1. PRODUCT AND COMPANY IDENTIFICATION

- **Product name**: Styrene
- **Product Number**: 240869
- **Brand**: Aldrich
- **Supplier**: Sigma-Aldrich Corporation
  
  3050 Spruce Street
  SAINT LOUIS MO  63103
  USA
- **Telephone**: +1 800-325-5832
- **Fax**: +1 800-325-5052
- **Emergency Phone # (For both supplier and manufacturer)**: (314) 776-6555
- **Preparation Information**: Sigma-Aldrich Corporation
  
  Product Safety - Americas Region
  1-800-521-8956

2. HAZARDS IDENTIFICATION

**Emergency Overview**

- **OSHA Hazards**: Flammable liquid, Carcinogen, Irritant
- **Target Organs**: Central nervous system, Blood, Lymphatic system, Endocrine system.
- **Other hazards which do not result in classification**: Lachrymator.

**GHS Classification**

- Flammable liquids (Category 3)
- Acute toxicity, Oral (Category 5)
- Acute toxicity, Inhalation (Category 4)
- Skin irritation (Category 2)
- Eye irritation (Category 2A)
- Acute aquatic toxicity (Category 2)

**GHS Label elements, including precautionary statements**

**Pictogram**

- **Signal word**: Warning
- **Hazard statement(s)**:
  - H226 Flammable liquid and vapour.
  - H303 May be harmful if swallowed.
  - H315 Causes skin irritation.
  - H319 Causes serious eye irritation.
  - H332 Harmful if inhaled.
  - H401 Toxic to aquatic life.
- **Precautionary statement(s)**:
  - P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if
present and easy to do. Continue rinsing.

HMIS Classification
- Health hazard: 2
- Chronic Health Hazard: *
- Flammability: 3
- Physical hazards: 0

NFPA Rating
- Health hazard: 2
- Fire: 3
- Reactivity Hazard: 0

Potential Health Effects
- **Inhalation**: May be harmful if inhaled. Causes respiratory tract irritation.
- **Skin**: May be harmful if absorbed through skin. Causes skin irritation.
- **Eyes**: Causes eye irritation.
- **Ingestion**: May be harmful if swallowed.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms**: Phenylethylene
Vinylbenzene

**Formula**: C₈H₈ C₈H₈

**Molecular Weight**: 104.15 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Styrene</strong></td>
<td></td>
</tr>
<tr>
<td>CAS-No.</td>
<td>100-42-5</td>
</tr>
<tr>
<td>EC-No.</td>
<td>202-851-5</td>
</tr>
<tr>
<td>Index-No.</td>
<td>601-026-00-0</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

**General advice**
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**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. 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.

### 5. FIREFIGHTING MEASURES

**Conditions of flammability**
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

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

**Specific hazards arising from the chemical**
Container explosion may occur under fire conditions. Vapours may form explosive mixture with air.

**Special protective equipment for firefighters**
Wear self contained breathing apparatus for fire fighting if necessary.
Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

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.

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).

7. HANDLING AND STORAGE

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.

Conditions for safe storage
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
Light sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>TWA</td>
<td>50 ppm 215 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>100 ppm 425 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z2</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td>Z37.15-1969</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEIL</td>
<td>200 ppm</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Z37.15-1969</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peak</td>
<td>600 ppm</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Z37.15-1969</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>50 ppm 215 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>100 ppm 425 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>20 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
</tbody>
</table>

Remarks: Z37.15-1969

Central Nervous System impairment, Upper Respiratory Tract irritation, Peripheral neuropathy
### Personal protective equipment

#### 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).

#### Hand 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.

#### Immersion protection
<table>
<thead>
<tr>
<th>Material:</th>
<th>Fluorinated rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum layer thickness:</td>
<td>0.7 mm</td>
</tr>
<tr>
<td>Break through time:</td>
<td>&gt; 480 min</td>
</tr>
<tr>
<td>Material tested:</td>
<td>Vitoject® (Aldrich Z677698, Size M)</td>
</tr>
</tbody>
</table>

#### Splash protection
<table>
<thead>
<tr>
<th>Material:</th>
<th>Nitrile rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum layer thickness:</td>
<td>0.4 mm</td>
</tr>
<tr>
<td>Break through time:</td>
<td>&gt; 30 min</td>
</tr>
<tr>
<td>Material tested:</td>
<td>Camatril® (Aldrich Z677442, Size M)</td>
</tr>
</tbody>
</table>

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, 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 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.

#### Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and body protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Form</th>
<th>liquid, clear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>colourless</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety data</th>
<th>pH</th>
<th>no data available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting</td>
<td>Melting point/range:</td>
<td>-31 °C (-24 °F) - lit.</td>
</tr>
</tbody>
</table>
## Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Range</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling point</td>
<td>145 - 146 °C (293 - 295 °F)</td>
<td>lit.</td>
</tr>
<tr>
<td>Flash point</td>
<td>32.0 °C (89.6 °F)</td>
<td>closed cup</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>480 °C (896 °F)</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>490.0 °C (914.0 °F)</td>
<td></td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>1.1 % (V)</td>
<td></td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>8.9 % (V)</td>
<td></td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>16.5 hPa (12.4 mmHg) at 37.7 °C (99.9 °F)</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>0.906 g/cm³ at 25 °C (77 °F)</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>insoluble</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>no data available</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
<td></td>
</tr>
</tbody>
</table>

## Stability and Reactivity

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
Vapours may form explosive mixture with air.

**Conditions to avoid**
May polymerize on exposure to light. Heat, flames and sparks.

**Materials to avoid**
Oxidizing agents, Copper

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

## Toxicological Information

**Acute toxicity**

**Oral LD₅₀**
LD₅₀ Oral - rat - 2,650 mg/kg

**Inhalation LC₅₀**
LC₅₀ Inhalation - rat - 4 h - 12,000 mg/m³

**Dermal LD₅₀**
no data available

**Other information on acute toxicity**
no data available

**Skin corrosion/irritation**

Aldrich - 240869
Skin - rabbit - Skin irritation

**Serious eye damage/eye irritation**
Eyes - rabbit - Eye irritation - 24 h

**Respiratory or skin sensitization**
no data available

**Germ cell mutagenicity**
Laboratory experiments have shown mutagenic effects.

**Carcinogenicity**
This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Styrene)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
no data available

**Teratogenicity**
no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**
no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**
no data available

**Aspiration hazard**
no data available

**Potential health effects**

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>May be harmful if inhaled. Causes respiratory tract irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>May be harmful if swallowed.</td>
</tr>
<tr>
<td>Skin</td>
<td>May be harmful if absorbed through skin. Causes skin irritation.</td>
</tr>
<tr>
<td>Eyes</td>
<td>Causes eye irritation.</td>
</tr>
</tbody>
</table>

**Signs and Symptoms of Exposure**
Dermatitis, Central nervous system depression, Nausea, Dizziness, Headache

**Synergistic effects**
no data available

**Additional Information**
RTECS: WL3675000

**12. ECOLOGICAL INFORMATION**

**Toxicity**
Toxicity to fish
LC50 - Leuciscus idus (Golden orfe) - 17.00 - 66.00 mg/l - 48 h
NOEC - Pimephales promelas (fathead minnow) - 4 mg/l - 96 h
LC50 - Pimephales promelas (fathead minnow) - 4.08 mg/l - 96 h
LOEC - Pimephales promelas (fathead minnow) - 7.6 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 182.00 mg/l - 24 h
NOEC - Daphnia magna (Water flea) - 1.9 mg/l - 48 h
LOEC - Daphnia magna (Water flea) - 3.3 mg/l - 48 h
EC50 - Daphnia magna (Water flea) - 4.7 mg/l - 48 h

Persistence and degradability
Biodegradability aerobic
Result: > 60 % - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
no data available

13. DISPOSAL CONSIDERATIONS
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 2055  Class: 3  Packing group: III
Proper shipping name: Styrene monomer, stabilized
Reportable Quantity (RQ): 1000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 2055  Class: 3  Packing group: III  EMS-No: F-E, S-D
Proper shipping name: STYRENE MONOMER, STABILIZED
Marine pollutant: No

IATA
UN number: 2055  Class: 3  Packing group: III
Proper shipping name: Styrene monomer, stabilized

15. REGULATORY INFORMATION
OSHA Hazards
Flammable liquid, Carcinogen, Irritant

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<tbody>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>2007-07-01</td>
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</tbody>
</table>

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

<table>
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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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<td>Styrene</td>
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<td>2007-07-01</td>
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</table>

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
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