SAFETY DATA SHEET
In accordance with 29 CFR 1910.1200

Product: Hop oil FPD-2015A-2097
Version: 1

Section 1. Identification of the substance or the mixture and of the supplier

1.1 Product Identifier
Product identifier: Hop oil; CAS: 8060-28-4
Other identifiers: Hop oil

1.2 Relevant identified uses of the substance or mixture and uses advised against
Product uses: Flavours, Fragrances

1.3 Details of the supplier of the safety data sheet
Company name: Perfumer's Apprentice
Company address: 170 Technology Circle
                      Scotts Valley
                      CA 95066
                      USA
Contact: Elisabeth Hanson
E-Mail address: regulatory@perfumersapprentice.com
Company phone: +1 (831) 346 7234

1.4 Emergency telephone number
Emergency phone: +1 (831) 346 7234

Section 2. Hazards identification

2.1 Classification of the substance or mixture
Class and category of danger:
- Flammable Liquid, Hazard Category 3
- Skin Corrosion / Irritation Category 2
- Eye Damage / Irritation Category 2A
- Sensitization - Skin Category 1
- Aspiration Hazard Category 1
- H226, Flammable liquid and vapour.
- H304, May be fatal if swallowed and enters airways.
- H315, Causes skin irritation.
- H317, May cause an allergic skin reaction.
- H319, Causes serious eye irritation.

2.2 Label elements
Signal word: Danger
Hazard statements:
- H226, Flammable liquid and vapour.
- H304, May be fatal if swallowed and enters airways.
- H315, Causes skin irritation.

Perfumer's Apprentice, 170 Technology Circle, Scotts Valley, CA, 95066, USA
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H317, May cause an allergic skin reaction.
H319, Causes serious eye irritation.

M factor: None

Precautionary statements:

P210, Keep away from heat, sparks, open flames and hot surfaces. - No smoking.
P233, Keep container tightly closed.
P240, Ground/bond container and receiving equipment.
P241, Use explosion-proof electrical, ventilating and lighting equipment.
P242, Use only non-sparking tools.
P243, Take precautionary measures against static discharge.
P261, Avoid breathing vapour or dust.
P264, Wash hands and other contacted skin thoroughly after handling.
P272, Contaminated work clothing should not be allowed out of the workplace.
P280, Wear protective gloves/eye protection/face protection.
P301/310, IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303/361/353, IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P305/351/338, IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P331, Do not induce vomiting.
P333/313, If skin irritation or rash occurs: Get medical advice/attention.
P337/313, If eye irritation persists: Get medical advice/attention.
P362, Take off contaminated clothing and wash before reuse.
P370/378, In case of fire: Use carbon dioxide, dry chemical, foam for extinction.
P403/235, Store in a well-ventilated place. Keep cool.
P405, Store locked up.
P501, Dispose of contents/container to approved disposal site, in accordance with local regulations.

Pictograms:

Other hazards: None

Section 3. Composition / information on ingredients

3.1 Substances

Product identifier: Hop oil; CAS: 8060-28-4
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**Version:** 1  
**Issue date:** 04/12/2018

### Contains:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>EC</th>
<th>%</th>
<th>GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myrcene</td>
<td>123-35-3</td>
<td>204-622-5</td>
<td>20-&lt;50%</td>
<td>FL 3-SCI 2-EDI 2A-AH 1;H226-H315-H319</td>
</tr>
<tr>
<td>beta-Pinene</td>
<td>127-91-3</td>
<td>204-872-5</td>
<td>0.1-&lt;1%</td>
<td>FL 3-SCI 2-SS 1B-AH 1;H226-H315-H317</td>
</tr>
<tr>
<td>dl-Limonene (racemic)</td>
<td>138-86-3</td>
<td>205-341-0</td>
<td>0.1-&lt;1%</td>
<td>FL 3-SCI 2-SS 1B-AH 1;H226-H315-H317</td>
</tr>
<tr>
<td>Geraniol</td>
<td>106-24-1</td>
<td>203-377-1</td>
<td>0.1-&lt;1%</td>
<td>SCI 2-EDI 1-SS 1;H315-H317-H318</td>
</tr>
<tr>
<td>alpha-Pinene</td>
<td>80-56-8</td>
<td>201-291-9</td>
<td>0.1-&lt;1%</td>
<td>FL 3-SCI 2-SS 1B-AH 1;H226-H315-H317</td>
</tr>
</tbody>
</table>

The exact percentage concentrations of components are being withheld as a trade secret.

