SECTION 1: Identification

1.1. Identification
Trade name: Ethanol-Extract, Total Resin Extract
Chemical name: Hop, Humulus lupulus, ext
CAS-No.: 8060-28-4

1.2. Recommended use and restrictions on use
Use of the substance/mixture: Manufacturing of food

1.3. Supplier
Manufacturer/Supplier/Importer
S. S. Steiner, Inc.
655 Madison Avenue
New York, NY 10065 - USA
T +1 212 838 8900

Manufacturer/Supplier/Importer
Simon H. Steiner, Hopfen, GmbH
Auhofstr. 18
Mainburg, 84048 - Germany
T +49-(0)8751-8605-0 - F +49-(0)8751-8605-80

Supplier/Importer
Steiner Hops Ltd.
185-189 High St
Epping, Essex CM16 4BL - United Kingdom

1.4. Emergency telephone number
Emergency number: 
S. S. Steiner, Inc.
Phone: +1 212 838 8900 (Monday – Friday 08.00 – 17.00, Eastern Time Zone)

Simon H. Steiner, Hopfen, GmbH
Tel.: +49-8751-8605-0 (Monday – Friday 08:00 – 17:00, Central European Time)

Steiner Hops Ltd.
Phone: +44 1992 572 331 (Monday – Friday 08.00 – 17.00, Greenwich Mean Time)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture
GHS-US classification
Acute toxicity (oral), Category 4: H302 Harmful if swallowed.
Carcinogenicity, Category 1A: H350 May cause cancer.

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements
GHS-US labelling
Hazard pictograms (GHS-US):

Signal word (GHS-US): Danger
Hazard statements (GHS-US):
H302 - Harmful if swallowed.
H350 - May cause cancer.

Precautionary statements (GHS-US):
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective clothing, protective gloves, eye protection, face protection.
P301+P312 - If swallowed: Call a POISON CENTER, a doctor if you feel unwell.
P330 - Rinse mouth.
P405 - Store locked up.
2.3. Other hazards which do not result in classification
Other hazards not contributing to the classification: Harmful to aquatic life with long lasting effects.

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances
Substance type: Multi-constituent
Chemical name: Hop, Humulus lupulus, ext
CAS-No.: 8060-28-4

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,5-dihydroxy-2,6,6-tris(3-methylbuten-2-yl)-4-(3-methyl-1-oxobutyl)cyclohexa-2,4-dien-1-one (Component)</td>
<td>(CAS-No.) 468-28-0</td>
<td>15-30</td>
<td>Acute Tox. 3 (Oral), H301</td>
</tr>
<tr>
<td>hop oil (Component)</td>
<td>(CAS-No.) 8007-04-3</td>
<td>3-12</td>
<td>Flam. Liq. 3, H226 Asp. Tox. 1, H304</td>
</tr>
<tr>
<td>ethanol (Component)</td>
<td>(CAS-No.) 64-17-5</td>
<td>&lt;0.3</td>
<td>Flam. Liq. 2, H225 Eye Irrit. 2A, H319 Carc. 1A, H350</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures
First-aid measures general: Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact: Wash skin with plenty of water.
First-aid measures after eye contact: Rinse eyes with water as a precaution.
First-aid measures after ingestion: Rinse mouth. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)
No additional information available

4.3. Immediate medical attention and special treatment, if necessary
Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media: Strong water jet.

5.2. Specific hazards arising from the chemical
Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

5.3. Special protective equipment and precautions for fire-fighters
Firefighting instructions: Cool closed containers exposed to fire with water spray.
Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
Other information: Do not allow run-off from fire fighting to enter drains or water courses. Disposal must be done according to official regulations.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
Emergency procedures: Only qualified personnel equipped with suitable protective equipment may intervene.
### 6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

### 6.2. Environmental precautions

Avoid sub-soil penetration. Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Cover spill with non combustible material, e.g.: sand/earth. Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal. Notify authorities if product enters sewers or public waters.

Other information: Disposal must be done according to official regulations.

### 6.4. Reference to other sections

Information for safe handling. See section 7. Concerning personal protective equipment to use, see section 8. For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling: Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Wear personal protective equipment.

Hygiene measures: Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Always wash hands after handling the product.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store locked up. Store in a well-ventilated place. Keep cool.

