Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name

Cyclic Trimethylolpropane Formal

Chemical Name

5-Ethyl-1,3-dioxane-5-methanol

CAS No

5187-23-5

Other means of identification

Safety data sheet number

P-0175

Pure substance/mixture

Substance

Recommended use of the chemical and restrictions on use

Application

Chemical intermediate. Use in plaster, Cleaning agent, in coatings and in inks.

Uses advised against

Not identified.

Details of the supplier of the safety data sheet

Manufacturer

Perstorp Specialty Chemicals AB
SE-284 80 Perstorp, Sweden
Tel. +46 435 380 00
www.perstorp.com

E-mail address

productinfo@perstorp.com

Emergency telephone number

China

(+86) 4001 2001 74 (contract no: 334101)

Asia Pacific

(+1) 760 476 3960 (contract no: 334101)

Section 2: HAZARDS IDENTIFICATION

Hazards description

Causes severe eye irritation

Classification of the substance or mixture

Acute toxicity - Oral

Category 5 - (H303)

Serious eye damage/eye irritation

Category 2A - (H319)

Label elements

Symbols/Pictograms

Signal word

Warning

Hazard statements

H319 - Causes serious eye irritation
Cyclic Trimethylolpropane Formal

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H303 - May be harmful if swallowed

Precautionary statements
P264 - Wash hands thoroughly after handling
P280 - Wear protective gloves and eye/face protection
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/attention

Contains: 5-Ethyl-1,3-dioxane-5-methanol

Other hazards
None known.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance</th>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Ethyl-1,3-dioxane-5-methanol</td>
<td>5187-23-5</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Section 4: FIRST AID MEASURES

Description of first aid measures

Inhalation
Immediate medical attention is not required. Remove to fresh air.

Skin contact
Immediate medical attention is not required. Wash skin with soap and water.

Eye contact
Rinse thoroughly with plenty of water, also under the eyelids. Use lukewarm water if possible. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion
Rinse mouth. Drink plenty of water. If a large quantity has been ingested or you feel unwell, get medical advice/attention.

Self-protection of the first aider
Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed
Causes severe irritation (tears, blurred vision and redness).

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

Section 5: FIRE FIGHTING MEASURES

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

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical
Hazardous combustion products
Carbon monoxide (CO), Carbon dioxide (CO2).

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus and protective suit.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear tightly sealed goggles. Wear gloves, protective clothing and rubber boots for hygienic reasons. Ensure adequate ventilation, especially in confined areas.

Environmental precautions
Do not allow into any sewer, on the ground or into any body of water. Local authorities should be advised if significant spillages cannot be contained. 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.
- Small spill: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
- Large spill: Pump up the product into a spare container suitably labelled.

Methods for cleaning up
Pick up and transfer to properly labelled containers. Clean contaminated surface thoroughly. After cleaning, flush away traces with water.

Section 7: HANDLING AND STORAGE

Precautions for safe handling
Ensure adequate ventilation, especially in confined areas. Avoid: aerosol or mist formation.

General Hygiene Considerations
Wash hands before breaks and after work. Avoid contact with eyes.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Keep in a dry place.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Users are advised to consider national Occupational Exposure Limits or other equivalent values, (if existing).

Appropriate engineering controls
Emergency shower and eye wash facilities must exist on work place.

Individual protection measures, such as personal protective equipment
- Eye/face protection: Tight sealing safety goggles.
- Hand Protection: Wear protective gloves. Nitrile rubber, NBR. Chloroprene rubber, CR.
- Skin and body protection: Normal work clothes for the chemical industry (long legs and sleeves).
- Respiratory protection: None under normal use conditions.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>Slight</td>
<td></td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>5 - 8</td>
<td>solution (5 %) @ 101.3 kPa</td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>&lt; -20 °C / -4 °F</td>
<td>OECD Test No. 103: Boiling Point ASTM D 7094-04</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>239 °C / 462 °F</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>116 °C / 241 °F</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td></td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td></td>
<td>No information available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td></td>
<td>No information available</td>
</tr>
</tbody>
</table>

Upper explosive limits
Section 10: STABILITY AND REACTIVITY

Reactivity

There exists no specific test data for this product. For further information, see the subsequent subsections of this chapter.

Chemical stability

Stable under normal conditions. In contact with air/oxygen the product will slowly form peroxides.

Possibility of Hazardous Reactions

In contact with air/oxygen the product will slowly form peroxides.

Conditions to avoid

None known.

Incompatible materials

Oxidizing substances including air (oxygen).

Hazardous decomposition products

Thermal decomposition can lead to release of irritating and toxic gases and vapours.

Section 11: TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact. Skin contact.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact: Causes severe irritation (tears, blurred vision and redness).

Numerical measures of toxicity

Acute toxicity

Product does not present an acute toxicity hazard based on known or supplied information.

