

MATERIAL SAFETY DATASHEET

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Section 1. ----- chemical identification -----

- a) Name: ISAAC solution (10 mL)
- b) Catalog #: 250.2010
- c) For use with electrochemical flow cell

Section 2. ----- composition/information on ingredients -----

ISAAC reference solution containing: Cl_3Fe (0.44 mol/L) with HCl 0.2% (0.06 mol/L) in water

a) Cl_3Fe :

cas #: 7705-08-0

mf: Cl_3Fe

ec no: 231-729-4

synonyms

chlorure perrique (french) * flores martis * iron chloride * iron(iii) chloride * iron trichloride * perchlorure de fer (french) *

b) HCl:

cas #: 7647-01-0

mf: HCl

ec no: 231-595-7

synonyms

acide chlorhydrique (french) * acido cloridrico (italian) * anhydrous hydrochloric acid * chloorwaterstof (dutch) * chlorohydric acid * chlorowodor (polish) * chlorwasserstoff (german) * hydrochloride * hydrogen chloride (acgi:h:osha) * muriatic acid * spirits of salt *

Section 3. ----- hazards identification -----

- a) Corrosive, causes burns, harmful if swallowed. Hygroscopic in case of contact with eyes, rinse immediately with plenty of water and seek medical advice. take off immediately all contaminated clothing. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- b) The small amount supplied in our kits are unlikely to cause severe health effects. Use as directed and in accordance with good laboratory practices.

Section 4. ----- first-aid measures -----

- a) if swallowed, wash out mouth with water provided person is conscious. call a physician immediately. do not induce vomiting.
- b) if inhaled, remove to fresh air. if not breathing give artificial respiration. if breathing is difficult, call a physician.
- c) in case of skin contact, flush with copious amounts of water for at least 15 minutes. remove contaminated clothing and shoes. call a physician.
- d) in case of contact with eyes, flush with copious amounts of water for at least 15 minutes. assure adequate flushing by separating the eyelids with fingers. call a physician.

Section 5. ----- fire fighting measures -----

- a) extinguishing media: carbon dioxide, dry chemical powder or appropriate foam.
- b) special fire fighting procedures: wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- c) unusual fire and explosions hazards: emits toxic fumes under fire conditions.

Section 6. ----- accidental release measures -----

Use proper personal protective equipment as indicated in Section 8.
Clean up spills immediately. Absorb spill with inert material, (e.g., dry sand or earth), then place into a chemical waste container. Clean up spills immediately, place in a bag and hold for waste disposal. ventilate area and wash spill site after material pickup is complete. Evacuate area.

Section 7. ----- handling and storage -----

refer to Section 8.

Section 8. - - - - - exposure controls/personal protection- - - - -

safety shower and eye bath.
use only in a chemical fume hood.
wash contaminated clothing before reuse.
discard contaminated shoes.
wash thoroughly after handling.
do not breathe vapor.
do not get in eyes, on skin, on clothing.
avoid prolonged or repeated exposure.
compatible chemical-resistant gloves.
chemical safety goggles.
keep tightly closed.
store in a cool dry place.

Section 9. - - - - - physical and chemical properties - - - - -

a) appearance and odor: yellow odorless liquid
b) physical properties
flashpoint none
vapor pressure: 190mm 25 c
specific gravity: 1.000
c) pH: 1-2

Section 10. - - - - - stability and reactivity - - - - -

a) stability: stable.
b) incompatibilities: strong oxidizing agents, forms explosive mixtures with: sodium, potassium
c) hazardous combustion or decomposition products: hydrogen chloride gas, iron oxides
d) hazardous polymerization: will not occur.

Section 11. - - - - - toxicological information - - - - -

a) acute effects: causes burns. May be harmful if absorbed through the skin. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract. May be harmful if inhaled. Harmful if swallowed. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation and stricture formation. Several hours may elapse before symptoms that can include epigastric pain, diarrhea, vomiting, nausea and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

B1) rtecs #: lj9100000: ferric chloride

B2) rtecs #: mw4025000: hydrochloric acid

C1) toxicity data Cl_3Fe

orl-wmn ldlo:4 ml/kg vhtode 40,31,1998

orl-rat ld50:450 mg/kg gisaaa 39(5),16,1974

orl-mus ld50:895 mg/kg trenaf 27,159,1976

ivn-mus ld50:58 mg/kg ykkzaj 87,677,1967

target organ data

paternal effects (spermatogenesis)

paternal effects (testes, epididymis, sperm duct)

effects on fertility (pre-implantation mortality)

only selected registry of toxic effects of chemical substances

(rtecs) data is presented here. see actual entry in rtecs for complete information.

C2) toxicity data HCl

orl-man ldlo:2857 ug/kg mjauaj 158,28,1993

orl-wmn ldlo:420 ul/kg jitoex 9,351,1996

ihl-hmn lclo:1300 ppm/30m 29zwae -,207,1968

ihl-hmn lclo:3000 ppm/5m tabia2 3,231,1933

unr-man ldlo:81 mg/kg 85dcai 2,73,1970

ihl-rat lc50:3124 ppm/1h amrl** tr-74-78,1974

ihl-mus lc50:1108 ppm/1h jctodh 3,61,1976
ipr-mus ld50:40142 ug/kg coreaf 256,1043,1963
orl-rbt ld50:900 mg/kg bizea2 134,437,1923

Section 12. - - - - - ecological information - - - - -

data not yet available.

Section 13. - - - - - disposal considerations - - - - -

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state and local environmental regulations.

Section 14. - - - - - transport information - - - - -

Proper Shipping Name: CORROSIVE LIQUIDS, N.O.S.
(CONTAIN FERRIC CHLORIDE, HYDROCHLORIC ACID)

Hazard Class: 8

UN/NA: UN1760

Packing Group: II

Section 15. - - - - - regulatory information - - - - -

europaean information

corrosive

r 34

causes burns.

r 22

harmful if swallowed.

s 26

in case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

s 27

take off immediately all contaminated clothing.

s 36/37/39

wear suitable protective clothing, gloves and eye/face protection.

s 45

in case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

reviews, standards, and regulations

oel=mak

acgih tlv-twa 1 mg(fe)/m3 dtlvs* tlv/bei,1999

msa standard-air:twa 1 mg(fe)/m3

dtlvs* 3,138,1971

oel-finland: twa 1 mg(fe)/m3, jan1999

oel-the netherlands: mac-tgg 1 mg(fe)/m3, jan1999

oel-norway: twa 1 mg(fe)/m3, jan1999

oel-switzerland: mak-w 1 mg(fe)/m3, jan1993

oel in argentina, bulgaria, colombia, jordan, korea check acgih tlv;

oel in new zealand, singapore, vietnam check acgih tlv

nohs 1974: hzd 33160; nis 51; tnf 3137; nos 37; tne 27934

noes 1983: hzd x6846; nis 1; tnf 39; nos 1; tne 39

noes 1983: hzd 33160; nis 70; tnf 5021; nos 79; tne 108492; tfe 52117

epa genetox program 1988, negative: b subtilis rec assay

epa tsca Section 8(b) chemical inventory

epa tsca Section 8(d) unpublished health/safety studies

epa tsca test submission (tscats) data base, january 2001

Section 16. - - - - - other information- - - - -

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