

Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 06/07/2010

Reviewed on 01/10/2013

1 Identification of substance

- **Trade name:** Monochlor F Reagent
- **Product use:** Reagent for water analysis
- **Catalogue number:** 251419RP1Y
- **Manufacturer/Supplier:**
YSI
1725 Brannum Lane
Yellow Springs, OH 45387
USA
phone: +1 937-767-7241
email: MSDSinfo@ysi.com
www.ysi.com
Made in Germany
- **Emergency information:** Chemtrec: (US & Canada) 800-424-9300 (International) 001 703-527-3887

* 2 Hazards identification

- **Hazard description:**



C Corrosive

- **Canadian Hazard Symbols:**



- **WHMIS classification:**

D2B

Toxic material causing other toxic effects

E

Corrosive material

- **Information pertaining to particular dangers for man and environment:**

R 34 Causes burns.

- **Classification system:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- **NFPA ratings (scale 0 - 4)**



Health = 3

Fire = 0

Reactivity = 1

- **GHS label elements:**

**Danger**

3.2/1A - Causes severe skin burns and eye damage.

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**Warning**

3.1/4 - Harmful if swallowed.

Prevention:

Do not breathe dust/fume/gas/mist/vapours/spray.

Response:

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Immediately call a POISON CENTER or doctor/physician.

Storage:

Store locked up.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

* 3 Composition / Data on components

- Description:** mixture contains organic and inorganic compounds

- Composition and Information on Ingredients:**

CAS: 1310-65-2 EINECS: 215-183-4	lithium hydroxide	C, Xn; R 22-35 Danger: 3.1.O/3; 3.2/1A	1-10%
CAS: 13755-38-9 EINECS: 238-373-9 RTECS: LJ 8925000	sodium nitroprusside dihydrate	T; R 25 Danger: 3.1.O/3	< 5%
CAS: 6106-24-7 EINECS: 212-773-3	di-sodium tartrate dihydrate		< 30%
CAS: 90-01-7 EINECS: 201-960-5	salicyl alcohol	Xi; R 36/37/38 Warning: 3.2/2, 3.3/2A, 3.8/3	< 20%
CAS: 68-04-2 EINECS: 200-675-3	sodium citrate, anhydrous		< 50%

- REACH - pre-registered substances** All components are REACH pre-registered.

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

4 First aid measures

- General information:** Immediately remove any clothing soiled by the product.

- After inhalation:**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness remove to fresh air, apply artificial respiration, and consult a physician.

- After skin contact:**

Immediately rinse with plenty of water.

Immediately wash with polyethylene glycol 400.

Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

- After eye contact:**

Rinse opened eye for several minutes (15 min) under running water.

Call a doctor immediately.

- After swallowing:**

Do not induce vomiting.

Rinse out mouth and then drink 1-2 glasses of water.

Call a doctor immediately.

- The following symptoms may occur:**

after inhalation:

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coughing
 breathing difficulty
 headache
 daze
 after swallowing:
 burns
 drop in blood pressure
 after swallowing of large amounts:
 CNS disorders
 cramps

- **Danger:**
 Danger of circulatory collapse.
 Danger of gastric perforation.
- **Treatment**
 Later observation for pneumonia and pulmonary edema.
 If swallowed or in case of vomiting, danger of entering the lungs.

5 Fire fighting measures

- **Suitable extinguishing agents:** Extinguishing powder. Do not use water.
 - **For safety reasons unsuitable extinguishing agents:** Water
 - **Special hazards caused by the material, its products of combustion or resulting gases:**
 Formation of toxic gases is possible during heating or in case of fire.
 Nitrogen oxides (NO_x)
 Hydrogen cyanide (HCN)
 nitrogen oxides
 cyanide compounds, sodium monoxide
 LiO_x
 - **Protective equipment:**
 Wear self-contained respiratory protective device.
 Wear fully protective suit.
 - **Additional information**
 Collect contaminated fire fighting water separately. It must not enter the sewage system.
 Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
-

6 Accidental release measures

- **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.
 - **Measures for environmental protection:** Do not allow product to reach sewage system or any water course.
 - **Measures for cleaning/collecting:**
 Dispose contaminated material as waste according to item 13.
 Pick up mechanically.
 Ensure adequate ventilation.
-

7 Handling and storage

- **Handling:**
- **Information for safe handling:**
 Prevent formation of dust.
 Open and handle receptacle with care.
- **Information about protection against explosions and fires:** The product is not flammable.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.

