Section 1: Product and Company Identification
Product Name: Glutaraldehyde 8%
Synonym: Glutaral, Glutaric Dialdehyde.
Company Name
Ted Pella, Inc. and PELCO International, P.O. Box 492477, Redding, CA 96049-2477
Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.

Section 2: Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Principle Hazardous Component(s) (chemical and common name(s)) (Cas. No)</th>
<th>%</th>
<th>OSHA PEL mg/m3</th>
<th>ACGIH TLV mg/m3</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glutaraldehyde (111-30-8)</td>
<td>8</td>
<td>0.8</td>
<td>0.2</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Water (7732-18-5)</td>
<td>&lt;92.5</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>0.5</td>
<td>260</td>
<td>262</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

Section 3: Hazard Identification
Emergency Overview
Appearance: Transparent colorless liquid with a sharp, fruity, medicinal odor.
Immediate effects: Vapor is irritating to the respiratory tract, causing stinging sensations in the nose and throat, discharge from the nose, possible bleeding from the nose, coughing, chest discomfort and tightness, difficulty with breathing, and headache. Heating the solution may result in more severe irritant effects. Eye contact will cause a severe and persistent conjunctivitis, seen as excess redness and marked swelling of the conjunctiva and profuse discharge. Severe corneal injury may develop, which could permanently impair vision if prompt first-aid and medical treatment are not obtained. Vapor will cause stinging sensations in the eye with excess tear production, blinking and possibly a slight excess redness of the conjunctiva. Brief skin contact will cause itching with mild to moderate local redness and possibly swelling. Prolonged contact may result in pain, severe redness and swelling, with ulceration, tissue destruction, and possibly bleeding into the inflamed areas. Contact with solutions of glutaraldehyde may cause harmless yellow or brownish coloration of the skin.

Primary Routes of entry: Inhalation, eye contact, skin contact, ingestion.
Signs and Symptoms of Overexposure:
Eyes: Severe and persistent conjunctivitis, seen as excess redness and marked swelling of the conjunctiva and profuse discharge. Severe corneal injury may develop, which could permanently impair vision.
Skin: Repeated skin contact may cause a cumulative dermatitis. May cause skin sensitization in a small portion of individuals and present as an allergic contact dermatitis. This usually results from contact with the liquid, but occasionally there may be a reaction to glutaraldehyde vapor.
Ingestion: Glutaraldehyde is moderately toxic on ingestion. May cause moderate to marked irritation and possibly chemical burns of the mouth, throat, esophagus, and stomach. There will be discomfort or pain in the chest and abdomen, nausea, vomiting, diarrhea, dizziness, faintness, drowsiness, thirst, weakness, circulatory shock, collapse and coma. Aspiration into the lungs may occur during ingestion or vomiting, resulting in lung injury.

Potential health effects

http://www.tedpella.com/msds_html/18420msd.htm
**Section 4: First Aid Measures**

*If accidental overexposure is suspected*

**Eye(s) Contact:** Immediately flush eyes with water and continue washing for at least 15 minutes. DO NOT remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist.

**Skin Contact:** Immediately remove contaminated clothing and shoes. Wash contaminated skin with soap and water. Obtain medical attention. Wash clothing before reuse. Discard contaminated leather articles such as shoes and belt.

**Inhalation:** Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen may be given by qualified personnel. Obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING. Do not give anything to drink. Obtain medical attention without delay.

**Note to physician**

Treatment: The hazards of the material are due mainly to its severely irritant properties on skin and mucosal surfaces. Moderately toxic by swallowing. Moderately toxic by absorption across the skin. Due to the severely irritating or corrosive nature of the material, swallowing may lead to ulceration and inflammation of the upper alimentary tract with hemorrhage and fluid loss. Also, perforation of the esophagus or stomach may occur, leading to mediastinitis or peritonitis and the resultant complications. Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g., gastric lavage after endotracheal intubation).

Medical Conditions generally Aggravated by Exposure: Skin contact may aggravate an existing dermatitis. Inhalation of material may aggravate asthma and inflammatory of fibrotic pulmonary disease.

**Section 5: Fire Fighting Measures**

**Flash Point:** None (Tag Closed Cup ASTM D 56 and Tag Closed Cup ASTM D 1310)

**Flammable Limits:** LEL: ND, UEL: ND

**Auto-ignition point:** NA

**Fire Extinguishing Media:** Non-Flammable (Aqueous Solution): After the water evaporates, the remaining material will burn. Use alcohol-type or all-purpose-type foam applied by manufacturer's recommended technique for large fires. Use CO₂ or dry chemical media for small fires.