### Section 4: First-aid measures

**4.1 Description of first aid measures**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**4.2 Most important symptoms and effects, both acute and delayed**

May be fatal if swallowed and enters airways.  
Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye irritation.

**4.3 Indication of any immediate medical attention and special treatment needed**

None expected, see Section 4.1 for further information.

### SECTION 5: Firefighting measures

**5.1 Extinguishing media**

Suitable media: Carbon dioxide, Dry chemical, Foam.

**5.2 Special hazards arising from the substance or mixture**

In case of fire, may be liberated: Carbon monoxide, Unidentified organic compounds.

**5.3 Advice for fire fighters:**

In case of insufficient ventilation, wear suitable respiratory equipment.
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Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Avoid inhalation. Avoid contact with skin and eyes. See protective measures under Section 7 and 8.

6.2 Environmental precautions:
Keep away from drains, surface and ground water, and soil.

6.3 Methods and material for containment and cleaning up:
Remove ignition sources. Provide adequate ventilation. Avoid excessive inhalation of vapours. Contain spillage immediately by use of sand or inert powder. Dispose of according to local regulations.

6.4 Reference to other sections:
Also refer to sections 8 and 13.

Section 7. Handling and storage

7.1 Precautions for safe handling:
Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

7.2 Conditions for safe storage, including any incompatibilities:
Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

7.3 Specific end use(s):
Flavours,Fragrances: Use in accordance with good manufacturing and industrial hygiene practices.

Section 8. Exposure controls/personal protection

8.1 Control parameters
Workplace exposure limits: Not Applicable

8.2 Exposure Controls
Eye / Skin Protection
Wear protective gloves/eye protection/face protection

Respiratory Protection
Under normal conditions of use and where adequate ventilation is available to prevent build up of excessive vapour, this material should not require special engineering controls. However, in conditions of high or prolonged use, or high temperature or other conditions which increase exposure, the following engineering controls can be used to minimise exposure to personnel: a) Increase ventilation of the area with local exhaust ventilation. b) Personnel can use an approved, appropriately fitted respirator with organic vapour cartridge or canisters and particulate filters. c) Use closed systems for transferring and processing this material.
Also refer to Sections 2 and 7.
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Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: Not determined
Odour: Not determined
pH: Not determined
Initial boiling point / range: Not determined
Flash point: 43 °C
Vapour pressure: Not determined
Relative density: Not determined
Solubility(ies): Not determined

9.2 Other information: None available

Section 10. Stability and reactivity

10.1 Reactivity:

Presents no significant reactivity hazard, by itself or in contact with water.

10.2 Chemical stability:

Good stability under normal storage conditions.

10.3 Possibility of hazardous reactions:

Not expected under normal conditions of use.

10.4 Conditions to avoid:

Avoid extreme heat.

10.5 Incompatible materials:

Avoid contact with strong acids, alkalis or oxidising agents.

10.6 Hazardous decomposition products:

Not expected.

Section 11. Toxicological information

11.1 Information on toxicological effects

May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.

Assumed Toxicity Value (LD50 or ATE) for Acute Oral Toxicity: Not Applicable
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Assumed Toxicity Value (LD50 or ATE) for Acute Dermal Toxicity: Not Applicable
Assumed Toxicity Value (LC50 or ATE) for Acute Inhalation Toxicity: Not Available
Inhalation Route: Not Available
Refer to Section 2 for additional information.

