Texas Technology

SECTION 1 - Identification of Product and Supplier Information

Manufacturer's Name: Texas Technology Associates, Inc.
Manufacturer's Mailing Address: PO Box 34059, Houston, Texas  77234-4059
Shipper's Name: Texas Technology Associates, Inc.
Shipper's Address: 1410 Preston Avenue, Suite A, Pasadena, Texas 77503-2554
Mailing: PO Box 34059, Houston, Texas  77234-4059

Information Telephone Number: 281-486-9863
Emergency Telephone Number: 281-486-9863

Chemical Name and Synonyms: peracetic acid, peroxyacetic acid, ethaneperoxic acid, acetylhydroperoxide
Chemical Family: Organic peroxide
Molecular Formula: C₂H₄O₃
Date MSDS Prepared or Revised: June 15, 2009

SECTION 2 - Composition and Ingredients Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>Wt.%</th>
<th>EC No.</th>
<th>EC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peracetic Acid</td>
<td>79-21-0</td>
<td>20-35</td>
<td>201-186-8</td>
<td>O, C, R20/21/22, 35; Xi, R36/37/38; N, R50; R7</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td>64-19-7</td>
<td>&lt;3</td>
<td>200-580-7</td>
<td>C, R34/35; Xi, R36/38</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>7722-84-1</td>
<td>&lt;1</td>
<td>231-765-0</td>
<td>O, Xi, R36/38</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Balance</td>
<td>231-791-2</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

SECTION 3 - Hazards Identification

Emergency overview:
Aqueous peracetic acid is a clear liquid having a pungent odor similar to that of acetic acid. It is highly corrosive to all body parts and may be fatal if swallowed or inhaled. Exposure requires special first aid and timely medical follow-up. Not flammable, but powerful oxidizing agent that assists combustion and decomposes in the presence of metals and alkalis and/or excessive heat leading to the buildup of pressure in un-vented containers and the risk of explosion.

Potential health effects:
- Poison by ingestion.
- Corrosive to skin and can cause serious eye damage.
- Severely irritating to respiratory tract, potentially lethal.

(For more information on health effects refer to Section No. 11–Toxicological Information).
SECTION 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes (keep eyelids apart and remove contacts if easily accomplished). Seek medical aid immediately.

Skin: Immediately flush skin with running water for at least 15 minutes while removing contaminated clothing and shoes. Wash thoroughly with soap and water. Flush contaminated clothing and shoes with water. Seek immediate medical aid immediately.

Ingestion: Flush mouth with water. Get immediate medical aid. If conscious give several glasses of water or milk. Never give fluids if the victim is unconscious or having convulsions. Do not induce vomiting. Seek medical aid immediately.

Inhalation: Remove from exposure to fresh air immediately. Keep victim warm and quiet. If not breathing, give artificial respiration. Seek medical attention.

SECTION 5 - Fire Fighting Measures

Fire/explosion hazard: Combustible – oxidizer – decomposition releases oxygen that can initiate or promote combustion and cause pressure buildup in containers and confined spaces.

Flash point: Approximately 70 deg C (Closed Cup)

Flammable limits: Not available

Fire fighting procedures: Use large amounts of water only to extinguish a fire.
Do not use powder or CO2 type extinguishers; these are not effective.
Use water spray to keep fire-exposed containers cool. Fight fire from protected location or maximum distance. Use proper personal protective equipment and positive pressure self-contained breathing apparatus.

SECTION 6 - Accidental Release Measures

Personal precautions: Emergency personnel must use full personal protective equipment (see Section 8) to prevent exposure. Remove all sources of ignition. Approach release from upwind.

Environmental precautions: If possible, shut off the leak. Prevent liquid entering sewers without dilution.

Methods of cleaning up: Contain the spill with sand or similar non-combustible material. Remove all inappropriate materials (certain metals and organic materials). Dilute with large amount of water. Do not return product to container or tank due to the risk of decomposition.

