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

Product Name: Glutaraldehyde, 70%

Product Code(s): 20100 - 20150

Recommended Use: For Further Manufacturing Use. For use as tissue fixative. Not for Human or Animal Drug Use

Synonyms: ALDEHYD GLUTAROWY (POLISH) * CIDEX * 1,3-DIFORMYLPROPANE * GLUTARAL *GLUTARALDEHYD (CZECH) * GLUTARALDEHYDE (ACGIH) * GLUTARDIALDEHYDE * GLUTARIC DIALDEHYDE * NCI-C55425 * 1,5-PENTANEDIAL * 1,5-PENTANEDIONE * POTENTIATED ACID GLUTARALDEHYDE * SONACIDE *

Distributor:
Ladd Research
83 Holly Court
Williston, VT 05495

Emergency Telephone Number: Chemtrec 1-800-424-9300

Company Phone Number: 1-802-658-4961
E-mail Address: sales@laddresearch.com

2. HAZARDS IDENTIFICATION

GHS - Classification

Classification: Acute Toxicity Oral 3 Skin Corrosion/Irritation 1B Skin Sensitizer 1 Respiratory Sensitizer 1 Aquatic Hazard (acute) 1 Germ Cell Mutagenicity 1B

Signal Word: Danger

Hazard Statements: H340 - May cause genetic defects H317 - May cause an allergic skin reaction H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled H331 - Toxic if inhaled H301 - Toxic if swallowed H314 - Causes severe skin burns and eye damage H400 - Very toxic to aquatic life
Precautionary Statements

- P310 - Immediately call a POISON CENTRE or doctor/physician
- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P302+ P352 - IF ON SKIN: Wash with plenty of soap and water
- P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No.</th>
<th>REACH Reg. No.</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>-</td>
<td>Not available</td>
<td>111-30-8</td>
<td>68-72</td>
<td>T;R23/25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C;R34</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R42/43</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N;R50</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact  
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician

Skin Contact  
Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes

Inhalation  
Move to fresh air. If breathing becomes difficult, give oxygen

Ingestion  
Clean mouth with water and afterwards drink plenty of water

Notes to Physician  
Treat symptomatically

5. FIRE-FIGHTING MEASURES

- Not flammable
- Not determined
- Dry chemical, CO2, water spray or regular foam
- Carbon oxides
- Not sensitive
- Not sensitive

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  
Avoid contact with skin, eyes and clothing. Use personal protective equipment. Ensure adequate ventilation
Methods for Containment  Prevent further leakage or spillage if safe to do so

Methods for Cleaning Up  Cover with dry lime or soda ash. Pick up and transfer to properly labeled containers. Ventilate area and wash spill site after material pickup is complete.

7. HANDLING AND STORAGE

Handling  Handle in accordance with good industrial hygiene and safety practice. Container may be opened only under exhaust ventilation hood.

Storage  Keep containers tightly closed in a dry, cool and well-ventilated place


8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>(vacated) Ceiling: 0.2 ppm</td>
<td>(vacated) Ceiling: 0.8 mg/m³</td>
<td>Ceiling: 0.2 ppm</td>
</tr>
<tr>
<td>111-30-8</td>
<td></td>
<td></td>
<td>Ceiling: 0.8 mg/m³</td>
</tr>
</tbody>
</table>

Engineering Measures  Showers  Eyewash stations  Ventilation systems

Personal Protective Equipment

Eye/Face Protection  Tightly fitting safety goggles

Skin and Body Protection  Wear protective gloves/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

Hygiene Measures  Handle in accordance with good industrial hygiene and safety practice
9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance | Clear to slightly Yellowish
Odor | Pungent
Odor Threshold | No information available
Decomposition Temperature °C | No information available
Freezing Point | No information available
Initial Boiling Point | No information available
Physical State | Liquid
pH | No data available
Flash Point | Not determined
Autoignition Temperature | No data available
Boiling Point/Range | No data available
Melting Point/Range | No data available
Flammability Limits in Air | Upper No data available  Lower No data available
Explosive Properties | No information available
Oxidizing Properties | No information available
Evaporation Rate | No data available
MMHG @ 37.8 C | No data available
Vapor Density | No data available
Specific Gravity | 1.129
Density | 1.1
Solubility | No information available
Partition Coefficient (n-octanol/water) | No data available
Viscosity | No information available