Maximum storage period: ≈ 8 year(s)

Storage temperature: < 50 °F

Information about storage in one common storage facility: Keep away from food, drink and animal feeding stuffs.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

<table>
<thead>
<tr>
<th>Control Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA OSHA PEL (TWA) (mg/m³)</td>
<td>1900 mg/m³</td>
</tr>
<tr>
<td>OSHA OSHA PEL (TWA) (ppm)</td>
<td>1000 ppm</td>
</tr>
<tr>
<td>OSHA Regulatory reference (US-OSHA)</td>
<td>OSHA</td>
</tr>
</tbody>
</table>

#### 8.2. Appropriate engineering controls

Appropriate engineering controls: Ensure good ventilation of the work station.

Environmental exposure controls: Avoid release to the environment.

#### 8.3. Individual protection measures/Personal protective equipment

**Hand protection:**

Chemically resistant protective gloves. Choosing the proper glove is a decision that depends not only on the type of material, but also on other quality features, which differ for each manufacturer. Please follow the instructions related to the permeability and the penetration time provided by the manufacturer. Gloves must be replaced after each use and whenever signs of wear or perforation appear.

**Eye protection:**

Wear closed safety glasses.

**Skin and body protection:**

Wear suitable protective clothing

**Respiratory protection:**

In case of inadequate ventilation wear respiratory protection. Filter type: P1.
SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Viscous</td>
</tr>
<tr>
<td>Colour</td>
<td>Green</td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>5.7 - 6.7</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>296 °F</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>≈ 1 g/ml (68°F)</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>400 - 1000 mPa.s (113°F)</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Product is not explosive. Explosive vapour/air mixtures may be formed.</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information

| Other properties                      | No additional information available.       |

SECTION 10: Stability and reactivity

10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal conditions. To avoid thermal decomposition, do not overheat.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>Harmful if swallowed.</td>
</tr>
</tbody>
</table>

Ethanol-Extract, Total Resin Extract

ATE US (oral) | 333 mg/kg bodyweight
3,5-dihydroxy-2,6,6-tris(3-methylbuten-2-yl)-4-(3-methyl-1-oxobuty1)cyclohexa-2,4-dien-1-one (468-28-0)

| LD50 oral rat | 100 mg/kg bodyweight |

Skin corrosion/irritation : Not classified
  (Based on available data, the classification criteria are not met)
  pH: 5.7 - 6.7

Serious eye damage/irritation : Not classified
  (Based on available data, the classification criteria are not met)
  pH: 5.7 - 6.7

Respiratory or skin sensitisation : Not classified
  (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
  (Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

12.1. Toxicity
Ecology - general : Harmful to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
</tr>
<tr>
<td>NOEC chronic fish</td>
</tr>
<tr>
<td>NOEC chronic crustacea</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
</tr>
<tr>
<td>Biodegradation</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Kow</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>ethanol (64-17-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecology - soil</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects
Other adverse effects : No additional information available.
SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods: Disposal must be done according to official regulations. Do not dispose of with domestic waste. Do not discharge into drains or the environment.

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Not applicable

Transportation of Dangerous Goods
Not applicable

Transport by sea
Not applicable

Air transport
Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Ethanol-Extract, Total Resin Extract
Manufacturing of food

15.2. International regulations

ethanol (64-17-5)
Listed on IARC (International Agency for Research on Cancer)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date: 01/22/2018
Data sources: Information provided by the manufacturer.
Department issuing data specification sheet: KFT Chemieservice GmbH
Im Leuschnerpark, 3 64347 Griesheim
Postfach 1451 64345 Griesheim
Germany
Phone: +49 6155-8981-400 Fax: +49 6155 8981-500
Safety Data Sheet Service: +49 6155 8981-522
Contact person: Stefanie Zgorzelski

01/22/2018 US-OSHA - en
Full text of H-statements:

| H225       | Highly flammable liquid and vapour. |
| H226       | Flammable liquid and vapour.        |
| H301       | Toxic if swallowed.                 |
| H302       | Harmful if swallowed.               |
| H304       | May be fatal if swallowed and enters airways. |
| H319       | Causes serious eye irritation.       |
| H350       | May cause cancer.                    |

Abbreviations and acronyms:

| ATE        | Acute Toxicity Estimate             |
| IATA       | International Air Transport Association |
| IMDG       | International Maritime Dangerous Goods |
| LD50       | Median lethal dose                   |
| SDS        | Safety Data Sheet                   |

Indication of changes:

<table>
<thead>
<tr>
<th>Section</th>
<th>Changed item</th>
<th>Change</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>GHS-US classification</td>
<td>Modified</td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Precautionary statements</td>
<td>Modified</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Composition</td>
<td>Modified</td>
<td></td>
</tr>
</tbody>
</table>

KFT SDS US 00

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.