SECTION 7 - Handling and Storage

Safe handling suggestions:
- Handle product with care and avoid any contamination (set up safety procedures)
- Do not return product to container or tank due to the risk of contamination and decomposition.
- Avoid contact with eyes, skin and breathing of vapors.
- Do not confine product in unvented vessel or between closed valves.
- Use adequate venting devices on all packagings, containers and tanks.
- Do not use valves and pumps needing lubricants.
Precautions for safe handling:
- During handling, wear personal protective equipment.
- Drain and clean pipes and facilities before any maintenance.
- Operate in a well-ventilated area.
- Maintain eye wash and safety shower facilities.

Storage: Technical measures
- Storage areas should be built with non-combustible materials and the floors should be impermeable and raised so that if an accidental leak occurs, peracetic acid will flow to a safe area or be retained.
- Use vessels and equipment approved for peracetic acid.
- Use adequate venting devices on all packaging, containers and tanks.
- Do not confine product in unvented vessel or between closed valves.
- Containers should be checked regularly by visual observation for any signs of abnormality (e.g. bulging or temperature increase).
- Containers must only be used for peracetic acid.
- Regularly verify the availability of water to deal with emergencies.
- Comply with instructions regarding sizes of packagings at different temperatures.

Storage conditions:
- Store in a cool (<5 deg C) and vented tank or in cooled, dark, clean and well-ventilated area.
- Keep away from incompatible and combustible materials.

Incompatible materials:
- Peracetic acid should be stored separated from organic and alkaline substances, chlorides and metals.

SECTION 8 - Exposure Controls / Personal Protection

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Peroxide</td>
<td>1 ppm (TWA)</td>
<td>1 ppm (PEL)</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td>15 ppm (STEL)</td>
<td>10 ppm PEL</td>
</tr>
<tr>
<td>Peracetic Acid</td>
<td>N.A.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Personal protective equipment:
- Work suit, boots and gloves made of neoprene or nitrile rubber.
- Chemical goggles and face shield by open handling.
- Gas mask with filter A or B. Breathing apparatus if necessary.

Precaution measures:
- Eye wash and safety shower must be available.
- Contaminated clothes and equipment must be washed thoroughly with water without delay.
- Do not wear leather shoes or cotton clothes due to fire risk.

SECTION 9 - Physical and Chemical Characteristics

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>76.0 (peracetic acid)</td>
</tr>
<tr>
<td>Formula</td>
<td>CH₃CO00H (peracetic acid)</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent odor similar to acetic acid</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid solution</td>
</tr>
</tbody>
</table>
**SECTION 10 - Stability and Reactivity**

Commercial solutions of aqueous peracetic acid produced on-site where they are consumed are usually stable for at least 24-48 hours, particularly when stored under refrigerated conditions (5 deg C or below). There are two generally recognized mechanisms of aqueous peracetic acid decomposition: 1) In the presence of metals, alkalis and other contaminants (see below) peracetic acid decomposes to acetic acid and oxygen with the evolution of considerable heat (see below) and buildup of potentially dangerous levels of pressure in un-vented containers. In the absence of contaminants, this decomposition reaction proceeds very slowly; 2) Aqueous peracetic acid also decomposes via the reverse reaction (where peracetic acid is produced from acetic acid and hydrogen peroxide using a mineral acid catalyst). In the absence of catalyst, this reverse reaction, which is actually slightly endothermic (absorbs a small amount of heat), proceeds very slowly. Refrigerated storage is recommended to minimize the decomposition of peracetic acid.

**Hazardous Decomposition or By-products:** Peracetic acid decomposes exothermically (91.6 kJ/mole is evolved), particularly at temperatures >55 deg C, forming acetic acid and oxygen upon decomposition.

