SECTION 1: Identification of the substance/mixture and of the company/undertaking
1.1 Product identifiers
   Product name: 2-Mercaptoethanol
   Product Number: M6250
   Brand: Aldrich
   REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
   CAS-No.: 60-24-2
1.2 Relevant identified uses of the substance or mixture and uses advised against
   Identified uses: Laboratory chemicals, Manufacture of substances
1.3 Details of the supplier of the safety data sheet
   Company: Sigma-Aldrich Chemie BV
   Stationsplein 4
   3331 LL ZWIJNDRECHT
   NETHERLANDS
   Telephone: +31 78-620-5411
   Fax: +31 78-620-5421
   E-mail address: eurtechserv@sial.com
1.4 Emergency telephone number
   Emergency Phone #: 112

SECTION 2: Hazards identification
2.1 Classification of the substance or mixture
   Classification according to Regulation (EC) No 1272/2008
   Acute toxicity, Oral (Category 3), H301
   Acute toxicity, Inhalation (Category 3), H331
   Acute toxicity, Dermal (Category 2), H310
   Skin irritation (Category 2), H315
   Serious eye damage (Category 1), H318
   Skin sensitisation (Category 1), H317
   Specific target organ toxicity - repeated exposure, Oral (Category 2), Liver, Heart, H373
   Acute aquatic toxicity (Category 1), H400
   Chronic aquatic toxicity (Category 1), H410
   For the full text of the H-Statements mentioned in this Section, see Section 16.

   Classification according to EU Directives 67/548/EEC or 1999/45/EC
   T, N Toxic, Dangerous for the environment R23/24/25, R38, R41, R43, R48/22, R50/53
   For the full text of the R-phrases mentioned in this Section, see Section 16.
2.2 Label elements
   Labelling according Regulation (EC) No 1272/2008
Pictogram

Signal word

Hazard statement(s)
H301 + H331  Toxic if swallowed or if inhaled
H310  Fatal in contact with skin.
H315  Causes skin irritation.
H317  May cause an allergic skin reaction.
H318  Causes serious eye damage.
H373  May cause damage to organs (Liver, Heart) through prolonged or repeated exposure if swallowed.
H410  Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261  Avoid breathing vapours.
P273  Avoid release to the environment.
P280  Wear protective gloves/ eye protection/ face protection.
P301 + P310  IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P302 + P350  IF ON SKIN: Gently wash with plenty of soap and water.
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Stench.

Stench., Rapidly absorbed through skin.

SECTION 3: Composition/information on ingredients

3.1 Substances
Synonyms:
Thioethylene glycol
2-Hydroxyethylmercaptan
BME
β-Mercaptoethanol

Formula:  C_{2}H_{6}OS
Molecular weight:  78.13 g/mol
CAS-No.:  60-24-2
EC-No.:  200-464-6

Hazardous ingredients according to Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Mercaptoethanol</td>
<td>Acute Tox. 3; Acute Tox. 2; Skin Irrit. 2; Eye Dam. 1; Skin Sens. 1; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 1; H301 + H331, H310, H315, H317, H318, H373, H410</td>
<td>50 - 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>60-24-2</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-464-6</td>
<td></td>
</tr>
</tbody>
</table>

Hazardous ingredients according to Directive 1999/45/EC

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Mercaptoethanol</td>
<td>T, N, R23/24/25 - R38 - R41 -</td>
<td>&lt;= 100 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>60-24-2</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Sulphur oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature 2 - 8 °C
Storage class (TRGS 510): Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Components with workplace control parameters

8.2 Exposure controls
Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0,3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nature latex/chloroprene
Minimum layer thickness: 0,6 mm
Break through time: 30 min
Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
**Body Protection**
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory Protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