**Special Fire Fighting Procedures:** Use self-contained breathing apparatus and protective clothing.

**Unusual Fire and Explosion Hazards:** NE

**Hazardous combustion products:** Carbon monoxide and/or carbon dioxide.

**DOT Class:** ND

**Section 6: Accidental Release Measures**

Steps to be Taken in Case Material is Released or Spilled: Wear suitable protective equipment. Toxic to fish; avoid discharge to natural waters. Very low concentrations (10ppm or less) can be degraded in a biological treatment system. Thus, small spills can be flushed with large quantities of water. Large quantities or 'slugs' can be harmful to the treatment system. Thus large spills should be collected for disposal. It may also be possible to decontaminate spilled material by careful application of aqueous sodium hydroxide or ammonium phosphate solution. Depending on conditions, considerable heat and fumes can be liberated by the decontamination reaction.

**Waste Disposal Methods:** Dispose of waste according to Federal, State and Local Regulations.

**Section 7: Handling and Storage**

Precautions to be Taken in Handling and Storage: Danger! Corrosive. Causes irreversible eye damage. Causes skin burns. May be fatal if swallowed. Prolonged or frequently repeated skin contact may cause allergic reaction in some individuals. Plastic container, if present, may cause static ignition hazard. Do not get in eyes, on skin, or on clothing. Avoid breathing vapor. Do not swallow. Keep container closed. Do not handle or empty in presence of flammable vapor. Use with adequate ventilation. Wear goggles, protective clothing and gloves. Wash exposed
Section 8: Exposure Controls / Personal Protection

Engineering Controls
Ventilation required: General (mechanical) room ventilation is expected to be satisfactory if this material is kept in covered equipment or if the solution is highly diluted. However, if vapors are strong enough to be irritating to the nose (or eyes), the TLV is probably being exceeded and special ventilation may be required.

Personal Protection Equipment
Respiratory protection: Use air-supplied mask in high concentrations. If self-contained breathing apparatus is not available, a MSHA/NIOSH approved air-purifying respirator equipped with an organic vapor cartridge should be used.
Protective gloves: Rubber, polyethylene, butyl or nitrile (NBR).
Skin protection: Protective clothing.
Eye protection: Mono-goggles or face shield.
Additional clothing and/or equipment: Eye bath, safety, rubber overshoes, chemical apron

Exposure Guidelines
See Composition/Information on Ingredients (Section2)

Section 9 Physical and Chemical Properties
Appearance and Physical State: Transparent colorless liquid.
Odor (threshold): Sharp, fruity, medicinal.
Specific Gravity (H₂O=1): 1.129 @ 20°C
Vapor Pressure (mm Hg): 0.20 @ 20°C
Vapor Density (air=1): 1.1
Percent Volatile by volume: ND
Evaporation Rate (butyl acetate=1): 1.0
Boiling Point: ~100.5°C
Freezing point / melting point: ~-21°C
pH: NA
Solubility in Water: 100% @ 20°C
Molecular Weight: 100.11 g/mol

Section 10: Stability and Reactivity
Stability: Stable.
Conditions to Avoid: High temperature and evaporation of water.
Materials to Avoid (Incompatibility): Strong alkalis and acids catalyze an aldol-type condensation (exothermic, but not expected to be violent.)
Hazardous Decomposition Products: ND
Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information
Results of component toxicity test performed:
Peroral: rat LD50 female 154 (116-206) mg/kg.
Major signs: sluggishness, lacrimation, diarrhea, piloerecion, perinasal encrustation.
Gross pathology: lungs, stomach, intestines discolored.

Peroral: rat LD50 male 246 (179-339) mg/kg.
Major signs: sluggishness, lacrimation, diarrhea, piloerecion, perinasal encrustation.
Gross pathology: lungs, stomach, intestines discolored.

Percutaneous: rabbit LD50 24 hr occluded 2.45 (1.46-4.41) ml/kg.
Major signs: necrosis at application site.
Gross pathology: lungs, liver, spleen, kidneys discolored.

Inhalation: dynamic generation of vapor.
Exposure time: 4h 163-ppm rat female.
Room temperature.
Kill rate: 0/5.
Major signs: blepharospasm, periocular wetness, and audible respiration.
Gross pathology: none.

Inhalation: static generation of substantially saturated vapor.
Exposure time: 4h, rat female.
20°C
Kill rate: 0/5.
Major signs: blepharospasm.
Gross pathology: None.

Inhalation: dynamic generation of vapor.
Exposure time: 4h, 16.3 ppm, rat male.
Room temperature.
Kill rate: 0/5.
Major signs: blepharospasm, periocular wetness, audible respiration.
Gross pathology: None.

Inhalation: static generation of substantially saturated vapor.
Exposure time: 4h, rat male.
20°C
Kill rate: 0/5.
Major signs: blepharospasm.
Gross pathology: None.

