1. Product and Company Identification

Material name: CIDEX Activated Dialdehyde Solution
Issue date: 9/14/12
Change Order #: 1005190
CAS #: Mixture
Revision #: F
MSDS Number: 006
Synonym(s): CIDEX Solution
Manufacturer/Supplier: Advanced Sterilization Products
33 Technology Drive, Irvine CA 92618
Telephone number: 1-800-755-5900

2. Hazards Identification

Physical state: Liquid.
Appearance: Unactivated, colorless liquid; Activated, green liquid.
Emergency overview: WARNING

OSHA regulatory status: This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects:
- Routes of exposure: Inhalation, Ingestion, Skin contact, Eye contact.
- Eyes: Risk of serious damage to eyes.
- Skin: May cause skin irritation. May cause allergic skin reaction.
- Inhalation: Vapor may cause irritation of the upper respiratory tract (nose and throat) and lungs. May cause asthma-like symptoms in sensitive individuals.
- Ingestion: Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract. Ingestion of this product may cause nausea, vomiting and diarrhea.

Target organs: Eye Skin
Chronic effects: Not known.

Signs and symptoms: Sensitization. Irritation of eyes and mucous membranes. Skin irritation. Upper respiratory tract irritation.

Potential environmental effects: The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde</td>
<td>111-30-8</td>
<td>2.55</td>
</tr>
</tbody>
</table>

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures:
- Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.
- Skin contact: Wash skin thoroughly with soap and water. Get medical attention if irritation develops and persists.
- Inhalation: Remove victim to fresh air. If breathing is difficult, give oxygen. Get medical attention.
Ingestion

Immediately rinse mouth and drink plenty of water. Keep person under observation. Do not induce vomiting. If vomiting occurs, keep head low. If person becomes uncomfortable seek medical advice.

Notes to physician

If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately.

General advice

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties

Fire or high temperatures create:

Extinguishing media

Suitable extinguishing media

Extinguish with water spray, carbon dioxide, dry chemical or material appropriate for the surrounding fire.

Unsuitable extinguishing media

None.

Protection of firefighters

Protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Move containers from fire area if you can do it without risk.

Hazardous combustion products

Carbon oxides.

6. Accidental Release Measures

Personal precautions

Avoid inhalation and contact with skin and eyes. Use personal protection as recommended in Section 8 of the MSDS.

Environmental precautions

Avoid discharge into storm drains, water courses or onto the ground.

Methods for containment

Stop leak if you can do so without risk.

Methods for cleaning up

Contain spill by placing suitable absorbent material around the edges of the spill and work inward. Carefully scoop up into waste container for disposal. For each estimated gallon of spill disperse about 228g of sodium bisulfite powder (CAS 7631-90-5) or 25g of glycine (56-40-6) on spill. Thoroughly blend into CIDEX Solution. Allow 5 minutes for neutralization. Dispose of in accordance with applicable Federal, State and Local Regulations. Following product recovery, flush area with water.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Provide adequate ventilation. Avoid inhalation of vapors/spray and contact with skin and eyes. Use in well-ventilated area and use with appropriate exhaust ventilation, for example a minimum of 10 air exchanges per hour or as defined by state and local regulations. Use appropriate Personal Protective Equipment. Wash thoroughly after handling. Observe good industrial hygiene practices.

Storage

Store in closed original container at temperatures at 15 - 30°C (59 - 86°F). Store away from incompatible materials.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.05 ppm</td>
</tr>
</tbody>
</table>

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.2 mg/m3 0.05 ppm</td>
</tr>
</tbody>
</table>

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.05 ppm</td>
</tr>
</tbody>
</table>
Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.05 ppm</td>
</tr>
</tbody>
</table>

Canada. Quebec OELS. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.41 mg/m3</td>
</tr>
</tbody>
</table>

Mexico. Occupational Exposure Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>Ceiling</td>
<td>0.7 mg/m3</td>
</tr>
</tbody>
</table>

Exposure guidelines

Use personal protective equipment as required. Keep working clothes separately.

Engineering controls

Provide adequate ventilation and minimize the risk of inhalation of vapors and mists. Use in well-ventilated area and use with appropriate exhaust ventilation, for example a minimum of 10 air exchanges per hour or as defined by state and local regulations.