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- **Information about storage in one common storage facility:**
 - Do not store together with acids.
 - Store away from oxidizing agents.
- **Further information about storage conditions:**
 - Keep receptacle tightly sealed.
 - Protect from heat and direct sunlight.
 - Store in dry conditions.
 - Protect from humidity and water.
 - This product is hygroscopic.
 - Protect from exposure to the light.
- **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)

* 8 Exposure controls and personal protection

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

- **Components with limit values that require monitoring at the workplace:**

1310-65-2 lithium hydroxide

WEEL (USA)	Short-term value: C 1 mg/m ³
EL (Canada)	Short-term value: C 1 mg/m ³
EV (Canada)	Short-term value: 1 mg/m ³ anhydrous

- **Personal protective equipment:**
- **General protective and hygienic measures:**
 - Avoid contact with the eyes and skin.
 - Do not eat, drink, smoke or sniff while working.
- **Breathing equipment:** Use respiratory protective device against the effects of fumes/dust/aerosol.
- **Recommended filter device for short term use:** Filter P2
- **Protection of hands:**
 - Alkaline resistant gloves
 - Preventive skin protection by use of skin-protecting agents is recommended.
 - After use of gloves apply skin-cleaning agents and skin cosmetics.
- **Material of gloves**
 - Nitrile rubber, NBR
 - Recommended thickness of the material: ≥ 0.11 mm
- **Penetration time of glove material**
 - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
 - Value for the permeation: Level ≥ 1 (10 min)
- **Eye protection:** Tightly sealed goggles
- **Body protection:** Alkaline resistant protective clothing

9 Physical and chemical properties

- | | |
|---------------------------------------|--------------------|
| · Odor Threshold: | Not applicable. |
| · Form: | Powder |
| · Color: | Light orange color |
| · Odor: | Odorless |
| · Melting point/Melting range: | Undetermined. |
| · Boiling point/Boiling range: | Not applicable. |
| · Freezing Point: | Not applicable. |
| · Flash point: | Not applicable. |

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· Flammability (solid, gaseous):	
Upper Flammable Limit:	Not applicable.
Lower Flammable Limit:	Not applicable.
· Ignition temperature:	Undetermined.
· Sensitivity to Mechanical Impact:	None
· Sensitivity to Static Discharge:	None
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product does not present an explosion hazard.
· Vapor Density:	Not applicable.
· Specific Gravity:	Not applicable.
· Density at 20°C (68°F):	1.58 g/cm ³
· Solubility in / Miscibility with Water:	Soluble.
· Coefficient of Water / Oil Distribution:	Not applicable.
· pH-value (26.6 g/l) at 20°C (68°F):	12.8
· Solvent content:	
Organic solvents:	0.0 %
Solids content:	100.0 %

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
 - organic substances
 - acids
 - oxidizing agents
- **Dangerous reactions**
 - Reacts with water.
 - > Forms heat.
 - Corrosive action on metals.
 - Contact with acids releases toxic gases.
 - Corrodes aluminium and zinc.
 - Aqueous solution reacts alkaline.
 - Reacts with light alloys to form hydrogen.
- **Dangerous products of decomposition:**
 - hydrogen cyanide (prussic acid)
 - see chapter 5

11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

· LD/LC50 values that are relevant for classification:		
1310-65-2 lithium hydroxide		
Oral	LD50	210 mg/kg (rat)
13755-38-9 sodium nitroprusside dihydrate		
Oral	LD50	99 mg/kg (rat)
	LDLo	20 mg/kg (rat)

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- **Primary irritant effect:**
 - **on the skin:** Caustic effect on skin and mucous membranes.
 - **on the eye:** strong caustic effect
 - **Sensitization:** No sensitizing effects known.
 - **Subacute to chronic toxicity:**
CAS-No. 1310-65-2:
chronic: central nervous system effects
 - **Experience with humans:**
Can cause liver damage.
Can cause kidney damages.
 - **Additional toxicological information:**
Corrosive
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
The following complies to cyanogen compounds / nitriles in general:
Utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration.
The following applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.
The following applies to lithium compounds in general:
after absorption: CNS disorders, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance
 - **Carcinogenicity:** NTP? IARC Monographs? OSHA Regulated? see chapter 8 / 15
 - **Teratogenicity:** Not found.
 - **Mutagenicity:** Not found.
 - **Reproductive Toxicity:** Not found.
 - **Synergistic Products:** None
-

12 Ecological information

- **Information about elimination (persistence and degradability):**
- **Other information:**
Quantitative data on the ecological effect of this preparation are not available.
The following statements refer to the individual components.
- **Ecotoxicological effects:**

- **Aquatic toxicity:**

13755-38-9 sodium nitroprusside dihydrate

Daphnia EC50	1.0 mg/l/24h (Daphnia magna)
EC50	1 mg/l (Daphnia magna)
LC50	0.05 mg/l (fish)

- **Remark:**
Toxic for fish:
CAS 13755-38-9 (Fe): > 0,9 mg/l / pH 6,5-7,5
Harmful effect due to pH shift.
Forms corrosive mixtures with water even if diluted.
MERCK: the following applies to dissolved iron compounds in general:
fish: lethal as from 1 mg/l at pH 5.5 - 6.7
- **Additional ecological information:**
The following applies to lithium compounds in general:
MERCK - biological effects:
fish toxic from 100 mg/l up
Daphnia toxic from 16 mg/ up
plants toxic from 0.2 mg/l up (value calculated as Li)
- **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water

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Do not allow product to reach ground water, water course or sewage system.
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms.

