

**SECTION 1: Identification****1.1 Product identifier**

Product name Headband  
Brand True Terpenes

**1.4 Supplier's details**

Name True Terpenes  
Address Portland , Oregon  
Telephone (888) 954-8550  
email info@TrueTerpenes.com

**1.5 Emergency phone number(s)**

Poison Control Help Line:  
1 (800) 222-1222

**SECTION 2: Hazard identification****2.1 Classification of the substance or mixture**

Not a hazardous substance or mixture.

**2.2 GHS label elements, including precautionary statements**

Not a hazardous substance or mixture.

**2.3 Other hazards which do not result in classification**

Not a hazardous substance or mixture.

**SECTION 3: Composition/information on ingredients****3.2 Mixtures****Hazardous components**

**1. Terpinolene**  
Concentration <= 31 % (Volume)  
EC no. 209-578-0

CAS no. 586-62-9

- Flammable liquids (chapter 2.6), Cat. 4
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 1

H227 Combustible liquid  
H410 Very toxic to aquatic life with long lasting effects

## 2. Limonene

Concentration  $\geq 14$  % (Volume)  
EC no. 227-813-5  
CAS no. 5989-27-5

- Acute toxicity, dermal (chapter 3.1), Cat. 5
- Acute toxicity, oral (chapter 3.1), Cat. 5
- Aspiration hazard (chapter 3.10), Cat. 1
- Flammable liquids (chapter 2.6), Cat. 3
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 1
- Sensitization, skin (chapter 3.4), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H226 Flammable liquid and vapor  
H303+H313 May be harmful if swallowed or in contact with skin  
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

## 3. Ocimene

Concentration  $\geq 12$  % (Volume)  
CAS no. 13877-91-3

- Flammable liquids (chapter 2.6), Cat. 3

H226 Flammable liquid and vapor

## 4. Myrcene

Concentration  $\leq 12$  % (Volume)  
CAS no. 123-35-3

- Aspiration hazard (chapter 3.10), Cat. 1
- Eye damage/irritation (chapter 3.3), Cat. 2A
- Flammable liquids (chapter 2.6), Cat. 3
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H226	Flammable liquid and vapor
H226	Flammable liquid and vapor
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation

**5. Beta Caryophyllene**

Concentration	<= 8 % (Volume)
CAS no.	87-44-5

**6. Beta Pinene**

Concentration	<= 5 % (Volume)
EC no.	No data available.
CAS no.	127-91-3

- Acute toxicity, dermal (chapter 3.1), Cat. 4
- Acute toxicity, inhalation (chapter 3.1), Cat. 4
- Acute toxicity, oral (chapter 3.1), Cat. 4
- Aspiration hazard (chapter 3.10), Cat. 1
- Eye damage/irritation (chapter 3.3), Cat. 2A
- Flammable liquids (chapter 2.6), Cat. 3
- Sensitization, skin (chapter 3.4), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H226	Flammable liquid and vapor
H302+H312+H332	Harmful if swallowed, in contact with skin or if inhaled
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
H335	May cause respiratory irritation

**7. Terpineol**

Concentration	<= 4 % (Volume)
CAS no.	8000-41-7

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H315	Causes skin irritation
H319	Causes serious eye irritation

**8. Alpha Pinene**

Concentration	>= 3 % (Volume)
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CAS no. 80-56-8

- Aspiration hazard (chapter 3.10), Cat. 1
- Flammable liquids (chapter 2.6), Cat. 3
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Sensitization, skin (chapter 3.4), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H226 Flammable liquid and vapor  
H304 May be fatal if swallowed and enters airways  
H315 Causes skin irritation  
H317 May cause an allergic skin reaction  
H402 Harmful to aquatic life

### 9. Phytol

Concentration  $\geq 2\%$  (Volume)  
CAS no. 7541-49-3

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H315 Causes skin irritation  
H319 Causes serious eye irritation  
H335 May cause respiratory irritation

### 10. Humulene

Concentration  $\geq 2\%$  (Volume)  
CAS no. 6753-98-6

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Flammable liquids (chapter 2.6), Cat. 4
- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H227 Combustible liquid  
H315 Causes skin irritation  
H319 Causes serious eye irritation  
H335 May cause respiratory irritation

