

Date of issue: 20 December 2004.

1- Identification of the product and of the company**Product name:**

- Cl-1 Chloride Reagent 1.

Application:

- Determination of chloride in water samples.

Distributor identification:

Milwaukee s.r.l.
c.so Leonardo da Vinci 48/50
21013 Gallarate (VA), Italy
tel.: +39 0331 268009

Emergency Telephone n. °:

+39-02-66101029
CENTRO ANTIVELENI
OSPEDALE NIGUARDA (MI) - ITALY

2 - Composition/information on ingredients

The percent content of the mercury compound refers to the amount of the pure mercury therein.

Hazardous Ingredients:

NAME <i>(EC directives)</i>	EC-Index-No.	CAS No.	LABELLING <i>(EC directives)</i>	CONTENT
Ethylene glycol	603-027-00-1	107-21-1	Xn R22	≥ 95%
Mercury (II) thiocyanate	080-002-00-6	592-85-8	T+, N R 26/27/28-33-50/53	≥ 0.1 - < 0.5%

(full text of R-phrases in section 16).

3 - Hazard identification

Harmful by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

4 - First aid measures

Remove contaminated, soaked clothing immediately and dispose of safely.

- **After inhalation** : remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.
- **After skin contact** : wash off with plenty of water. Immediately remove contaminated clothing.
- **After eye contact** : rinse out immediately with plenty of water for at least 15 minutes. If discomfort persists obtain medical attention.
- **After swallowing** : wash out mouth thoroughly with water provided person is conscious. OBTAIN MEDICAL ATTENTION.

5 - Fire-fighting measures

- **Suitable extinguishing media:**

- Appropriate foam, dry chemical powder or carbon dioxide.

Health & Safety data sheet

According to EC Directive 91/155/EC and following amendments

- **Special risks:**
- - Specific Hazard(s): emits toxic fumes under fire conditions. The following may develop in event of fire: carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, mercury/mercury oxides, mercury vapors.
- **Special protective equipment for fire fighting:**
 - Do not stay in dangerous zone without suitable chemical protection clothing and self-contained breathing apparatus.
- **Additional information:**
 - Do not direct a solid stream of water at burning material as spattering may result.

6 - Accidental release measures

- **Personal precautions:**
 - Absorb on sand or vermiculite and place in closed containers for disposal. When spilled, the floor may be slippery. Wipe up the floor completely. Clean up affected area and dispose according to local regulation. Ventilate area after material pickup is complete.
- **Environmental precautions:**
 - Do not discharge into the drains/surface waters/groundwaters.
- **Additional notes:**
 - For large spillages liquids should be contained with sand or earth and both liquids and solids transferred to salvage containers. Any residues should be treated as for small spillages

7 - Handling and storage

- **Handling:**
 - Do not breathe vapor. Avoid contact with eyes, skin, and clothing.
 - Avoid prolonged or repeated exposure
- **Storage:**
 - Store at room temperature (+15 to +25 °C recommended). Protect from light and moisture.
 - Accessible only for authorized persons.

8 - Exposure control/personal protection

- **General hygiene measures**
 - Wash thoroughly after handling.
- **Ingredients with occupational exposure limits to be monitored:**