---

### SECTION 9: Physical and chemical properties

#### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
</table>
| **a)** Appearance | Form: liquid  
Colour: colourless yellow |
| **b)** Odour | Stench. |
| **c)** Odour Threshold | No data available |
| **d)** pH | 4.5 - 6 at 500 g/l at 20 °C |
| **e)** Melting point/freezing point | < -49.99 °C |
| **f)** Initial boiling point and boiling range | 157 °C - lit. |
| **g)** Flash point | No data available |
| **h)** Evaporation rate | No data available |
| **i)** Flammability (solid, gas) | No data available |
| **j)** Upper/lower flammability or explosive limits | Upper explosion limit: 18 %(V)  
Lower explosion limit: 2.3 %(V) |
| **k)** Vapour pressure | 0.76 hPa at 20 °C  
4.67 hPa at 40 °C |
| **l)** Vapour density | 2.70 - (Air = 1.0) |
| **m)** Relative density | 1.114 g/cm3 at 25 °C |
| **n)** Water solubility | soluble |
| **o)** Partition coefficient: n-octanol/water | log Pow: -0.326log Pow: -0.056 at 25 °C |
| **p)** Auto-ignition temperature | No data available |
| **q)** Decomposition temperature | No data available |
| **r)** Viscosity | No data available |
| **s)** Explosive properties | No data available |
| **t)** Oxidizing properties | No data available |

#### 9.2 Other safety information

Relative vapour density 2.70 - (Air = 1.0)
SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Metals, Oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 98 - 162 mg/kg
(OECD Test Guideline 401)

LC50 Inhalation - Rat - 4 h - 2 mg/l
LC50 Inhalation - Rat - 4 h - 625 ppm
LD50 Dermal - Rabbit - 112 mg/kg

Skin corrosion/irritation
Skin - Rabbit
Result: Irritating to skin.
(Draize Test)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Risk of serious damage to eyes.

Respiratory or skin sensitisation
Maximisation Test (GPMT) - Guinea pig
May cause sensitisation by skin contact.
(OECD Test Guideline 406)

Germ cell mutagenicity
Experiments showed mutagenic effects in cultured bacterial cells.

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Ingestion - May cause damage to organs through prolonged or repeated exposure. - Liver, Heart

Aspiration hazard
No data available
Additional Information
RTECS: KL5600000

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Weakness, Unconsciousness, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
LC50 - Leuciscus idus (Golden orfe) - 46 - 100 mg/l - 96,0 h

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia (water flea) - 0,89 mg/l - 48 h
(OECD Test Guideline 202)

Toxicity to algae
EC50 - Desmodesmus subspicatus (green algae) - 12 mg/l - 72 h

Toxicity to bacteria
LC50 - Bacteria - 125 mg/l - 17 h

12.2 Persistence and degradability

Biodegradability
Result: < 30,0 % - Not readily biodegradable.
Result: 6 % - Not readily biodegradable.
aerobic - Exposure time 28 d
Result: < 10 % - Not readily biodegradable.

Biochemical Oxygen Demand (BOD) 105 mg/g

Chemical Oxygen Demand (COD) 1,894 mg/g

12.3 Bioaccumulative potential

Does not accumulate in organisms.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Very toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 2966 IMDG: 2966 IATA: 2966

14.2 UN proper shipping name
ADR/RID: THIOGLYCOL IMDG: THIOGLYCOL IATA: Thioglycol
14.3 Transport hazard class(es)
ADR/RID: 6.1  
IMDG: 6.1  
IATA: 6.1

14.4 Packaging group
ADR/RID: II  
IMDG: II  
IATA: II

14.5 Environmental hazards
ADR/RID: yes  
IMDG Marine pollutant: yes  
IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

No data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.  
Acute toxicity
Aquatic Acute  
Acute aquatic toxicity
Aquatic Chronic  
Chronic aquatic toxicity
Eye Dam.  
Serious eye damage
H301  
Toxic if swallowed.
H301 + H331  
Toxic if swallowed or if inhaled
H310  
Fatal in contact with skin.
H315  
Causes skin irritation.
H317  
May cause an allergic skin reaction.
H318  
Causes serious eye damage.
H331  
Toxic if inhaled.
H373  
May cause damage to organs through prolonged or repeated exposure if swallowed.
H400  
Very toxic to aquatic life.

Full text of R-phrases referred to under sections 2 and 3

N  
Dangerous for the environment
T  
Toxic
R23/24/25  
Toxic by inhalation, in contact with skin and if swallowed.
R38  
Irritating to skin.
R41  
Risk of serious damage to eyes.
R43  
May cause sensitisation by skin contact.
R48/22  
Harmful: danger of serious damage to health by prolonged exposure if swallowed.
R50/53  
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Further information

Copyright 2014 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.