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

1.1 Product Code: 21576
Product Name: \(\alpha\)-Pinene
Synonyms: \((\pm)\)-\(\alpha\)-Pinene;

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: 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:
   Flammable Liquids, Category 3
   Acute Toxicity: Oral, Category 4
   Skin Corrosion/Irritation, Category 2
   Skin Sensitization, Category 1
   Aspiration Toxicity, Category 1
   Aquatic Toxicity (Acute), Category 1
   Aquatic Toxicity (Chronic), Category 1

2.2 Label Elements:

   GHS Signal Word: Danger

   GHS Hazard Phrases:
   H226: Flammable liquid and vapor.
   H302: Harmful if swallowed.
   H304: May be fatal if swallowed and enters airways.
   H315: Causes skin irritation.
   H317: May cause an allergic skin reaction.
   H400: Very toxic to aquatic life.
   H410: Very toxic to aquatic life with long lasting effects.

   GHS Precaution Phrases:
   P210: Keep away from (heat/sparks/open flames/hot surfaces). - No smoking.
   P261: Avoid breathing (dust/fume/gas/mist/vapors/spray).
   P264: Wash (hands) thoroughly after handling.
   P272: Contaminated work clothing should not be allowed out of the workplace.
   P273: Avoid release to the environment.
   P280: Wear (protective gloves/protective clothing/eye protection/face protection).

   GHS Response Phrases:
SAFETY DATA SHEET
.alpha.-Pinene

P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P330: Rinse mouth.
P331: Do NOT induce vomiting.
P332+313: If skin irritation occurs, get medical advice/attention.
P333+313: If skin irritation or rash occurs, seek medical advice/attention.
P362+364: Take off contaminated clothing and wash it before reuse.
P391: Collect spillage.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Effects and Symptoms:
Causes skin irritation.
Harmful if swallowed.
Material may be irritating to the mucous membranes and upper respiratory tract.
May be fatal if swallowed and enters airways.
May be harmful by skin absorption.
May cause an allergic skin reaction.
May cause eye, skin, or respiratory system irritation.
Very toxic to aquatic life with long lasting effects.
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>80-56-8 DT7000000</td>
<td>Bicyclo[3.1.1]hept-2-ene, 2,6,6-Trimethyl-</td>
<td>100.0 %</td>
<td>201-291-9 NA</td>
<td>Flam. Liq. 3: H226 Asp. Toxic. 1: H304 Skin Corr. 2: H315 Skin Sens. 1: H317 Acute Tox. (O) 4: H302 Aquatic (C) 1: H410 Aquatic (A) 1: H400</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. 

5.2 Unsuitable Extinguishing Media: A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards: 

- Flash Pt: No data available.
- 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

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: 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).

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.

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.

7.2 Precautions To Be Taken in Storing: Keep container tightly closed. Store in accordance with information listed on the product insert.

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>80-56-8</td>
<td>Bicyclo[3.1.1]hept-2-ene, 2,6,6-Trimethyl-</td>
<td>ACGIH TLV</td>
<td>TLV: 20 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

8.2.3 Other Protective Clothing: Lab coat

8.2.4 Respiratory Equipment: NIOSH approved respirator, as conditions warrant.

( Specify Type):

8.2.5 Work/Hygienic/Maintenance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower. Do not take internally. Wash thoroughly after handling.
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 liquid

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.

Octanol/Water Partition Coefficient:

Autoignition Pt: No data.

Decomposition Temperature: No data.

Viscosity: No data.

9.2 Other Information

Percent Volatile: No data.

Molecular Formula & Weight: C10H16 136.2

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.

Polymerization:

Will occur [ ] Will not occur [X]

10.4 Conditions To Avoid:

heat, flames, & sparks

10.5 Incompatibility - Materials strong oxidizing agents

To Avoid:

10.6 Hazardous

carbon dioxide

Decomposition or

carbon monoxide

Byproducts:
Section 11. Toxicological Information

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

Toxicological Effects: .alpha.-Pinene - Toxicity Data: Oral LD50 (rat): 3700 mg/kg; Inhalation LCLO (rat): 625 ug/m3; Intraperitoneal LD (mouse): >500 mg/kg; .alpha.-Pinene; .alpha.-Pinene - Investigated as a natural product and primary irritant.

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

.alpha.-Pinene RTECS Number: DT7000000

<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>80-56-8</td>
<td>Bicyclo[3.1.1]hept-2-ene, 2,6,6-Trimethyl-</td>
<td>n.a.</td>
<td>n.a.</td>
<td>A4</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: alpha-Pinene

DOT Hazard Class: 3 FLAMMABLE LIQUID

UN/NA Number: UN2368 Packing Group: III

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: alpha-Pinene

UN Number: 2368 Packing Group: III

Hazard Class: 3 - FLAMMABLE LIQUID

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: alpha-Pinene

UN Number: 2368 Packing Group: III

Hazard Class: 3 - FLAMMABLE LIQUID IATA Classification: 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

<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>80-56-8</td>
<td>Bicyclo[3.1.1]hept-2-ene, 2,6,6-Trimethyl-</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>80-56-8</td>
<td>Bicyclo[3.1.1]hept-2-ene, 2,6,6-Trimethyl-</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: 05/15/2017

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.