Inhalation: Aerosol.
Exposure time: 4h.
LC50 0.48 (0.41-0.59) ml/l.
Major signs: heavy or irregular breathing, nasal discharge, gasping, nasal encrustation.
Gross pathology: lungs discolored.

Skin irritation: rabbit, 4 hr covered
2/6 with necrosis.

Skin irritation: rabbit, 1 hr occluded
Minor to severe erythema and edema with necrosis, scabbing, desquamation and alopecia.

Skin irritation: rabbit, 3 min occluded
Minor erythema

Eye irritation: rabbit, 0.005 ml
Severe corneal injury, iritis, swelling and necrosis of eyelid.

Eye irritation: rabbit, 0.5 ml, 5% solution in water.
Severe corneal injury, iritis, swelling and necrosis of eyelid.

Eye irritation: rabbit, 0.5 ml, 1% solution in water.
Trace corneal injury.

Guinea Pig Maximization Test: intradermal injection of a 0.1% glutaraldehyde solution and topical administration of a 5% solution. Evidence of delayed contact hypersensitivity in 68% of test animals upon challenge.

Subchronic drinking water studies in rats, mice and dogs using glutaraldehyde concentrations up to 1000 ppm

http://www.tedpella.com/msds_html/18420msd.htm
showed no evidence for any target organ toxicity. In vitro studies for genotoxicity using a variety of assays have given results varying from no activity, through equivocal, to weakly positive; however, in all vivo studies for genotoxicity have been uniformly negative. Several developmental toxicity studies have demonstrated that at maternally nontoxic doses, glutaraldehyde does not produce fetotoxic, embryotoxic or teratogenic effects.

In chronic (2 year) continuous drinking water combined chronic toxicity-oncogenicity study using Fischer 344 rats, there was no evidence for non-oncogenic target organ toxicity. The only possible oncogenicity-related finding was an increase in the incidence of large granular cell lymphocytic leukemia in female, but nor male, rats. The pattern of the response suggests that it does not represent direct chemical carcinogenic activity but, rather, a modifying influence on the expression of this spontaneous and commonly occurring neoplasm in the Fischer 344 rat.

Human experience: Studies in humans have shown that glutaraldehyde is neither phototoxic nor a photosensitizer. An extensive clinical survey has been conducted on nursing staff in 59 endoscopy units (340 currently employed workers and 18 former employees); investigational procedures included detailed questionnaire, sensitization to common allergens, blood for IgE measurements, lung function tests, peak flow diaries, and measurement of workplace glutaraldehyde vapor concentrations. About two-thirds of current employees had ocular, nasal, or lower respiratory tract symptoms, but these were more prevalent for non-work conditions. The only effect correlated with glutaraldehyde exposure was nasal irritation. There was a slight, but no statistically or biologically significant, decrease in FEV1 for those with lower respiratory track symptoms. There were no indications of asthma and no objective evidence for respiratory sensitization.

This product does not contain any compounds listed by NTP or IARC or regulated by OSHA as a carcinogen.

Section 12: Ecological Information
Ecological Information: Ecotoxicity to microorganisms: Bacterial/NA LC50 16 h 50 mg/l. Ecotoxicity to aquatic invertebrates: Daphnia LC50 48 h 11.5 mg/l. Confidence limits: 9.4 - 14.2 mg/l. Ecotoxicity to fish: Blue gill LC50 96 h 22 mg/l. THOD (measured) 1.00. Chemical Fate Information: BOD (% oxygen consumption) @ day 5 = 32%, @ day 10 = 68%, between day 15 and 20 = 86%.

Section 13 Disposal Considerations
RCRA 40 CFR 261 Classification:
Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

Section 14: Transportation Information
NA

Section 15: Regulatory Information
United States Federal Regulations
MSDS complies with OSHA’s Hazard Communication Rule 29, CFR 1910.1200. SARA: No SARA Title III: This product does not contain toxic chemicals at levels that could require reporting under the statute. Delay hazard: yes. Fire hazard: no. Immediate health hazard: yes. Reactive hazard: no. Sudden release of pressure hazard: no. RCRA: ND TSCA: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements. CERCLA: None State Regulations California Proposition 65: the product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute. International Regulations Canada WHMIS: ND Europe EINECS Numbers: ND

Section 16: Other Information
Label Information: ND
European Risk and Safety Phrases: ND
European symbols needed: ND
Canadian WHMIS Symbols: ND
Hazard Rating: Health: 3; Fire: 0; Reactivity: 1
(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)
Abbreviations used in this document
NE= Not established
NA= Not applicable
NIF= No Information Found
ND= No Data

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