**Hazardous Polymerization:** Will not occur.

**Conditions to Avoid:** Open flames, elevated temperatures and other sources of heat.

**Incompatibility (materials to avoid):**
- Heavy metals, transitions metals and their salts cause catalytic decomposition.
- Concentrated acids or alkali, reducing agents, dirt, ash and rust may cause spontaneous decomposition.
- Contact with organic material, for example wood, paper and textiles may cause fire.
- Peracetic acid reacts violently with chlorides forming chlorine gas.

**SECTION 11 - Toxicological Information**

**Acute toxicity:**
- **Ingestion:** LD50(rat) = 1,175 mg/Kg PAA solution (2% PAA, 7%H2O2, 19% HOAc)
- **Inhalation:** LC50(rat) = 590 mg/m^3 PAA solution (15% PAA, 15% H2O2, 25% HOAc)
- **Skin contact:** LD50(rat) = 12,000 mg/Kg PAA solution (2% PAA, 7% H202, 19% HOAc)

**Local effects:**
- **Inhalation:** Severely irritating to respiratory tract and may cause inflammation and pulmonary edema. Symptoms are cough, dizziness or sore throat. Higher concentration may have lethal effect.
- **Ingestion:** Ingestion causes burning necrosis of the mucous membranes of mouth, esophagus and stomach. Rapid liberation of oxygen may cause gastric distension and bleeding may lead to severe damage to the stomach. Risk of fatal damage if ingestion is substantial and medical treatment is delayed.
- **Skin contact:** Short contact with the skin causes general burning with discoloration of affected area and erythema, blistering and necrosis may occur. Corrosive to skin (rabbit).
Eye contact: Contact with eyes may produce corneal injury and irreversible damage. Severely irritating to the eye (rabbit).

**Specific effects:**

**Sensitization:** Not sensitizing to the skin (guinea-pigs)

**Mutagenicity:**

- In vitro: Positive result in Ames test (*Salmonella typhimurium*)
- In vivo: No significant effects on mice (micronuclear test).

**Carcinogenicity:** Not carcinogen to the skin (mouse 0.2 - 2.0% PAA). PAA is not listed as carcinogen by IARC, NTP or OSHA.

**Reproduction effects and teratogenicity:** Decreased reproduction in tests on rats (dose 0.2-1 g/kg).

**SECTION 12 - Ecological Information**

**Mobility:**

- **Air:** Low volatility at ambient temperatures.
- **Water:** Significant solubility and mobility.
- **Soil:** No significant adsorption.

**Persistence / degradability:** Peracetic acid is rapidly reacted to non-toxic substances (water, carbon dioxide, oxygen).

**Bioaccumulation:** Peracetic acid is not bioaccumulated.

**Ecotoxicity:** In general, peracetic acid (PAA) causes effects on aqueous organisms at concentrations higher than 1 mg/L. Freshwater organisms have a greater sensitivity than marine organisms.

PAA is an active bactericide in concentrations over 5 mg/L. The chronic toxicity of PAA is probably negligible due to reactions via hydrogen peroxide and acetic acid to non-toxic compounds (water, carbon dioxide, oxygen).

- **Fish:** 48 h LC50 (*Oncorhynchus mykiss*) = 18 mg/L PAA solution (15% PAA, 25% H2O2, 25%HAc)
- **Crustacean:** 24 h LC50 (*Daphnia magna*) = 6.6 mg/L PAA solution (15% PAA, 25% H2O2, 25%HAc)

**SECTION 13 - Disposal Considerations**

Dispose of in a manner consistent with Federal, State, and Local regulations.

**RCRA:** Under RCRA, it is the responsibility of the user to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

**Other Disposal Considerations:** Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with applicable regulations. Note that these regulations may also apply to empty containers, liner and rinsate. Processing, use dilution or contamination of this product may cause its physical and chemical properties to change.

**Waste product:** If sufficiently diluted, peracetic acid may be discharged to an approved sewer.

**Contaminated packaging:** Packages should be rinsed with water prior to disposal.

**Note:** The information provided here is for the product as supplied. Use and/or alterations to the product, such as
mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal methods.

