SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 22/NOV/2005
Date Updated: 13/MAR/2004
Version 1.1
According to 91/155/EEC

1 - Product and Company Information

Product Name: GLYOXAL TRIMERIC DIHYDRATE
Product Number: 220132
Company: Sigma-Aldrich Pte Ltd
#02-14 The Capricorn, Sci. Park II
Singapore 117528
Singapore
Technical Phone #: (65) 6779 1200
Fax: (65) 6779 1822

2 - Composition/Information on Ingredients

Product Name: GLYOXAL TRIMER DIHYDRATE
CAS #: 4405-13-4
EC no: 224-551-3
Annex I Index Number: None

Formula: C6H10O8
Molecular Weight: 210.14 AMU
Synonyms: p-Dioxino(2,3-b)-p-dioxin-2,3,6,7-tetrol, hexahydro- * Ethanedial, trimer, dihydrate *
Glyoxal trimeric dihydrate * Triethanedral dihydrate

3 - Hazards Identification

SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT
Irritating to eyes, respiratory system and skin.

4 - First Aid Measures

AFTER INHALATION
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

AFTER SKIN CONTACT
In case of contact, immediately wash skin with soap and copious amounts of water.

AFTER EYE CONTACT
In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes.

AFTER INGESTION
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

5 - Fire Fighting Measures

EXTINGUISHING MEDIA
Suitable: Water spray. Carbon dioxide, dry chemical powder, or
appropriate foam.

SPECIAL RISKS
Specific Hazard(s): Emits toxic fumes under fire conditions.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

6 - Accidental Release Measures

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

7 - Handling and Storage

HANDLING
Directions for Safe Handling: Do not breathe dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE
Conditions of Storage: Keep tightly closed.

8 - Exposure Controls / Personal Protection

ENGINEERING CONTROLS
Safety shower and eye bath. Mechanical exhaust required.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling.

PERSONAL PROTECTIVE EQUIPMENT
Respiratory Protection: Government approved respirator.
Hand Protection: Compatible chemical-resistant gloves.
Eye Protection: Chemical safety goggles.

9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical State:</td>
<td>Solid</td>
<td></td>
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<tr>
<td>Color: White</td>
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</tr>
<tr>
<td>Form: Powder</td>
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</tr>
<tr>
<td>pH</td>
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<tr>
<td>BP/BP Range</td>
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<td>MP/MP Range</td>
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<tr>
<td>Flash Point</td>
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<td>Flammability</td>
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<tr>
<td>Autoignition Temp</td>
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<td>Oxidizing Properties</td>
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<tr>
<td>Explosive Properties</td>
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<tr>
<td>Explosion Limits</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>SG/Density</td>
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</table>

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Partition Coefficient  N/A
Viscosity                N/A
Vapor Density           N/A
Saturated Vapor Conc.  N/A
Evaporation Rate        N/A
Bulk Density            N/A
Decomposition Temp.     N/A
Solvent Content         N/A
Water Content           N/A
Surface Tension         N/A
Conductivity            N/A
Miscellaneous Data      N/A
Solubility              N/A

10 - Stability and Reactivity

STABILITY
Stable. Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

11 - Toxicological Information

RTECS NUMBER: JH53800000

SIGNS AND SYMPTOMS OF EXPOSURE
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: May be harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract.
Ingestion: May be harmful if swallowed.

CHRONIC EXPOSURE - MUTAGEN

Rat
100 MG/L
Cell Type: liver
DNA damage

Rat
200 MG/KG
Oral
DNA damage

12 - Ecological Information

No data available.

13 - Disposal Considerations

SUBSTANCE DISPOSAL
Contact a licensed professional waste disposal service to dispose
of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

14 - Transport Information

RID/ADR
Non-hazardous for road transport.

IMDG
Non-hazardous for sea transport.

IATA
Non-hazardous for air transport.

15 - Regulatory Information

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES
INDICATION OF DANGER: Xi
Irritant.
R-PHRASES: 36/37/38
Irritating to eyes, respiratory system and skin.
S-PHRASES: 26-36
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

SWITZERLAND
SWISS POISON CLASS: 3

16 - Other Information

WARRANTY
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 Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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