### 11. Fenchol

Concentration  $\leq 2\%$  (Volume)  
CAS no. 1632-73-1

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 3

- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H412	Harmful to aquatic life with long lasting effects

**12. Linalool**

Concentration	<= 2 % (Volume)
EC no.	201-134-4
CAS no.	78-70-6

- Acute toxicity, dermal (chapter 3.1), Cat. 4
- Acute toxicity, oral (chapter 3.1), Cat. 5
- Eye damage/irritation (chapter 3.3), Cat. 2A
- Flammable liquids (chapter 2.6), Cat. 4
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H227	Combustible liquid
H303	May be harmful if swallowed
H312	Harmful in contact with skin
H315	Causes skin irritation
H315+H320	Causes skin and eye irritation
H319	Causes serious eye irritation
H402	Harmful to aquatic life

**13. Camphene**

Concentration	<= 1 % (Volume)
CAS no.	79-92-5

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Flammable solids (chapter 2.7), Cat. 2
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 1

H228	Flammable solid
H319	Causes serious eye irritation
H410	Very toxic to aquatic life with long lasting effects

**14. Geranyl Acetate**

Concentration	<= 1 % (Volume)
CAS no.	105-87-3

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 2

- Sensitization, skin (chapter 3.4), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H315	Causes skin irritation
H315+H320	Causes skin and eye irritation
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H401	Toxic to aquatic life

### 15. Eucalyptol

Concentration	<= 1 % (Volume)
CAS no.	470-82-6

- Flammable liquids (chapter 2.6), Cat. 3

H226	Flammable liquid and vapor
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### 16. Pulegone

Concentration	<= 1 % (Volume)
CAS no.	89-82-7

- Acute toxicity, dermal (chapter 3.1), Cat. 5
- Acute toxicity, oral (chapter 3.1), Cat. 4
- Flammable liquids (chapter 2.6), Cat. 4
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 3
- Skin corrosion/irritation (chapter 3.2), Cat. 3

H227	Combustible liquid
H302	Harmful if swallowed
H313	May be harmful in contact with skin
H316	Causes mild skin irritation
H351	Suspected of causing cancer
H402	Harmful to aquatic life
H412	Harmful to aquatic life with long lasting effects

### 17. Alpha Bisabolol

Concentration	< 1 % (Volume)
CAS no.	515-69-5

- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 2
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 2

H401	Toxic to aquatic life
H411	Toxic to aquatic life with long lasting effects

**18. Nerolidol**

Concentration < 1 % (Volume)  
CAS no. 7212-44-4

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 1

H319 Causes serious eye irritation  
H410 Very toxic to aquatic life with long lasting effects

**19. Menthol**

Concentration < 1 % (Volume)  
CAS no. 89-78-1

- Acute toxicity, oral (chapter 3.1), Cat. 5
- Eye damage/irritation (chapter 3.3), Cat. 1
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 3
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 3
- Skin corrosion/irritation (chapter 3.2), Cat. 2
- Specific target organ toxicity, single exposure (chapter 3.8), Cat. 3

H303 May be harmful if swallowed  
H315 Causes skin irritation  
H318 Causes serious eye damage  
H335 May cause respiratory irritation  
H402 Harmful to aquatic life  
H412 Harmful to aquatic life with long lasting effects

**20. Alpha Cedrene**

Concentration < 1 % (Volume)  
CAS no. 469-61-4

- Eye damage/irritation (chapter 3.3), Cat. 2A
- Hazardous to the aquatic environment - acute hazard (chapter 4.1), Cat. 1
- Hazardous to the aquatic environment - long-term hazard (chapter 4.1), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 2

H315 Causes skin irritation  
H319 Causes serious eye irritation  
H410 Very toxic to aquatic life with long lasting effects

**SECTION 4: First-aid measures**

**4.1 Description of necessary first-aid measures**

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact	Wash off with soap and plenty of water. Consult a physician.
In case of eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
Personal protective equipment for first-aid responders	No data available.

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

No data available.

**4.3 Indication of immediate medical attention and special treatment needed, if necessary**

No data available.

**SECTION 5: Fire-fighting measures****5.2 Specific hazards arising from the chemical**

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Terpinolene: Carbon oxides.

