (gas and aerosol mists)
IOELV (European Union)	Short-term value: 15 mg/m³, 10 ppm Long-term value: 8 mg/m³, 5 ppm

· **DNELs**		
7647-01-0 Hydrochloric acid		
Inhalative	DNEL acute / short-term exposure - local effects	15 mg/m³ (worker)
	DNEL long-term exposure - local effects	8 mg/m³ (worker)
7705-08-0 Iron trichloride		
Oral	DNEL acute / short-term exposure - systemic effect	20 mg/kg bw/d (general population)
	DNEL long-term exposure - systemic effects	0.28 mg/kg bw/d (general population)
Dermal	DNEL long-term exposure - systemic effects	1.4 mg/kg bw/d (general population)
		2.8 mg/kg bw/d (worker)

· **PNECs**	
7705-08-0 Iron trichloride	
PNEC	49.5 mg/kg (sediment (freshwater))

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	49.5 mg/kg (sediment (marine water))
	55.5 mg/kg (soil)
	500 mg/l (STP (sewage treatment plant))
7647-01-0 Hydrochloric acid	
PNEC	36 µg/l (aqua (freshwater))
	45 µg/l (aqua (intermittent releases))
	36 µg/l (aqua (marine water))
	36 µg/l (STP (sewage treatment plant))

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **8.2 Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
Keep away from foodstuffs, beverages and food.
Instantly remove any contaminated garments.
Do not eat, drink or smoke while working.
Avoid contact with the eyes and skin.
Do not inhale gases / fumes / aerosols.
Wash hands during breaks and at the end of the work.
Use skin protection cream for preventive skin protection.
· **Breathing equipment:**
Not necessary if room is well-ventilated.
Use breathing protection in case of insufficient ventilation.
Use breathing protection when aerosol or mist is formed.
· **Recommended filter device for short term use:** Combination filter B-P2
· **Protection of hands:**
Acid resistant gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
Check the permeability prior to each renewed use of the glove.
To avoid skin problems reduce the wearing of gloves to the required minimum.
· **Material of gloves**
Chloroprene rubber - CR
e.g. KCL Camapren®
The breakthrough times were determined by KCL in laborataory tests acc. to EN 374 with samples of the recommended glove types.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
Penetration time: ≥ 8 hours
Protective gloves should be replaced at first signs of wear.
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:** Tightly sealed safety glasses
· **Body protection:**
Acid resistant protective clothing
Body protection must be chosen depending on activity and possible exposure.
· **Limitation and supervision of exposure into the environment**
Do not allow to enter drainage system, surface or ground water.

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	liquid
Colour:	dark brown
· **Smell:**	acidic
· **Odour threshold:**	not determined
· **pH-value at 20 °C:**	ca. 1
· **Change in condition**	
Melting point/Melting range:	not determined
Boiling point/Boiling range:	100 - 105 °C
Setting temperature / range:	not determined
· **Flash point:**	not applicable
· **Inflammability (solid, gaseous)**	Product is not flammable.
· **Ignition temperature:**	not applicable
· **Decomposition temperature:**	315 °C
· **Self-inflammability:**	Product is not selfigniting.
· **Danger of explosion:**	Product is not explosive.
· **Critical values for explosion:**	
Lower:	Not determined.
Upper:	Not determined.
· **Oxidising properties**	not classified as oxidising
· **Vapor pressure:**	Not determined.
· **Density at 20 °C:**	1.41 - 1.44 g/cm³
· **Bulk density:**	not applicable
· **Relative density**	Not determined.
· **Vapour density (AIR = 1):**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water:	fully miscible
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
dynamic:	not determined
kinematic:	not determined
· **9.2 Other information**	Further informations please refer to technical data sheet.

SECTION 10: Stability and reactivity

· **10.1 Reactivity** see 10.3
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
Temperature over 300 °C.
Light
Protect from frost.

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· **10.3 Possibility of hazardous reactions**
Corrosive action on metals
Reacts with metals forming hydrogen
Violent reactions with strong alkalis and oxidizing agents
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:**
Strong oxidizing agents
Metals
Alkaline materials
· **10.6 Hazardous decomposition products:**
Hydrogen chloride (HCl)
Chlorine
Hydrogen

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SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity**
Harmful if swallowed.