Personal protective equipment

- **Eye / face protection**
  Wear safety glasses with side shields.
- **Skin protection**
  Wear chemical-resistant, impervious gloves. Suitable gloves can be recommended by the glove supplier. Wear suitable protective clothing.
- **Respiratory protection**
  In case of risk of inhalation of vapour/aerosols: Use high efficiency particulate respirator with appropriate filter.
- **General hygiene considerations**
  Wash thoroughly after handling. Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

**Appearance**
Unactivated, colorless liquid; Activated, green liquid.

**Color**
Unactivated, colorless; Activated, green.

**Odor**
Characteristic aldehyde.

**Odor threshold**
Not available.

**Physical state**
Liquid.

**Form**
Liquid.

**pH**
3 - 4.6 (unactivated)
8.2 - 9.2 (activated)

**Melting point**
Not available.

**Freezing point**
Not available.

**Boiling point**
Not available.

**Flash point**
Not available.

**Evaporation rate**
1

**Flammability limits in air, upper, % by volume**
Not available.

**Flammability limits in air, lower, % by volume**
Not available.

**Vapor pressure**
0.0012 mmHg (68°F/20°C)

**Vapor density**
1.1

**Specific gravity**
1.003

**Solubility (water)**
Completely Soluble.

**Partition coefficient (n-octanol/water)**
Not available.

**Auto-ignition temperature**
212 °F (100 °C)

**Decomposition temperature**
Not available.

10. Chemical Stability & Reactivity Information

**Chemical stability**
Stable under normal temperature conditions.

**Conditions to avoid**
Extremes of temperature, direct sunlight and prolonged heating at temperature above 40°C.
Incompatible materials
Strong oxidizers, strong acids, and strong bases.

Hazardous decomposition products
Carbon oxides.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

11. Toxicological Information

<table>
<thead>
<tr>
<th>Toxicological data</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td></td>
</tr>
<tr>
<td>CIDEX Activated Dialdehyde Solution (Mixture)</td>
<td>Acute Dermal LD50 Rabbit: &gt; 2000 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Acute Oral LD50 Rat: 4250 mg/kg</td>
</tr>
</tbody>
</table>

Acute effects
Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Local effects
Causes skin and eye irritation. May cause irritation of respiratory tract.

Sensitization
May cause allergic skin reaction.

ACGIH Sensitizer
Glutaraldehyde (CAS 111-30-8) Sensitiser.

Chronic effects
Not known.

Carcinogenicity
Not classified.

ACGIH Carcinogens
Glutaraldehyde (CAS 111-30-8) A4 Not classifiable as a human carcinogen.

Mutagenicity
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Reproductive effects
Not classified.

Symptoms and target organs
Sensitizing. Skin irritation. Irritation of eyes and mucous membranes. Upper respiratory tract irritation.

Further information
No other specific acute or chronic health impact noted.

12. Ecological Information

Ecotoxicity
Not expected to be harmful to aquatic organisms.

Environmental effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability
No data is available on the degradability of this product.

Bioaccumulation / Accumulation
No data available.

Partition coefficient (n-octanol/water)
Not available.

Mobility in environmental media
The product is soluble in water.

13. Disposal Considerations

Disposal instructions
Any disposal practice must be in compliance with local, state and federal laws and regulations (contact local or state environment agency for specific rules). Do not dump in sewers, any body of water or on the ground.

14. Transport Information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

TDG
Not regulated as dangerous goods.
15. Regulatory Information

US federal regulations

This product is hazardous according to OSHA 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)

No

Section 311/312 (40 CFR 370)

No

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)

Not controlled

WHMIS status

Controlled

WHMIS classification
D1B - Immediate/Serious-TOXIC
D2B - Other Toxic Effects-TOXIC
E - Corrosive

WHMIS labeling

Inventory status

Country(s) or region | Inventory name | On inventory (yes/no)*
--- | --- | ---
Australia | Australian Inventory of Chemical Substances (AICS) | Yes
Canada | Domestic Substances List (DSL) | Yes
Canada | Non-Domestic Substances List (NDSL) | No
China | Inventory of Existing Chemical Substances in China (IECSC) | Yes
Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes
Europe | European List of Notified Chemical Substances (ELINCS) | No
Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes
Korea | Existing Chemicals List (ECL) | Yes
New Zealand | New Zealand Inventory | Yes
Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes
United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes

* A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

US - California Hazardous Substances (Director's): Listed substance
Glutaraldehyde (CAS 111-30-8) Listed.

US - Massachusetts RTK - Substance: Listed substance
Glutaraldehyde (CAS 111-30-8) Listed.

US - New Jersey RTK - Substances: Listed substance
Glutaraldehyde (CAS 111-30-8) Listed.

US - Pennsylvania RTK - Hazardous Substances: Listed substance
Glutaraldehyde (CAS 111-30-8) Listed.
16. Other Information

HMIS® ratings
Health: 2  
Flammability: 0  
Physical hazard: 0  

NFPA ratings
Health: 2  
Flammability: 0  
Instability: 0  

Disclaimer
The information in the sheet was written based on the best knowledge and experience currently available.