<ul style="list-style-type: none"> - ETHYLENE GLYCOL <table border="0"> <tr> <th colspan="3">EXPOSURE LIMITS - GERMANY</th> </tr> <tr> <td>Source</td> <td>Type</td> <td>Value</td> </tr> <tr> <td>TRGS 900</td> <td>OEL</td> <td>26 mg/m³ 10 ppm</td> </tr> </table> <table border="0"> <tr> <th colspan="3">EXPOSURE LIMITS - DENMARK</th> </tr> <tr> <td>Source</td> <td>Type</td> <td>Value</td> </tr> <tr> <td>OEL</td> <td>TWA</td> <td>10 mg/m³</td> </tr> </table>	EXPOSURE LIMITS - GERMANY			Source	Type	Value	TRGS 900	OEL	26 mg/m ³ 10 ppm	EXPOSURE LIMITS - DENMARK			Source	Type	Value	OEL	TWA	10 mg/m ³	<ul style="list-style-type: none"> - MERCURIC THIOCYANATE <table border="0"> <tr> <th colspan="3">EXPOSURE LIMITS - UNITED KINGDOM</th> </tr> <tr> <td>Source</td> <td>Type</td> <td>Value</td> </tr> <tr> <td>OEL</td> <td>LTEL</td> <td>0.05 mg (Hg)/m³</td> </tr> <tr> <td>OEL</td> <td>STEL</td> <td>0.15 mg (Hg)/m³</td> </tr> </table> <table border="0"> <tr> <th colspan="3">EXPOSURE LIMITS - DENMARK</th> </tr> <tr> <td>Source</td> <td>Type</td> <td>Value</td> </tr> <tr> <td>OEL</td> <td>TWA</td> <td>0.05 mg (Hg)/m³</td> </tr> </table> <p>Remarks: SKIN</p>	EXPOSURE LIMITS - UNITED KINGDOM			Source	Type	Value	OEL	LTEL	0.05 mg (Hg)/m ³	OEL	STEL	0.15 mg (Hg)/m ³	EXPOSURE LIMITS - DENMARK			Source	Type	Value	OEL	TWA	0.05 mg (Hg)/m ³
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- **Personal protective equipment:**
 - As appropriate to quantity handled.

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- **Respiratory protection:**
 - Required when vapors/aerosols are generated.
- **Protective gloves:**
 - Rubber or plastic
- **Eye protection:**
 - Goggles or face mask

9 - Physical/chemical properties

- **Appearance** : colorless liquid
- **Odor** : odorless
- **Solubility in water** : Soluble
- **pH value at 20°C** : NA
- **Melting point** : - 13°C
- **Boiling point** : > 190°C
- **Density at 20°C** : 1.11 g/cm³
- **Flash point** : ~ 115°C
- **Explosion limits** : lower = 3% upper = 15%
- **Ignition temperature** : ~ 410°C
- **Vapor pressure at 20°C** : 0.08 mmHg

10 - Stability and reactivity

- **Conditions to be avoided:**
 - Heat. Protect from moisture.
- **Hazardous decomposition products:**
 - In the event of fire: see section 5.
- **Substances to be avoided:**
 - Strong acids, strong oxidizing agents, strong bases, aldehydes, aluminum.
- **Hazardous polymerization:**
 - Will not occur.

11 - Toxicological information

Quantitative data on the toxicity of this product are not available.

APPLICABLE TO MAIN COMPONENTS:

- The following applies to Ethylene Glycol, as the pure substance:

*Acute toxicity*LD₅₀ Oral, Rat: 4700 mg/kgLD₅₀ Intraperitoneal, Rat: 5010 mg/kgLD₅₀ Subcutaneous, Rat: 2800 mg/kgLD₅₀ Intravenous, Rat: 3260 mg/kg*Signs and symptoms of exposure*

When ingested early symptoms mimic alcohol inebriation and are followed by nausea, vomiting, abdominal pain, weakness, muscle tenderness, respiratory failure, convulsions, cardiovascular collapse, pulmonary edema, hypocalcaemic tetany, and severe metabolic acidosis. Without treatment, death may occur in 8 to 24 hours. Victims who survive the initial toxicity period usually develop renal failure along with brain and liver damage. Exposure to and/or consumption of alcohol may increase toxic effects.

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Conditions aggravated by exposure

Ethylene glycol is metabolized to glycoaldehyde, glycolic acid, and glyoxal, followed by conversion to glyoxylic acid, formic acid, and oxalic acid. It has been shown that ethylene glycol is much less toxic than its metabolites. Glycolic acid is thought to be the major toxic metabolite causing acute as well as reproductive and developmental toxicity observed with ethylene glycol exposures. May cause nervous system disturbances.

- The following applies to Mercury (II) thiocyanate, as the pure substance:

Acute toxicity

LD₅₀ Oral, Rat: 46 mg/kg

LD₅₀ Skin, Rat: 685 mg/kg

LD₅₀ Oral, Mouse: 24.5 mg/kg

LD₅₀ Intraperitoneal, Mouse: 3500 UG/KG

Sensitization

Sensitization: May cause allergic reaction.