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Effective dose</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 401: Acute Oral Toxicity</td>
<td>Rat</td>
<td>Oral</td>
<td>&gt;2000</td>
<td>mg/kg LD50 (lethal dose)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation

Non-irritating to the skin.
5-Ethyl-1,3-dioxane-5-methanol (5187-23-5)

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 404: Acute Dermal Irritation/Corrosion</td>
<td>Rabbit</td>
<td>Dermal</td>
<td>Non-irritating to the skin No classification according to GHS criteria.</td>
</tr>
</tbody>
</table>

Serious eye damage/eye irritation
Irritating to eyes.

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 405: Acute Eye Irritation/Corrosion</td>
<td>Rabbit</td>
<td>Eye</td>
<td>Irritating to eyes</td>
</tr>
</tbody>
</table>

Respiratory or skin sensitisation
No sensitising effects known.

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 429: Skin Sensitisation: Local Lymph Node Assay</td>
<td>Mouse</td>
<td>Skin</td>
<td>Not a skin sensitiser</td>
</tr>
</tbody>
</table>

Germ cell mutagenicity
Not mutagenic.

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Results:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 476: In vitro Mammalian Cell Gene Mutation Test</td>
<td>in vitro</td>
<td></td>
<td>Not mutagenic</td>
</tr>
<tr>
<td>OECD Test No. 471: Bacterial Reverse Mutation Test</td>
<td>in vitro</td>
<td></td>
<td>Not mutagenic</td>
</tr>
<tr>
<td>OECD Test No. 473: In vitro Mammalian Chromosome Aberration Test</td>
<td>in vitro</td>
<td></td>
<td>Not mutagenic</td>
</tr>
</tbody>
</table>

Carcinogenicity
Since all in vitro mutagenicity studies are negative, there is no hint for any carcinogenic potential.

Reproductive toxicity
No information available.

STOT - single exposure Target organ effects: None known
STOT - repeated exposure Target organ effects: None known

Aspiration hazard
No information available.

Section 12: ECOLOGICAL INFORMATION

Toxicity
Low toxicity to aquatic organisms.

<table>
<thead>
<tr>
<th>Method</th>
<th>Species</th>
<th>Exposure route</th>
<th>Effective dose</th>
<th>Exposure time</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 203: Fish, Acute Toxicity Test</td>
<td>Brachydanio rerio</td>
<td>Freshwater</td>
<td>&gt;1000</td>
<td>96h</td>
<td>mg/l LC50 (lethal concentration)</td>
</tr>
<tr>
<td>OECD Test No. 202: Daphnia magna</td>
<td>Freshwater</td>
<td>2466</td>
<td>48h</td>
<td>mg/l EC50 (effective concentration)</td>
<td></td>
</tr>
<tr>
<td>OECD Test No. 201: Freshwater Algae and Pseudokirchneriella subcapitata</td>
<td>Freshwater</td>
<td>&gt;1000</td>
<td>72h</td>
<td>mg/l EC50 (effective concentration)</td>
<td></td>
</tr>
</tbody>
</table>
Cyclic Trimethylolpropane Formal

Persistence and degradability
Readily biodegradable.

5-Ethyl-1,3-dioxane-5-methanol (5187-23-5)

<table>
<thead>
<tr>
<th>Method</th>
<th>Value</th>
<th>Exposure time</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD Test No. 111: Hydrolysis as a Function of pH</td>
<td></td>
<td></td>
<td>Stable</td>
</tr>
<tr>
<td>OECD Test No. 301A: Ready Biodegradability: DOC Die-Away Test (TG 301 A)</td>
<td>&gt;90%</td>
<td>28d</td>
<td>Readily biodegradable</td>
</tr>
<tr>
<td>OECD Test No. 302B: Inherent Biodegradability: Zahn-Wellens/EVPA Test</td>
<td>&gt;90%</td>
<td>28d</td>
<td>Inherently biodegradable.</td>
</tr>
</tbody>
</table>

Bioaccumulative potential
No bioaccumulation potential.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition coefficient</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Ethyl-1,3-dioxane-5-methanol</td>
<td></td>
<td>0.19</td>
</tr>
</tbody>
</table>

Mobility in soil
The substance is not expected to adsorb to a high degree to suspended solids and sediment based upon the log Pow.

Other adverse effects
No information available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal methods
This material and its container must be disposed of as hazardous waste. Incinerate at a licensed installation. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Contaminated packaging materials must be disposed of in the same manner as the product. Thoroughly emptied and clean packaging may be recycled. Methods for cleaning up: Recommended use: Water (with cleaning agent).

Section 14: TRANSPORT INFORMATION

China Road transport
Not regulated

IMDG Sea transport
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not regulated
No information available

IATA Air transport
Not regulated

Section 15: REGULATORY INFORMATION

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

International Regulations
Not applicable.

National Regulations

China
Not applicable.
Taiwan
Not applicable.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet
Not applicable

Issue Date 29-Feb-2016
Revision Date 24-Feb-2016
Revision Note No information available.

Disclaimer
The information provided in this 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