SAFETY DATA SHEET
Acetic Anhydride

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 400031
Product Name: Acetic Anhydride

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: +1 (734)971-3335

1.4 Emergency telephone number:
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
Flammable Liquids, Category 3
Acute Toxicity: Inhalation, Category 4
Acute Toxicity: Oral, Category 4
Skin Corrosion/Irritation, Category 1B

2.2 Label Elements:

GHS Signal Word: Danger

GHS Hazard Phrases:
H226: Flammable liquid and vapor.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.

GHS Precaution Phrases:
P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.
P260: Do not breathe {dust/fume/gas/mist/vapors/spray}.
P264: Wash {hands} thoroughly after handling.
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.

GHS Response Phrases:
P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.
P363: Wash contaminated clothing before reuse.
GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Causes severe skin burns and eye damage.
Effects and Symptoms:
- Harmful if inhaled or swallowed.
- Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
- May be harmful by skin absorption.
- May cause respiratory system irritation.
- To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/ REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./ EC Index No.</th>
<th>GHS Classification</th>
</tr>
</thead>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:
- In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
- In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
- In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
- In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:
- Use alcohol-resistant foam, carbon dioxide, or dry chemical spray.
- Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media:
- DO NOT USE WATER.

5.2 Flammable Properties and Hazards:
- Can release vapors that form explosive mixtures at temperatures at or above the flashpoint.
- Container explosion may occur under fire conditions.
- Sensitive to static discharge.
- No data available.

- Flash Pt: 49.00 C Method Used: Closed Cup
- Explosive Limits: LEL: 2.7% at 25.0 C UEL: 10.3% at 25.0 C
- Autoignition Pt: 332.00 C

5.3 Fire Fighting Instructions:
- As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.
- Note: Combustible.
Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid breathing vapors and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure. Keep away from sources of ignition. Take precautionary measures against static discharge.

7.2 Precautions To Be Taken in Storing: Keep away from heat, sparks, and flame. Keep container tightly closed. Store in accordance with information listed on the product insert. Other Precautions: Reacts violently with water.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Chemical Name</th>
<th>Jurisdiction</th>
<th>Recommended Exposure Limits</th>
<th>Notations</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-24-7</td>
<td>Acetic anhydride</td>
<td>ACGIH TLV</td>
<td>TLV: 5 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Europe</td>
<td>TWA: 0.5 mg/m3 (2.5 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>France VL</td>
<td>STEL: 20 mg/m3 (5 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PELs</td>
<td>PEL: 5 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Britain EH40</td>
<td>TWA: 2.5 mg/m3 (0.5 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 10 mg/m3 (2 ppm)</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:

8.2.1 Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

- **Eye Protection:** Safety glasses
- **Protective Gloves:** Compatible chemical-resistant gloves
- **Other Protective Clothing:** Lab coat
- **Respiratory Equipment:** NIOSH approved respirator, as conditions warrant.
- **(Specify Type):**
- **Work/Hygienic/Maintenance Practices:** Do not take internally. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Wash thoroughly after handling. No data available.
Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [X] Liquid [ ] Solid

Appearance and Odor: A colorless solution

pH: No data.

Melting Point: -73.00 °C

Boiling Point: 138.00 °C - 140.00 °C / 760 mm Hg.

Flash Pt: 49.00 °C Method Used: Closed Cup

Evaporation Rate: No data.

Flammability (solid, gas): No data available.

Explosive Limits:
LEL: 2.7% at 25.0 °C
UEL: 10.3% at 25.0 °C

Vapor Pressure (vs. Air or Hg):
4 MM_HG at 20.0 °C

Vapor Density (vs. Air = 1): 3.52

Specific Gravity (Water = 1): 1.08

Solubility in Water: No data.

Octanol/Water Partition Coefficient: No data.

Decomposition Temperature: No data.

Autoignition Pt: 332.00 °C

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [ ] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

10.4 Conditions To Avoid: heat, flames, and sparks
Reacts violently with water.

10.5 Incompatibility - Materials acids
To Avoid: alcohols, bases, oxidizing agents, powdered metals, reducing agents, water

10.6 Hazardous Decomposition or Byproducts:
carbon dioxide, carbon monoxide
Section 11. Toxicological Information

11.1 Information on
Toxicological Effects: Acetic Anhydride - Toxicity Data: Oral LD50 (rat): 1,780 mg/kg; Inhalation LC50 (rat): 1,000 ppm/4h; Dermal LD50 (rabbit): 4 ml/kg; Irritation Data: Eyes (rabbit): severe; Skin (rabbit): mild;
Chronic Toxicological Effects: Acetic anhydride - Investigated as a primary irritant.

Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here.
See actual entry in RTECS for complete information.
Acetic anhydride RTECS Number: AK1925000

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-24-7</td>
<td>Acetic anhydride</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

12.2 Persistence and Degradability: No data available.

12.3 Bioaccumulative Potential: No data available.

12.4 Mobility in Soil: No data available.

12.5 Results of PBT and vPvB assessment: No data available.

12.6 Other adverse effects: No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Acetic anhydride
DOT Hazard Class: 8 (3) CORROSIVE, FLAMMABLE LIQUID
UN/NA Number: UN1715 Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Acetic anhydride
UN Number: 1715 Packing Group: II
Hazard Class: 8 (3) - CORROSIVE, FLAMMABLE LIQUID
14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Acetic anhydride
UN Number: 1715
Hazard Class: 8 (3) - CORROSIVE, FLAMMABLE LIQUID

Packing Group: II
IATA Classification: 8 (3)

Additional Transport Information:
Transport in accordance with local, state, and federal regulations.

When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.
Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-24-7</td>
<td>Acetic anhydride</td>
<td>No</td>
<td>Yes 5000 LB</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-24-7</td>
<td>Acetic anhydride</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Section 16. Other Information

Revision Date: 11/13/2018
Additional Information About This Product: No data available.

Company Policy or Disclaimer: DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.