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Limonene: Static charges generated by emptying package in or near flammable vapor may cause flash fire. Fire may produce irritating, corrosive and / or toxic gases.

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Phytol: No data available.

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Pulegone: Static charges generated by emptying package in or near flammable vapor may cause flash fire. Fire may produce irritation, corrosive and / or toxic gases.

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Menthol: Static charges generated by emptying package in or near flammable vapor may cause flash fire. Fire may produce irritating, corrosive and / or toxic gases.

Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.



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Alpha Cedrene: Hazardous decomposition products formed under fire conditions. Carbon oxides.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### 6.2 Environmental precautions

No data available.

### 6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Keep away from sources of ignition. No smoking. Take measures to prevent the buildup of electrostatic charge. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Container which are opened must be carefully resealed and kept upright to prevent leakage.

#### Specific end use(s)

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

## SECTION 8: Exposure controls/personal protection

### 8.2 Appropriate engineering controls

No data available.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

#### Eye/face protection

No data available.

#### Skin protection

No data available.

**Body protection**

No data available.

**Respiratory protection**

No data available.

**Thermal hazards**

No data available.

**Control banding approach**

No data available.

**Environmental exposure controls**

No data available.

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties**

Appearance/form (physical state, color, etc.)	No data available.
Odor	No data available.
Odor threshold	No data available.
pH	No data available.
Melting point/freezing point	No data available.
Initial boiling point and boiling range	No data available.
Flash point	No data available.
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper/lower flammability limits	No data available.
Vapor pressure	No data available.
Vapor density	No data available.
Relative density	No data available.
Solubility(ies)	No data available.
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

**SECTION 10: Stability and reactivity****10.5 Incompatible materials**

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Terpinolene: Heat, flames and sparks.

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Limonene: Strong oxidizing agents.

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Ocimene: No data available.

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Myrcene: Strong oxidizing agents. Heat, flames and sparks.

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Beta Pinene: Strong oxidizing agents. Heat, flames, and sparks. Vapors may form explosive mixture with air.

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Terpineol: Oxidizing agents.

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Alpha Pinene: Vapors may form explosive mixture with air. Heat, flames and sparks. Strong oxidizing agents.

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Linalool: Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials. Strong oxidizing agents.

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Eucalyptol: Strong oxidizing agents, strong acids, acid chlorides, acid anhydrides.

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Menthol: Keep away from heat, sparks and open flame. Avoid temperatures exceeding the flash point. Minimize dust generation and accumulation. Contact with incompatible materials. Strong oxidizing agents.

## 10.6 Hazardous decomposition products

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Terpinolene: No data available.

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Limonene: No hazardous decomposition products if stored and handled as indicated.

## SECTION 11: Toxicological information

### Information on toxicological effects

#### Acute toxicity

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Terpinolene: No data available.

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Limonene: Maybe fatal if swallowed and enters airways. May be harmful in contact with skin. May cause an allergic skin reaction.

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Linalool: LD50 Oral: Rat, 2,790 mg/kg  
LD50 Dermal: Rabbit, 2,000 mg/kg

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Geranyl Acetate: LD50 Oral: Rat, 6,330 mg/kg

Remarks:  
Behavioral: Somnolence (general depressed activity).  
Behavioral: Coma

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Pulegone: LD50 Oral: Rat, 470 mg/kg  
LD50 Dermal: Rabbit, 3,090 mg/kg

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Alpha Bisabolol: Dermal LD50 Rabbit: > 15,000 mg/kg

Oral LD50 Rat: > 20,000 mg/kg

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Menthol: LD50 Oral: Rat, 2,600 mg/kg

// ----- From the Suggestion report (09/13/2017, 5:57 PM) ----- //  
ATE (inhalation, gaseous) of mixture: 90000 ppmv

#### **Skin corrosion/irritation**

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Terpinolene: No data available.

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Limonene: Causes skin irritation.

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Linalool: Causes skin irritation.  
Guinea Pig - skin irritation, 24h, Draize Test  
Rabbit - irritant (OECD Guideline 405)

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Camphene: Rabbit, no skin irritation - 4 h (OECD Test Guideline 404)

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Geranyl Acetate: Causes skin irritation.  
Species: Rabbit  
Result: Irritant

Method: OECD Guideline 405

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Pulegone: Causes mild skin irritation.

