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

<table>
<thead>
<tr>
<th>1.1 Product Code:</th>
<th>82235</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name:</td>
<td>AAPH</td>
</tr>
<tr>
<td>Synonyms:</td>
<td>2,2'-azobis-2-methyl-propanimidamide, dihydrochloride;</td>
</tr>
</tbody>
</table>

**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
- **Address:** 1180 E. Ellsworth Rd., Ann Arbor, MI 48108
- **Web site address:** www.caymanchem.com
- **Information:** Cayman Chemical Company +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:**

- **Self-Heating Substances, Category 1**
- **Acute Toxicity: Oral, Category 4**
- **Skin Sensitization, Category 1**

**2.2 Label Elements:**

- **GHS Signal Word:** Danger
- **GHS Hazard Phrases:**
  - H251: Self-heating; may catch fire.
  - H302: Harmful if swallowed.
  - H317: May cause an allergic skin reaction.
- **GHS Precaution Phrases:**
  - P235+410: Keep cool and protect from sunlight.
  - P261: Avoid breathing (dust/fume/gas/mist/vapours/spray).
  - P264: Wash (hands) thoroughly after handling.
  - P272: Contaminated work clothing should not be allowed out of the workplace.
  - 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.
  - P302+352: IF ON SKIN: Wash with plenty of soap and water.
  - P330: Rinse mouth.
  - P333+313: If skin irritation or rash occurs, seek medical advice/attention.
  - P363: Wash contaminated clothing before reuse.
- **GHS Storage and Disposal Phrases:**
  - P407: Maintain air gap between stacks/pallets.
  - P420: Store away from other materials.
  - Please refer to Section 7 for Storage and Section 13 for Disposal information.
2.3 Adverse Human Health Effects and Symptoms: 
Harmful if swallowed. 
Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation or skin absorption.
May cause an allergic skin reaction.
May cause eye, skin, or respiratory system irritation.
Self-heating; may catch fire.

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>
<tbody>
<tr>
<td>2997-92-4</td>
<td>AAPH</td>
<td>100.0 %</td>
<td>221-070-0</td>
<td>Acute Tox.(O) 4: H302</td>
</tr>
<tr>
<td>UE4575500</td>
<td></td>
<td></td>
<td>611-053-00-X</td>
<td>Skin Sens. 1: H317</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Self-Heat. 1: H251</td>
</tr>
</tbody>
</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 15 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 15 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, water, or dry chemical spray.

Unsuitable Extinguishing Media:
Use water spray to cool fire-exposed containers.

5.2 Flammable Properties and Hazards:
No data available.

Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.

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.
### Section 6. Accidental Release Measures

<table>
<thead>
<tr>
<th>6.1 Protective Precautions, Protective Equipment and Emergency Procedures:</th>
<th>Avoid raising and breathing dust, 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).</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.2 Environmental Precautions:</td>
<td>Take steps to avoid release into the environment, if safe to do so.</td>
</tr>
<tr>
<td>6.3 Methods and Material For Containment and Cleaning Up:</td>
<td>Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.</td>
</tr>
</tbody>
</table>

### Section 7. Handling and Storage

<table>
<thead>
<tr>
<th>7.1 Precautions To Be Taken in Handling:</th>
<th>Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2 Precautions To Be Taken in Storing:</td>
<td>Keep container tightly closed. Store in accordance with information listed on the product insert.</td>
</tr>
<tr>
<td>Other Precautions:</td>
<td>Keep product and empty container away from heat and sources of ignition.</td>
</tr>
</tbody>
</table>

### Section 8. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>8.1 Exposure Parameters:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.2 Exposure Controls:</td>
</tr>
<tr>
<td>8.2.1 Engineering Controls (Ventilation etc.):</td>
</tr>
<tr>
<td>8.2.2 Personal protection equipment:</td>
</tr>
<tr>
<td>Eye Protection:</td>
</tr>
<tr>
<td>Protective Gloves:</td>
</tr>
<tr>
<td>Other Protective Clothing:</td>
</tr>
<tr>
<td>Respiratory Equipment (Specify Type):</td>
</tr>
<tr>
<td>Work/Hygienic/Maintenance Practices:</td>
</tr>
</tbody>
</table>
Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [X] Solid
Appearance and Odor: A crystalline solid
pH: No data.
Melting Point: No data.
Boiling Point: No data.
Flash Pt: No data.
Evaporation Rate: No data.
Flammability (solid, gas): No data available.
Explosive Limits:
   LEL: No data.
   UEL: No data.
Vapor Pressure (vs. Air or mm Hg): No data.
Vapor Density (vs. Air = 1): No data.
Specific Gravity (Water = 1): No data.
Solubility in Water: No data.
Solubility Notes:
   ~10 mg/ml in PBS (pH 7.2); soluble (sparingly) in: EtOH; DMSO; DMF;
Octanol/Water Partition Coefficient: No data.
Autoignition Pt: No data.
Decomposition Temperature: No data.
Viscosity: No data.

9.2 Other Information

Percent Volatile: No data.
Molecular Formula & Weight: \(\text{C}_8\text{H}_{18}\text{N}_6 \cdot 2\text{HCl} \quad 271.2\)

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: [X] Stable
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will not occur [X]

10.4 Conditions To Avoid: heat, flames and sparks

10.5 Incompatibility - Materials

To Avoid: strong oxidizing agents

10.6 Hazardous

Decomposition or

Byproducts:
   hydrogen chloride gas
   hydrogen cyanide
   nitrogen oxides
Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
The toxicological effects of this product have not been thoroughly studied.

AAPH - Toxicity Data: Skin LD50 (rat): >5,900 mg/kg; Oral LD50 (rat): 410 mg/kg; Irritation Data:
Skin (rabbit): 500 mg mild;

Chronic Toxicological Effects:
AAPH - Investigated as a mutagen and primary irritant.

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

AAPH RTECS Number: UE4575500

<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>2997-92-4</td>
<td>AAPH</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: Self-heating solid, organic, n.o.s. (Propanimidamide, 2,2'-azobis[2-methyl-, dihydrochloride)
DOT Hazard Class: 4.2 - SPONTANEOUSLY COMBUSTIBLE
UN/NA Number: UN3088 Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Self-heating solid, organic, n.o.s. (Propanimidamide, 2,2'-azobis[2-methyl-, dihydrochloride)
UN Number: 3088 Packing Group: II
Hazard Class: 4.2 - SPONTANEOUSLY COMBUSTIBLE

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Self-heating solid, organic, n.o.s. (Propanimidamide, 2,2'-azobis[2-methyl-, dihydrochloride)
UN Number: 3088 Packing Group: II
Hazard Class: 4.2 - SPONTANEOUSLY COMBUSTIBLE IATA Classification: 4.2
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>2997-92-4</td>
<td>AAPH</td>
<td>No</td>
<td>No</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>2997-92-4</td>
<td>AAPH</td>
<td>CAA HAP, ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Regulatory Information: This SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

Section 16. Other Information

Revision Date: 10/03/2017

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.