Section 12. Ecological information

12.1 Toxicity:
Harmful to aquatic life with long lasting effects.
12.2 Persistence and degradability: Not available
12.3 Bioaccumulative potential: Not available
12.4 Mobility in soil: Not available
12.5 Results of PBT and vPvB assessment:
This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.
12.6 Other adverse effects: Not available

Section 13. Disposal considerations

13.1 Waste treatment methods:
Dispose of in accordance with local regulations. Avoid disposing into drainage systems and into the environment. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Section 14. Transport information

14.1 UN number: UN1169
14.2 UN Proper Shipping Name: EXTRACTS, AROMATIC, LIQUID
14.3 Transport hazard class(es): 3
   Sub Risk: -
14.4. Packing Group: III
14.5 Environmental hazards: Not environmentally hazardous for transport
14.6 Special precautions for user: None additional
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:
Not applicable

Section 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
RIFM ID Number: 5079-G2.9
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15.2 Chemical Safety Assessment

A Chemical Safety Assessment has not been carried out for this product.

Section 16. Other information

Concentration % Limits:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI 2</td>
<td>26.32%</td>
</tr>
<tr>
<td>EDI 2</td>
<td>25.00%</td>
</tr>
<tr>
<td>SS 1</td>
<td>50.00%</td>
</tr>
<tr>
<td>AH 1</td>
<td>10.20%</td>
</tr>
</tbody>
</table>

Total Fractional Values:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI 2</td>
<td>3.80</td>
</tr>
<tr>
<td>EDI 2</td>
<td>4.00</td>
</tr>
<tr>
<td>SS 1</td>
<td>2.00</td>
</tr>
<tr>
<td>AH 1</td>
<td>9.80</td>
</tr>
</tbody>
</table>

Key to revisions:

Not applicable

Key to abbreviations:

<table>
<thead>
<tr>
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<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH 1</td>
<td>Aspiration Hazard Category 1</td>
</tr>
<tr>
<td>EDI 1</td>
<td>Eye Damage / Irritation Category 1</td>
</tr>
<tr>
<td>EDI 2A</td>
<td>Eye Damage / Irritation Category 2A</td>
</tr>
<tr>
<td>FL 3</td>
<td>Flammable Liquid, Hazard Category 3</td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapour.</td>
</tr>
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</tr>
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</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
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<td>Wear protective gloves/eye protection/face protection.</td>
</tr>
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<td>P301/310</td>
<td>IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P302/352</td>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
</tr>
<tr>
<td>P303/361/353</td>
<td>IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.</td>
</tr>
<tr>
<td>P305/351/338</td>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P310</td>
<td>Immediately call a POISON CENTER or doctor/physician.</td>
</tr>
<tr>
<td>P331</td>
<td>Do not induce vomiting.</td>
</tr>
<tr>
<td>P332/313</td>
<td>If skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td>P333/313</td>
<td>If skin irritation or rash occurs: Get medical advice/attention.</td>
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</table>
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<th>Code</th>
<th>Instruction</th>
</tr>
</thead>
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<tr>
<td>P337/313</td>
<td>If eye irritation persists: Get medical advice/attention.</td>
</tr>
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<td>P362</td>
<td>Take off contaminated clothing and wash before reuse.</td>
</tr>
<tr>
<td>P370/378</td>
<td>In case of fire: Use carbon dioxide, dry chemical, foam for extinction.</td>
</tr>
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<td>Store in a well-ventilated place. Keep cool.</td>
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<td>P405</td>
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</tr>
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<td>P501</td>
<td>Dispose of contents/container to approved disposal site, in accordance with local regulations.</td>
</tr>
<tr>
<td>SCI 2</td>
<td>Skin Corrosion / Irritation Category 2</td>
</tr>
<tr>
<td>SS 1</td>
<td>Sensitization - Skin Category 1</td>
</tr>
<tr>
<td>SS 1B</td>
<td>Sensitization - Skin Category 1B</td>
</tr>
</tbody>
</table>

The information in this safety data sheet is to the best of our knowledge true and accurate but all data, instructions, recommendations and/or suggestions are made without guarantee.