Material Safety Data Sheet

1 Identification of substance:

- **Product details:**
  - **Trade name:** 2-Mercaptoethanol
  - **Catalog or product number:** 1610710, 1610710EDU, 1610710XTU
  - **Application of the substance / the preparation:** Laboratory chemicals

- **Manufacturer/Supplier:**
  Bio-Rad Laboratories, Life Science Group
  2000 Alfred Nobel Drive
  Hercules, California 94547
  (510) 741-1000

- **Information department:** Technical services, customer support.

- **Emergency information:**
  1(800) 424-9300 Use only in the event of a CHEMICAL EMERGENCY involving a SPILL, LEAK, FIRE, EXPLOSION or ACCIDENT.
  510-741-1000

2 Composition/Information on components:

- **Chemical characterization:**
  - **CAS No. Description:**
    - 60-24-2 2-mercaptoethanol
  - **Identification number(s):**
    - **EINECS Number:** 200-464-6
  - **Additional information:** For the wording of the listed risk phrases refer to section 16.

3 Hazards identification

- **Emergency overview:**
  Toxic by dermal absorption.
  Corrosive.
  Irritant to skin.
  May cause irreversible eye damage.
  T Toxic
  N Dangerous for the environment

- **Routes of exposure:**
  Ingestion
  Skin

- **Information pertaining to particular dangers for man and environment**
  R 22 Harmful if swallowed.
  R 24 Toxic in contact with skin.
  R 34 Causes burns.
  R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- **Classification system**
  The classification was made according to OSHA 29CFR 1910.1200 and 1910.1030, and is expanded upon from company and/or literature information.

- **GHS label elements**
  Skull and crossbones Danger
  3.1/2 - Fatal in contact with skin.
  3.1/4 - Harmful if swallowed.
  Corrosion Danger
  3.2/1B - Causes severe skin burns and eye damage.
  Warning
  2.6/4 - Combustible liquid.

(Contd. on page 2)
**Environment**

4.1/2 - Toxic to aquatic life with long lasting effects.

- **Prevention:**
  - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - Do not breathe dust/fume/gas/mist/vapours/spray.
  - Do not get in eyes, on skin, or on clothing.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Avoid release to the environment.
  - Wear protective gloves/protective clothing/eye protection/face protection.

- **Response:**
  - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
  - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
  - IF ON SKIN: Gently wash with plenty of soap and water.
  - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
  - 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.
  - Specific treatment (see label).
  - Specific measures (see label).
  - Rinse mouth.
  - Remove/Take off immediately all contaminated clothing.
  - Wash contaminated clothing before reuse.
  - In case of fire: Use for extinction: CO2, powder or water spray.
  - Collect spillage.

- **Storage:**
  - Store in a well-ventilated place. Keep cool.
  - Store locked up.

- **Disposal:**
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

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**4 First aid measures**

- **General information**
  - Immediately remove any clothing soiled by the product.
  - Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - In case of irregular breathing or respiratory arrest provide artificial respiration.

- **After inhalation**
  - In case of unconsciousness place patient stably in side position for transportation.

- **After skin contact**
  - Immediately wash with water and soap and rinse thoroughly.
  - Immediately rinse with water.

- **After eye contact**
  - Rinse opened eye for several minutes under running water. Then consult a doctor.

- **After swallowing**
  - Immediately call a doctor.
  - Drink copious amounts of water and provide fresh air. Immediately call a doctor.

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**5 Fire fighting measures**

- **Suitable extinguishing agents**
  - CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
6 Accidental release measures

- **Person-related safety precautions**: Wear protective equipment (See section 8). Keep unprotected persons away.
- **Measures for environmental protection**:
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Dilute with plenty of water.
  - Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collection**:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralizing agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.

7 Handling and storage

- **Handling**
  - **Information for safe handling**: No special precautions are necessary if used correctly.
  - **Information about protection against explosions and fires**: No special measures required.
- **Storage**
  - **Requirements to be met by storerooms and receptacles**: According to product specification
  - **Information about storage in one common storage facility**: Not required.
  - **Further information about storage conditions**: Keep receptacle tightly sealed.

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**:
  
<table>
<thead>
<tr>
<th>Component</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-24-2 2-mercaptoethanol</td>
<td>0.2 ppm</td>
</tr>
<tr>
<td></td>
<td>Skin</td>
</tr>
</tbody>
</table>
- **Additional information**: The lists that were valid during the creation were used as basis.
- **Personal protective equipment**
  - **General protective and hygienic measures**
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing
    - Wash hands before breaks and at the end of work.
    - Store protective clothing separately.
    - Avoid contact with the eyes and skin.
  - **Breathing equipment**: Not required.
  - **Protection of hands**: Protective gloves.
  - **Material of gloves**: Synthetic gloves
  - **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.
9 Physical and chemical properties:

- **Form:** liquid
- **Color:** Light yellow
- **Odor:** Sulphurous

- **Change in condition**
  - **Melting point/Melting range:** undetermined
  - **Boiling point/Boiling range:** 157°C

- **Flash point:** > 55°C

- **Danger of explosion:** Product does not present an explosion hazard.