10. STABILITY AND REACTIVITY

Stability | Stable under recommended storage conditions
Conditions to Avoid | Avoid initiators, accelerators, heat, pressure and contamination.
Hazardous Decomposition Products | Carbon oxides.
Hazardous Polymerization | Hazardous polymerization may occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity


<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>66 mg/kg (Rat)</td>
<td>560 µL/kg (Rabbit)</td>
<td>2000 mg/kg (Rat)</td>
</tr>
</tbody>
</table>

Chronic Toxicity

Chronic Toxicity | Suspected mutagen.
Target Organ Effects

Central nervous system (CNS), Heart.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Harmful to aquatic organisms.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Microtox</th>
<th>Daphnia Magna (Water Flea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>EC50 = 0.61 mg/L 72 h</td>
<td>LC50 = 13 mg/L Lepomis macrochirus 96 h</td>
<td>EC50 = 13.3 mg/L 17 h</td>
<td>EC50 = 14 mg/L 48 h</td>
</tr>
<tr>
<td></td>
<td>EC50 = 0.84 mg/L 96 h</td>
<td></td>
<td>EC50 = 76.0 mg/L 5 min</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>= 0.22 25 °C OECD Guideline 107</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method
Dispose of material in accordance with all federal, state, and local regulations.

Contaminated Packaging
Dispose of in accordance with all federal, state and local regulations

14. TRANSPORT INFORMATION

IATA

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3265</td>
<td>CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (GLUTARALDEHYDE)</td>
<td>8</td>
<td>II</td>
</tr>
</tbody>
</table>

DOT

<table>
<thead>
<tr>
<th>UN-No</th>
<th>Proper Shipping Name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3265</td>
<td>CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (GLUTARALDEHYDE)</td>
<td>8</td>
<td>II</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

REACH Title VII Restrictions
No information available.
### Dangerous Substances

#### Glutaraldehyde

- **Weight %**: >=0.1 %
- **Organic Solvents**: Not applicable
- **Harmful Substances Whose Names Are to be Indicated on the Label**: Not applicable
- **Pollution Release and Transfer Registry (Class II)**: Not applicable
- **Pollution Release and Transfer Registry (Class I)**: 66
- **Poison and Deleterious Substances Control Law**: Not applicable

#### Component

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ISHA - Harmful Substances Prohibited for Manufacturing, Importing, Transferring, or Supplying</th>
<th>ISHA - Harmful Substances Requiring Permission</th>
<th>Toxic Chemical Classification Listing (TCCL) - Toxic Chemicals</th>
<th>Toxic Release Inventory (TRI) - Group I</th>
<th>Toxic Release Inventory (TRI) - Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde 111-30-8 (45-55)</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>97-1-5, 25 % or more in mixtures</td>
<td>Not applicable</td>
<td>&gt;= 1.0 %</td>
</tr>
</tbody>
</table>

### International Inventories

- **TSCA**: Complies
- **EINECS/ELINCS**: Complies
- **ENCS**: Complies
- **IECSC**: Complies
- **KECL**: Complies
- **PICCS**: Complies
- **AICS**: Complies

### U.S. Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or 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**: Yes
- **Chronic Health Hazard**: Yes
- **Fire Hazard**: No
- **Sudden Release of Pressure Hazard**: No
- **Reactive Hazard**: No

### 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)

### Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>HAPS data</th>
<th>VOC Chemicals</th>
<th>Class 1 Ozone Depleters</th>
<th>Class 2 Ozone Depleters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>111-30-8</td>
<td>68-72</td>
<td></td>
<td></td>
<td>Group IV</td>
<td></td>
</tr>
</tbody>
</table>
CERCLA

U.S. State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

International Regulations

Mexico - Grade

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogen Status</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td></td>
<td>Mexico: Ceiling= 0.7 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mexico: Ceiling= 0.2 ppm</td>
</tr>
</tbody>
</table>

Canada

WHMIS Hazard Class
D1B  Toxic materials
D2A  Very toxic materials
D2B  Toxic materials
E    Corrosive material

16. OTHER INFORMATION

Revision Date  3-23-2018

Recommended Restrictions  No information available
Disclaimer
The information presented is believed to be correct and is the most accurate information available to us at this time. However, Ladd Research makes no warranty, express or implied, and assumes no liability for this information and the product described herein.