· **LD/LC50 values that are relevant for classification:**		
7705-08-0 Iron trichloride		
Oral	LD50	1300 mg/kg (mouse) 500 mg/kg (rat, female) ECHA Dossier: Last modified 03 Aug 2015
Dermal	LD50	> 2000 mg/kg (rat)
7647-01-0 Hydrochloric acid		
Oral	LD50	900 mg/kg (rabbit)
Inhalative	LC50/1 h	3.124 - 4.74 mg/l (rat) (RTECS)

· **Primary irritant effect:**
· **Skin corrosion/irritation**
Causes skin irritation.
· **Serious eye damage/irritation**
Causes serious eye damage.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Other information (about experimental toxicology):**
Ingestion may cause pain, lethargy, vomiting and diarrhea.
· **Additional toxicological information:**
The product shows the following dangers according to the calculation method of Regulation (EC) No. 1272/2008 (CLP/GHS):
Eye Dam. 1
Acute Tox. 4 (oral)
Skin Irrit. 2
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

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SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
7705-08-0 Iron trichloride	
EC50/48 h	9.6 mg/l (water flea (daphnia magna))
ErC50/72 h	6.9 mg/l (algae (pseudokirchneriella subcapitata)) (OECD 201)
LC50/48 h	24.3 mg/l (water flea (daphnia magna))
LC50/96 h	75.6 mg/l (gambusia affinis)
	60 mg/l (red killifish (Oryzias latipes))
	20.3 mg/l (bluegill (lepomis macrochirus))
NOEC	0.32 mg/l (fathead minnow (pimephales promelas)) (33 d)
NOEC/21 d	0.7 mg/l (water flea (daphnia magna))
NOEC/72 h	2.4 mg/l (algae (pseudokirchneriella subcapitata)) (OECD 201)
7647-01-0 Hydrochloric acid	
EC50/72 h	56 mg/l (daphnia)
LC50/48 h	862 mg/l (leuciscus idus)
LC50/96 h	282 mg/l (fish)

· **12.2 Persistence and degradability** No further relevant information available.
· **Other information:**
Methods for the determination of biodegradability are not applicable to inorganic substances.
· **12.3 Bioaccumulative potential**
BCF: ≤ 100
Not bioaccumulative
· **12.4 Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Harmful to aquatic organisms
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Water hazard class 1 (Self-assessment): slightly hazardous for water
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Disposal must be made according to official regulations.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to disposers of hazardous waste.
· **European waste catalogue:**
Waste disposal key numbers from EWC have to be assigned depending on origin and processing.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.
· **Recommended cleaning agent:** Water, if necessary with cleaning agent.

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SECTION 14: Transport information

· **14.1 UN-Number**
· **ADR, IMDG, IATA** UN2582

· **14.2 UN proper shipping name**
· **ADR** UN2582 FERRIC CHLORIDE SOLUTION
· **IMDG, IATA** FERRIC CHLORIDE SOLUTION

· **14.3 Transport hazard class(es)**

· **ADR**

· **Class** 8 (C1) Corrosive substances.
· **Label** 8

· **IMDG, IATA**

· **Class** 8 Corrosive substances.
· **Label** 8

· **14.4 Packing group**
· **ADR, IMDG, IATA** III

· **14.6 Special precautions for user** Warning: Corrosive substances.
· **Kemler Number:** 80
· **EMS Number:** F-A,S-B
· **Segregation groups** Acids

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

· **Transport/Additional information:** Transport by post may be prohibited or restricted.

· **ADR**
· **Limited quantities (LQ):** 5L
· **Transport category:** 3
· **Tunnel restriction code:** E

· **UN "Model Regulation":** UN2582, FERRIC CHLORIDE SOLUTION, 8, III

SECTION 15: Regulatory information

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

· **National regulations**

· **Information about limitation of use:** Employment restrictions concerning young persons must be observed.

· **Decree to be applied in case of technical fault:** Directive 2012/18/EU does not apply.

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water
· **Other regulations, limitations and prohibitive regulations**
Observe restrictions on the marketing and use according to Annex XVII of Regulation (EC) No 1907/2006.

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· ***15.2 Chemical safety assessment:*** *A Chemical Safety Assessment has not been carried out.*

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SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· ***Reasons for changes:***
*The Material Safety Data Sheet has been revised. Changes in the respective chapters are characterized in the left side edge by *.*
Changes in classification and labelling

· ***Relevant phrases***
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

· ***Department issuing MSDS:***
C.S.B. GmbH *Phone: +49 - 2151 - 652086-0*
Düsseldorfer Str. 113 *Fax: +49 - 2151 - 652086-9*
47809 Krefeld / Germany

· ***Abbreviations and acronyms:***
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Met. Corr.1: Corrosive to metals, Hazard Category 1
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

· ***Sources:*** *These data are based on information submitted by pre-suppliers.*

· **** Data compared to the previous version altered.***