GLYOXAL, 40%

MATERIAL SAFETY DATA SHEET

INTEGRA Chemical Company
1216 6th Ave N
Kent WA 98032
Phone: 253-479-7000
24 Hour Emergency Response: CHEMTREC 800-424-9300 (Outside USA 703-527-3887)

Product Identification

Product Name: GLYOXAL, 40%
Synonyms: 
Chemical Formula: C2H2O2
Formula Weight: 58.04
Chemical Family: Aldehyde
Integra Product Numbers: G661.50

Hazard Overview

HMIS Rating: 2-0-0-C   NFPA Rating: NE
Warning Label:
WARNING!
Harmful if swallowed, inhaled or absorbed through the skin. Use only with adequate ventilation and protective equipment. Causes irritation. Do not allow contact with skin, eyes or clothing. Wash thoroughly after handling.

Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>07732-18-5</td>
<td>60</td>
</tr>
<tr>
<td>Glyoxal</td>
<td>00107-22-0</td>
<td>40</td>
</tr>
</tbody>
</table>

Physical Data

- Boiling Point: 110 °C
- Melting Point: -15 °C
- Specific Gravity: 1.27
- Water = 1
- Evaporation Rate: 1
- Butyl Acetate = 1
- Vapor Pressure: 18 mm Hg @20°C
- Vapor Density: 0.7
- Air = 1
- Solubility: Soluble in water
- Appearance and Odor: Clear, pale-yellow liquid

Fire and Explosion Data

- Flash Point: NA
- Test Method:
- Auto-ignition Temperature: 284 °C
- Flammable Limits (% by volume in air): Upper: NA
- Lower: NA

Fire Extinguishing Media:
- Water spray, CO2, dry chemical or foam.

Special Firefighting Procedures:
- Use water to cool nearby containers and structures. Wear full protective equipment, including suitable respiratory protection.

Unusual Fire and Explosion Hazards:
- Fire conditions may liberate toxic and noxious fumes. Closed container may explode if heated to 200°C

Health Hazard Information

Effects of Overexposure

Skin Contact:
- Causes skin irritation.
Health Hazard Information

Eye Contact:
Vapors are irritating to the eyes. Liquid may cause severe irritation with stinging, tearing, redness and pain.

Ingestion:
May be harmful if swallowed.

Inhalation:
Harmful if inhaled. Irritating to the upper respiratory tract and mucous membranes.

Chronic Effects of Overexposure:
None Identified

Exposure Limits:

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>STEL</th>
<th>Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Glyoxal</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

ACGIH TLV

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>STEL</th>
<th>Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
<tr>
<td>Glyoxal</td>
<td>NE</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

Toxicity Data:

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 (oral, guinea pig)</th>
<th>LD50 (intraperitoneal, mouse)</th>
<th>LD50 (oral, rat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>760 mg/kg</td>
<td>200 mg/kg</td>
<td>1100 mg/kg</td>
</tr>
<tr>
<td>Glyoxal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Medical Conditions Generally Aggravated by Exposure:
None Identified

Target Organs:
Skin

Reproductive Effects:
None Identified

Carcinogenicity:
None Identified

<table>
<thead>
<tr>
<th>Component</th>
<th>NTP Listing</th>
<th>IARC Listing</th>
<th>OSHA Regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>No listing</td>
<td>No Listing</td>
<td></td>
</tr>
<tr>
<td>Glyoxal</td>
<td>No listing</td>
<td>No listing</td>
<td></td>
</tr>
</tbody>
</table>

Emergency First Aid Procedures

Skin Contact:
Wash with soap and water. Seek medical attention if irritation develops.

Eye Contact:
Flush with water for at least 15 minutes. Seek immediate medical attention.

Inhalation:
Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult administer oxygen. Seek medical attention.

Ingestion:
Emergency First Aid Procedures

Ingestion:
Give victim large amounts of water and induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.

Additional First aid and Treatment Notes:
No information available

Reactivity Data

Stability: Stable
Hazardous Polymerization: Will Not Occur

Incompatibles:
Incompatible with strong bases and strong oxidizers Silver, copper, iron salts

Decomposition Products:
Oxides of carbon (CO, CO2)

Conditions to Avoid:
Excessive heat. Evaporation; contamination.

Spill and Disposal Procedures

Spill and Leak Procedures:
Prevent spread of spill. Absorb with sand or inert material. Sweep or scoop into a disposal container. Flush spill area with water. Wear suitable protective equipment.

Disposal Procedures:
Dispose in accordance with all Local, State and Federal regulations.

Protective Equipment

Ventilation:
Use adequate general or local exhaust ventilation to keep fume and/or dust levels as low as possible.

Respiratory Protection:
If use generates dusts or vapors use an NIOSH approves dust/mist respirator.

Skin and Eye Protective Equipment:
Safety goggles, protective clothing and gloves. Maintain an eyewash station and safety shower nearby.

Storage and Handling Precautions

Storage Area: GENERAL
Store in a cool, dry, well-ventilated area. Store away from incompatible materials. Protect containers from physical damage.

Transportation Information

Regulated Material domestic ground transportation
(reference: CFR Title 49, Transportation)

Proper Shipping Name:
UN or NA Identification number: Hazard Class and Label:
Packing Group: Subsidiary Risk and Label:
GLYOXAL, 40%
MATERIAL SAFETY DATA SHEET

INTEGRA Chemical Company
1216 6th Ave N
Kent WA 98032
Phone: 253-479-7000

MSDS Number: G661
Revision Date: 16-Apr-08
Revision No.: 003

24 Hour Emergency Response: CHEMTREC 800-424-9300 (Outside USA 703-527-3887)

Transportation Information

☐ Regulated Material via Air Transportation

(reference: ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air)

Proper Shipping Name:
UN Identification Number: Hazard Class and Label:
Packing Group: Subsidiary Risk and Label:

Packing Instruction Max net qty per package

Passenger Aircraft:
Cargo Aircraft:

Regulatory Information

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA Inventory</th>
<th>CERCLA RQ</th>
<th>SARA EHS TPQ</th>
<th>SARA 313 Toxic Release de minimus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>☐</td>
<td>lbs</td>
<td>☐</td>
<td>lbs</td>
</tr>
<tr>
<td>Glyoxal</td>
<td>☒</td>
<td>lbs</td>
<td>☐</td>
<td>lbs</td>
</tr>
</tbody>
</table>

SARA Hazard Categories:
Water ☐ ☐ Flammability ☐ ☐
Glyoxal ☐ ☐ ☐ ☐ ☐

Clean Air Act Categories:
SOCMI ☐ HAP ☐ Volatile HAP ☐ Organic HAP ☐ Ozone Depleting ☐

MSDS Revision History:
002 - Format revisions; updated header phone number
003 - Updated Header Information

NE = Not established, NA = Not applicable or Not available

The information presented above is offered for informational purposes only. This MSDS, and the associated product, is intended for use only by technically qualified persons, and at their own discretion and risk. Since conditions and manner of use are outside the control of Integra Chemical Company, we make no warranties, either expressed or implied, and assume no liability in connection with any use of this information.

***** END OF MSDS *****