1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name: 2-Methoxyethanol
Product Code: SC-238120

Recommended use of the chemical and restrictions on use
For research use only. Not intended for diagnostic or therapeutic use.

2. HAZARDS IDENTIFICATION

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification
Acute toxicity - Oral: Category 4
Acute toxicity - Dermal: Category 4
Acute toxicity - Inhalation (Dusts/Mists): Category 4
Reproductive toxicity: Category 1B
Specific target organ toxicity (single exposure): Category 1
Specific target organ toxicity (repeated exposure): Category 2
Flammable liquids: Category 3

Label elements
Signal word: Danger
Hazard statements:
- Harmful if swallowed
- Harmful in contact with skin
- Harmful if inhaled
- May damage fertility or the unborn child
- Causes damage to organs
- May cause damage to organs through prolonged or repeated exposure
- Flammable liquid and vapor

Symbols/Pictograms:

- Flammable liquid and vapor

Emergency telephone number
Chemtrec
1.800.424.9300 (Within USA)
+1.703.527.3887 (Outside USA)
Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazard not otherwise classified (HNOC)
Hazards not otherwise classified (HNOC)  Not applicable

Other Information

NFPA  Health hazards  1  Flammability  2  Stability  0  Physical and chemical properties -
HMIS  Health hazards  1  Flammability  2  Physical hazards  0  Personal protection -

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight %</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol</td>
<td>109-86-4</td>
<td>&gt;98</td>
<td>2370 mg/kg (Rat)</td>
<td>1280 mg/kg (Rabbit)</td>
<td>1478 ppm (Rat) 7 h</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First Aid Measures
General advice  Immediate medical attention is required. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Eye contact
Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Call a physician immediately.

Skin Contact
Wash off immediately with plenty of water.

Inhalation
Immediate medical attention is required. Remove to fresh air. If not breathing, give artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

Ingestion
Do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Drink plenty of water.

Self-protection of the first aider
Remove all sources of ignition.

Most important symptoms and effects, both acute and delayed
Symptoms
No information available.

Indication of any immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
None.

Specific hazards arising from the chemical
Specific hazards arising from the chemical
No information available.

Hazardous combustion products
Carbon oxides.

Explosion data
Sensitivity to Mechanical Impact
No information available.

Sensitivity to Static Discharge
No information available.

Protective equipment and precautions for firefighters
Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions
Remove all sources of ignition. Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas.

Environmental precautions
Environmental precautions
Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so. Cover powder spill with plastic sheet or tarp to minimize spreading. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up
Dam up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE
Precautions for safe handling
Advice on safe handling
Ensure adequate ventilation, especially in confined areas. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded.

Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep tightly closed in a dry and cool place. Keep in properly labeled containers. Store at room temperature.
Incompatible materials
None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Guidelines
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol 109-86-4</td>
<td>TWA: 0.1 ppm S*</td>
<td>TWA: 25 ppm TWA: 80 mg/m³ (vacated) TWA: 25 ppm (vacated) TWA: 80 mg/m³ (vacated) S*</td>
<td>IDLH: 200 ppm TWA: 0.1 ppm TWA: 0.3 mg/m³</td>
</tr>
</tbody>
</table>

NIOSH IDLH Immediately Dangerous to Life or Health

Appropriate engineering controls
Engineering Controls
Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment
Eye/face protection
Tight sealing safety goggles.
Skin and Body Protection
Wear protective gloves and protective clothing.
Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations
When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
liquid
Appearance
No information available
Odor
Ether

Property
Values
pH
No information available
Melting point/freezing point
-85 °C
Boiling point
124 °C
Flash point
40 °C CC (closed cup)
10. STABILITY AND REACTIVITY

Reactivity
Not applicable

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization
No information available.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Strong oxidizing agents.

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
No data available.

Eye contact
No data available.

Skin Contact
No data available.

Ingestion
No data available.

Information on toxicological effects

Symptoms
No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
May cause adverse effects on the bone marrow and blood-forming system. Contains a known or suspected reproductive toxin.

Target Organ Effects
Blood, Reproductive System, Central nervous system, Eyes, Respiratory system, Kidney, Hematopoietic System.

Numerical measures of toxicity - Product Information

Unknown acute toxicity
No information available.

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 500 mg/kg
ATEmix (dermal) 1280 mg/kg
ATEmix (inhalation-dust/mist) 1.5 mg/l
ATEmix (inhalation-vapor) 1478 mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity
May cause long lasting harmful effects to aquatic life
Chemical Name | Algae/aquatic plants | Fish | Toxicity to Microorganisms | Crustacea |
--- | --- | --- | --- | --- |
2-Methoxyethanol 109-86-4 | - | 10000: 96 h Lepomis macrochirus mg/L LC50 static 500: 96 h Leuciscus idus mg/L LC50 static 16000: 96 h Oncorhynchus mykiss mg/L LC50 static 9650: 96 h Lepomis macrochirus mg/L LC50 static | - | 10000: 24 h Daphnia magna mg/L EC50 |

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Persistence and degradability | No information available.
Bioaccumulation | No information available.
Mobility | No information available.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol 109-86-4</td>
<td>-0.85</td>
</tr>
</tbody>
</table>

### 13. DISPOSAL CONSIDERATIONS

| Disposal of wastes | Disposal should be in accordance with applicable regional, national and local laws and regulations. |
| Contaminated packaging | Do not reuse container. |
| Other Information | Waste codes should be assigned by the user based on the application for which the product was used. |

### 14. TRANSPORT INFORMATION

**DOT**
- UN/ID no: UN1188
- Hazard Class: 3
- Packing Group: III
- Proper shipping name: Ethylene glycol monomethyl ether
- Description: UN1188, Ethylene glycol monomethyl ether, 3, III
- Emergency Response Guide Number: 127

**IMDG**
- UN/ID no: UN1188
- Hazard Class: 3
- Packing Group: III
- Proper shipping name: Ethylene glycol monomethyl ether
- Description: UN1188, Ethylene glycol monomethyl ether, 3, III, (40°C c.c.)
- EmS-No: F-E, S-D

**IATA**
- UN/ID no: UN1188
- Hazard Class: 3
- Packing Group: III
- Proper shipping name: Ethylene glycol monomethyl ether
- Description: UN1188, Ethylene glycol monomethyl ether, 3, III

### 15. REGULATORY INFORMATION
International Inventories
All of the components in the product are on the following Inventory lists
TSCA (United States): Canada (DSL/NDSL) Europe (EINECS/ELINCS/NLP) Australia (AICS) South Korea (KECL): China (IECSC)
ENCS (Japan): Philippines (PICCS)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X - Listed
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Acute health hazard No
Chronic Health Hazard Yes
Fire hazard Yes
Sudden release of pressure hazard No
Reactive hazard No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

US State Regulations

California Proposition 65
This product contains the following Proposition 65 chemicals.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol - 109-86-4</td>
<td>Developmental Male Reproductive</td>
</tr>
</tbody>
</table>

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Methoxyethanol</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>109-86-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Revision note
No information available

Disclaimer
The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
End of Safety Data Sheet