13 Disposal considerations

- **Product:**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to hazardous waste disposers.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

* 14 Transport information

· TDG / DOT regulations:



- **Hazard class:** 8
- **Identification number:** UN2680
- **Packing group:** II
- **Proper shipping name (technical name):** LITHIUM HYDROXIDE, mixture
- **Label:** 8

· Land transport ADR/RID (cross-border):



- **ADR/RID class:** 8 (C6) Corrosive substances
- **Danger code (Kemler):** 80
- **UN-Number:** 2680
- **Packaging group:** II
- **Description of goods:** 2680 LITHIUM HYDROXIDE
- **Limited quantity (LQ):** LQ23

· Maritime transport IMDG:



- **IMDG Class:** 8
- **UN Number:** 2680
- **Label:** 8
- **Packaging group:** II
- **EMS Number:** F-A,S-B
- **Marine pollutant:** No

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· Proper shipping name:	LITHIUM HYDROXIDE
· Air transport ICAO-TI and IATA-DGR:	
	
· ICAO/IATA Class:	8
· UN/ID Number:	2680
· Label	8
· Packaging group:	II
· Proper shipping name:	LITHIUM HYDROXIDE
	None
· Canadian TDG Class:	8
· UN "Model Regulation": UN2680, LITHIUM HYDROXIDE, 8, II	

* 15 Regulations

· Sara	
· Section 355 (Extremely hazardous substances):	
None of the ingredients is listed.	
· Section 313 (Specific toxic chemical listings):	
None of the ingredients is listed.	
· TSCA (Toxic Substances Control Act):	
68-04-2	sodium citrate, anhydrous
90-01-7	salicyl alcohol
1310-65-2	lithium hydroxide
· Proposition 65	
· Chemicals known to cause cancer:	
None of the ingredients is listed.	
· Chemicals known to cause reproductive toxicity for females:	
None of the ingredients is listed.	
· Chemicals known to cause reproductive toxicity for males:	
None of the ingredients is listed.	
· Chemicals known to cause developmental toxicity:	
None of the ingredients is listed.	
· Canadian Ingredient Disclosure List	
· Limit 0,1%	
None of the ingredients is listed.	
· Limit 1%	
cyanide compounds, anorganic, n.o.s.	
1310-65-2	lithium hydroxide
13755-38-9	sodium nitroprusside dihydrate
· Canadian Domestic Substances List (DSL)	
68-04-2	sodium citrate, anhydrous
1310-65-2	lithium hydroxide
· EPA (Environmental Protection Agency)	
None of the ingredients is listed.	

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· IARC (International Agency for Research on Cancer)		
None of the ingredients is listed.		
· NTP (National Toxicology Program)		
None of the ingredients is listed.		
· NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients is listed.		
· OSHA-Ca (Occupational Safety & Health Administration)		
None of the ingredients is listed.		
· Australian Inventory of Chemical Substances		
All ingredients are listed.		
· ENCS List (MITI):		
68-04-2	sodium citrate, anhydrous	2-1323
90-01-7	salicyl alcohol	3-1052
1310-65-2	lithium hydroxide	1-712
· Standard for the Uniform Scheduling of Drugs and Poisons		
None of the ingredients is listed.		

· **Product related hazard informations:**

· **Hazard symbols:**

C Corrosive

· **Hazard-determining components of labelling:**

lithium hydroxide

· **Risk phrases:**

34 Causes burns.

· **Safety phrases:**

20 When using do not eat or drink.

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

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

45 In case of accident or if you feel unwell, seek medical advice immediately.

60 This material and its container must be disposed of as hazardous waste.

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

· **Water hazard class:** Water hazard class 2 (Self-assessment): hazardous for water.

· **CPR Classification:**

Class D, Division 2B

Class E

· **This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR**

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant R-phrases**

22 Harmful if swallowed.

25 Toxic if swallowed.

35 Causes severe burns.

36/37/38 Irritating to eyes, respiratory system and skin.

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- **Recommended restriction of use:** professional/industrial use only
- **Sources** Data arise from manufacturers' data sheets, reference works and literature.
- * **Data compared to the previous version altered.**

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