### SECTION 14 - Transportation Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Designation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name:</td>
<td>Organic peroxide Type C, liquid</td>
<td>49 CFR §173.225 (c)(2)(iv)(A)</td>
</tr>
<tr>
<td>UN Identification:</td>
<td>UN 3103</td>
<td>49 CFR §172.101</td>
</tr>
<tr>
<td>Packing Group:</td>
<td>PG II</td>
<td>49 CFR §172.101</td>
</tr>
<tr>
<td>Hazard Classifications:</td>
<td>Organic Peroxide Class 5.2</td>
<td>49 CFR §172.101</td>
</tr>
<tr>
<td>Secondary Name (Technical Name):</td>
<td>peroxyacetic acid</td>
<td>none</td>
</tr>
<tr>
<td>Approved packaging x container size</td>
<td>Fiberboard Box x 0.25 liter</td>
<td>49 CFR §173.212-178.503</td>
</tr>
<tr>
<td>Packing Instruction</td>
<td>500</td>
<td>IATA 5.5</td>
</tr>
</tbody>
</table>

Proper labeling and placards include the following:

Organic peroxide Type C, liquid, UN 3103, PG II, Class 5.2
(peroxyacetic acid)

### SECTION 15 - Regulatory Information

**National Regulations (US)**

**TSCA Inventory 8(b):** Yes

**SARA Title III Sec. 302/303 Extremely Hazardous Substances (40 CFR355):** Yes
- Reportable Quantity: Not known
- Threshold Planning Quantity: Not known

**SARA Title III Sec. 311/312 (40 CFR 370):**
- Hazard Category: Fire Hazard, Immediate Health Hazard
- Threshold planning quantity: Not known

**SARA Title III Sec. 313 Toxic Chemical Emissions Reporting (40 CFR 372):** Yes

**CERCLA Hazardous Substance (40CFR Part 302)**
- Not known

**State Component Listing:** No data

**National Regulations (Canada) Canadian NDSL/DSL Registration:** DSL
WHMIS Classification:  C Oxidizing  
E Corrosive  
F Dangerously Reactive  

Labeling according to Directive 1999/45/EC.  
Symbols  
O Oxidizing  
C Corrosive  
X Irritant  
N Environmentally dangerous substance  

Phrases  
R 7 May cause fire  
20/21/22 Harmful by inhalation, in contact with skin and if swallowed  
35 Causes severe burns  
36/37/38 Irritating to eyes, respiratory system and skin  

Phrases S  
3/7 Keep container tightly closed in cool place.  
36/37/39 Wear suitable protective clothing, gloves, and eye/face protection.  
45 In case of accident or if you feel unwell, seek medical advice immediately (Show label where possible).  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  

SECTION 16 - Other Information  

NFPA Ratings: Health - 3 Flammability - 0 Reactivity -3 Other - OX  

SECTION 17 - Legends, Nomenclature, Abbreviations  

ACGIH American Conference of Government Industrial Hygienists  
C Corrosive  
CASRN Chemical Abstracts Service Registry Number  
CERCLA Comprehensive Environmental Response, Compensation and Liability Act  
DIN Deutsches Institut für Normung e.V. (German Institute for Standardization, similar to US ANSI)  
DOT Department Of Transportation  
DSL Domestic Substance List  
EC European Community  
EMS Emergency Management System  
HMIS Hazardous Material Identification System, or Hazardous Material Information System  
H₂O₂ Hydrogen peroxide  
HOAc Acetic Acid  
IARC International Agency for Research on Cancer  
ID Identification  
IMDG International Maritime Dangerous Goods  
IMO International Maritime Organization [code] (see IMDG, CFR 49 DOT)  
ISTA International Safe Transit Association  
LD50 Lethal Dose 50% Population  
LEL Lower Explosion Limit  
LFL Lower Flammability Limit  
MSHA Mine Safety and Health Administration  
N Environmentally dangerous substance