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Alpha Bisabolol: Prolonged skin contact may cause temporary irritation.

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Menthol: Causes skin irritation.  
Rabbit: Irritating to skin.

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Alpha Cedrene: Skin - rabbit - Skin irritation

### **Serious eye damage/irritation**

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Terpinolene: No data available.

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Limonene: Direct contact with eyes may cause temporary irritation.  
Eyes - rabbit. Result: No eye irritation.  
(OECD Test Guideline 405)

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Linalool: Causes serious eye irritation.  
Rabbit - moderate eye irritation, Draize Test  
Rabbit - slightly irritating (OECD Guideline 405)

-----  
Camphene: Rabbit, irritating to eyes - 24 h (OECD Test Guideline 405)

-----  
Geranyl Acetate: Causes serious eye irritation.  
Species: Rabbit  
Result: Irritant  
Method: OECD Guideline 405

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Menthol: Causes serious eye damage.  
Rabbit: Mild eye irritation.

### **Respiratory or skin sensitization**

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Terpinolene: No data available.

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Limonene: May cause an allergic skin reaction.

Mouse. Result: May cause sensitisation by skin contact.  
(OECD Test Guideline 429)

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Linalool: Patch-test / Human: Non-sensitizing  
Draize test / Guinea Pig: Non-sensitizing

-----  
Geranyl Acetate: Not a respiratory sensitizer.

May cause an allergic skin reaction.  
Species: Guinea Pig  
Result: Non-sensitizing

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Pulegone: Not a respiratory sensitizer. This product is not expected to cause skin sensitization.

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Menthol: Not a respiratory sensitizer.  
Humans (Skin Sensitisation): No sensitizing effect at 8%

#### **Germ cell mutagenicity**

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Terpinolene: No data available.

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Limonene: Mouse  
Lymphocyte  
Result: Negative

Rat - Male  
Result: Negative

-----  
Linalool: Results from a number of mutagenicity studies with microorganisms, mammalian cell cultures and mammals are available. Taking into account all of the information, there is no indication that the substance is mutagenic.

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Camphene: Hamster (ovary)  
Result: negative

Mouse (lymphocyte)  
Result: negative

Mutagenicity (micronucleus test) mouse (male and female)  
Result: negative

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Geranyl Acetate: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity**

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Terpinolene: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.

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Limonene: IARC Monographs: Overall Evaluation of Carcinogenicity - CARVENE (CAS 5989-27-5) 3 Not classifiable as to carcinogenicity to humans.

OSHA: Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.

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Ocimene: IARC: No component of this product, present levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product, present levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product, present levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product, present levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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Myrcene: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.

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Beta Caryophyllene: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possibly or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possibly or confirmed human carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possibly or confirmed human carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as probably, possibly or confirmed human carcinogen by OSHA.

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Alpha Pinene: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA.

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Phytol: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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Pulegone: IARC: Monographs, Overall Evaluation of Carcinogenicity  
p-Menth-4(8)-en-3-one (CAS 89-82-7) 2B Possibly carcinogenic to humans.

OSHA: Specifically Regulated Substances (29 CFR 1910.1001-1050)  
Not listed.

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Alpha Bisabolol: OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not listed.

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Alpha Cedrene: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.



ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

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Terpinolene: No data available.

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Limonene: This product is not expected to cause reproductive or developmental effects.

**Summary of evaluation of the CMR properties**

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Terpinolene: No data available.

**STOT-single exposure**

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Terpinolene: No data available.

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Limonene: Not classified.

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Phytol: Inhalation - May cause respiratory irritation.

-----  
Linalool: Not Classified.

**STOT-repeated exposure**

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Terpinolene: No data available.

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Limonene: Repeated dose toxicity - mouse - male and female - No observed adverse effect level - 1,650 mg/kg -  
Lowest observed adverse effect level - 3,300 mg/kg.

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Linalool: Not Classified.

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Geranyl Acetate: Not classified.

**Aspiration hazard**

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Terpinolene: No data available.

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Alpha Bisabolol: Not an aspiration hazard.