- **Vapor pressure at 20°C:** 3.6 hPa

- **Density at 20°C:** 1.1143 g/cm³

- **Solubility in / Miscibility with**
  - **Water:** Fully miscible
  - **Organic solvents:** 0.0%

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Dangerous reactions:** No dangerous reactions known
- **Dangerous products of decomposition:** No dangerous decomposition products known

11 Toxicological information

- **Acute toxicity:**
- **Primary irritant effect:**
  - **on the skin:** Caustic effect on skin and mucous membranes.
  - **on the eye:** Strong caustic effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
  - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **Target organs:** Skin.

12 Ecological information:

- **Ecotoxic effects:**
- **Remark:** Toxic for fish
- **General notes:**
  - Water danger class 3 (Internal calculation) (Assessment by list): extremely hazardous for water.
13 Disposal considerations

- **Product:**
  - **Recommendation:** Hand over to hazardous waste disposers.
  - **Recommendation:** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

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

14 Transport information

- **DOT regulations:**
  - **Hazard class:** 6.1
  - **Identification number:** UN2966
  - **Packing group:** II
  - **Proper shipping name (technical name):** THIOGLYCOL
  - **Label:** 6.1
  - **Remarks:** ERG 153

- **Land transport ADR/RID (cross-border):**
  - **ADR/RID class:** 6.1 Toxic substances
  - **Danger code (Kemler):** 60
  - **UN-Number:** 2966
  - **Packing group:** II
  - **Label:** 6.1
  - **Description of goods:** 2966 THIOGLYCOL

- **Maritime transport IMDG:**
  - **IMDG Class:** 6.1
  - **UN Number:** 2966
  - **Label:** 6.1
  - **EMS Number:** F-A,S-A
  - **Marine pollutant:** No
  - **Proper shipping name:** THIOGLYCOL

- **Air transport ICAO-TI and IATA-DGR:**
  - **ICAO/IATA Class:** 6.1
  - **UN/ID Number:** 2966
  - **Label:** 6.1
  - **Packing group:** II
  - **Proper shipping name:** THIOGLYCOL

- **UN "Model Regulation":** UN2966; THIOGLYCOL; 6.1; II
Trade name: 2-Mercaptoethanol

- Environmental hazards: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID

### 15 Regulations

- **SARA (Superfund Amendments and Reauthorization Act of 1986 - USA)**
  - Section 302/304 (40 CFR 355.30 / 40 CFR 355.40):
    Substance not listed.
  - Section 313 (40 CFR 372.65):
    Substance is not listed.

- **TSCA (Toxic Substances Control Act):**
  Substance is listed.

- **Cancerogenity categories**
  - **EPA (Environmental Protection Agency)**
    Substance is not listed.
  - **IARC (International Agency for Research on Cancer)**
    Substance is not listed.
  - **NTP (National Toxicology Program)**
    Substance is not listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    Substance is not listed.
  - **MAK (German Maximum Workplace Concentration)**
    Substance is not listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    Substance is not listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    Substance is not listed.

- **Markings according to EU guidelines:**
The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials

- **Code letter and hazard designation of product:**
  - T Toxic
  - N Dangerous for the environment

- **Risk phrases:**
  22 Harmful if swallowed.
  24 Toxic in contact with skin.
  34 Causes burns.
  51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- **Safety phrases:**
  26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  28 After contact with skin, wash immediately with plenty of water
  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.
  61 Avoid release to the environment. Refer to special instructions/Safety data sheets
Trade name: 2-Mercaptoethanol

### National regulations

<table>
<thead>
<tr>
<th>Class</th>
<th>Share in %</th>
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<tbody>
<tr>
<td>I</td>
<td>50-100</td>
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</table>

- **Water hazard class:** Water danger class 3 (Assessment by list): extremely hazardous for water.

### 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.

- **Department issuing MSDS:** Environmental Health and Safety.
- **Contact:**
  - Life Science Group, Environmental Health and Safety, 2000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 741-1000
  - Diagnostic Group, Environmental Health and Safety, 4000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 724-7000

**Abbreviations and acronyms:**

- ADR: Accord européen sur le transport des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- RID: Reglement internationale concernent le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- IMDG: International Maritime Code for Dangerous Goods
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
- ICAO: International Civil Aviation Organization
- ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
- GHS: Globally Harmonized System of Classification and Labelling of Chemicals
- ACGIH: American Conference of Governmental Industrial Hygienists
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)

* Data compared to the previous version altered.