Signs and symptoms of exposure

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: ACUTE: contact with eyes causes severe lesions. Swallowing and inhalation of dust damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhea, intestinal burns, glottal edema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; CHRONIC: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

Conditions aggravated by exposure

May cause nervous system disturbances.

Property of this product must be anticipated on the basis from the components of the preparation:

- **In case of inhalation** : may be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract
- **In case of skin contact** : irritant effects, danger of skin absorption.
- **In case of skin absorption** : may be harmful if absorbed through the skin.
- **In case of eye contact** : irritant effects.
- **In case of ingestion** : harmful if swallowed.
- **Further data** : The following applies to Ethylene Glycol: CHRONIC EXPOSURE:
 - TERATOGEN Result: laboratory experiments have shown teratogenic effects.
 - REPRODUCTIVE HAZARD Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

12 - Ecological information

Quantitative data on the toxicity of this product are not available.

APPLICABLE TO MAIN COMPONENTS:

- The following applies to Ethylene Glycol, as the pure substance:

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Biologic degradation:

Biodegradation: 83-96 % /14 d MITI test.

Readily biodegradable.

Behavior in environmental compartments:

Distribution: log p(o/w): -1.36 (experimental).

No bioaccumulation is to be expected (log P(o/w) <1).

Ecotoxic effects:

Biological effects:

Fish toxicity: Onchorhynchus mykiss LC₅₀: >18500 mg/l /96 h. L.idus LC₅₀: >10000 mg/l /48 h.

Daphnia toxicity: Daphnia magna EC₅₀: 74000 mg/l /24 h.

Bacterial toxicity: Ps.putida EC₅₀: >10000 mg/l /16 h.

Maximum permissible toxic concentration:

Algal toxicity: Sc.quadricauda IC₅: >10000 mg/l /7 d.

Bacterial toxicity: M.aeruginosa EC₅: 2000 mg/l /8 d.

Protozoa: E.sulcatum EC₅: >10000 mg/l /72 h.

Further ecologic data:

Degradability:

BOD₅: 0.78 g/g.

COD: 1.19 g/g.

TOD: 1.29 g/g.

BOD 60 % from TOD /5 d.

- The following applies to inorganic Hg compounds in general:

Ecotoxicological effects

Fish species: Salmo lethal from 0.05 ppm up; P. promelas LC₅₀: 0.19 mg/l; Hg ions toxic: fish: L. idus LC₅₀: 0.013 mg/l; Algae: Sc. quadricauda toxic from 0.07 mg/l up; M. aeruginosa toxic from 0.005 mg/l up.

Additional ecological information

Fish toxicity: mercury: LC₅₀: 0.5 mg/L Hg(II) ions. Hazard for drinking water.

Luminescent bacteria toxicity:

13 - Disposal considerations

• **Waste disposal:**

- Chemical residues are generally classified as special waste and thus covered by local regulations. Contact local authorities or disposal companies for advice.
- Handle contaminated packaging in the same way as the substance itself.

14 - Transport information

- **Land transport**

ADR/RID	: 9, II
UN-No.	: 3316
Name	: CHEMICAL KIT

- **Sea transport**

IMDG	: 9/UN 3316/PGII
Name	: CHEMICAL KIT
Marine Pollutant	: No

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- **Air transport** ICAO/IATA : 9/UN 3316/PGII
Name : CHEMICAL KIT

These transport data apply to the COMPLETE KIT!

15 - Regulatory information
Labeling according to EC Directives:

Symbol:	Xn	Harmful.
R-phrases :	20/21/22-33-52/53	Harmful by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrases :	28.1-36/37-45	After contact with skin, wash immediately with plenty of water. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Contains:	Mercury (II) thiocyanate. Ethylene glycol.	

16 - Other information

- **Text of any R phrases referred to under heading 2:**
 - 22 : Harmful if swallowed.
 - 26/27/28 : Very toxic by inhalation, in contact with skin and if swallowed.
 - 33 : Danger of cumulative effects.
 - 50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 - **Supersedes edition of** : / (first edition)
 - **Legend** : NA Not applicable
ND Not determined
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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.