## SECTION 12: Ecological information

### Toxicity

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Terpinolene: No data available.

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Limonene: Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.

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Linalool: Activated sludge of a predominantly domestic sewage: EC10, > 100 mg/l, 3 hours

Green Algae (*Chlamydomonas variabilis*): EC50, 88.3 mg/l, 96 hours DIN 38412 Part 9 static. The details of the toxic effect related to the nominal concentration.

Daphnia magna: EC50, 20 mg/l, 48 hours DIN 38412 Part 11 static. The details of the toxic effect related to the nominal concentration.

Ide, silver or golden orfe (*Leuciscus idus*): LC50, 22 - 46 mg/l, 96 hours DIN 38412 Part 15 static. The details of the toxic effect related to the nominal concentration.

Fish: LC50-R, 27.8 mg/l, 96 hours.

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Camphene: Fish: Flow-through test LC50 - *Brachydanio rerio* (zebrafish) - 0.72 mg/l - 96 h (OECD Test Guideline 203)

Daphnia and Other Aquatic Invertebrates: Semi-static test EC50 - *Daphnia magna* (water flea) - 0.72 mg/l - 48 h (OECD Test Guideline 202)

Algae: Static test EC50 - *Desmodesmus subspicatus* (*Scenedesmus subspicatus*) - > 1,000 mg/l - 72 h (OECD Test Guideline 201)

Bacteria: Respiration inhibition EC50 - Sludge Treatment - > 1,000 mg/l - 3 h (OECD Test Guideline 209)

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Geranyl Acetate: Green Algae (*Chlamydomonas variabilis*): EC50 3.72 mg/l, 72 hours OECD Guideline 201 static. The statement of the toxic effect relates to the analytically determined concentration.

Daphnia magna: EC50 14.1 mg/l, 48 hours Directive 84/449/EEC, C.2 static. The statement of the toxic effect relates to the analytically determined concentration.

Fish: LC50 68.12 mg/l, 96 hours *Cyprinus carpio*. OECD Guideline 203 static. The product has not been tested. The statement has been derived from products of a similar structure or composition.

Bacterium: EC10 >10,000 mg/l, 0.5 hours DIN 38412 Part 27 (draft) aquatic. The statement of the toxic effect relates to the analytically determined concentration. The product has low solubility in the test medium. An aqueous solution prepared with solubilizers has been tested.

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Pulegone: Water Flea (*Daphnia pulex*): EC50, 24.4 mg/l, 48 hours

-----  
Alpha Bisabolol: EC10 *Pseudomonas putida*: > 10,000 mg/l, 16 hours

LC50 *Leuciscus idus* (Golden orfe): 4.6 - 10 mg/l, 96 hours

-----  
Menthol: Micro-organisms: EC50 306 mg/l, 3 hours

*Daphnia magna*: EC50 44.3 mg/l, 24 hours

*Danio rerio*: LC50 22.3 mg/l, 96 hours

-----  
Alpha Cedrene: EC50: *Daphnia pulex* (Water flea) - 0.044 mg/l - 48

#### **Persistence and degradability**

-----  
Terpinolene: No data available.

-----  
Limonene: Biodegradability: Result: 71% - Readily biodegradable. (OECD Test Guideline 301B)

-----  
Linalool: Biological/Abiological Degradation  
Test method: OECD 301D; EEC 92/69, C.4-E (aerobic), municipal sewage treatment plant effl.  
Method of analysis: BOD of the ThOD  
Degree of elimination: 60 - 70% (28 d)  
Evaluation: Readily biodegradable (according to OECD criteria)

-----  
Camphene: Aerobic - Exposure time 28d. Result: 14% - not readily biodegradable (OECD Test Guideline 301C)

-----  
Geranyl Acetate: Biological / Abiological Degradation  
Test Method: OECD Guideline 301F (aerobic), activated sludge, domestic  
Method of Analysis: BOD of the ThOD  
Degree of Elimination: >70% (28d)  
Evaluation: Readily biodegradable (according to OECD criteria)

**Hydrolysis**

Test Method: OECD Guideline 111 (abiotic)

pH7

Half-life: 1.539 h (25°C)

**Environmental Mobility:**

Transportation between environmental compartments:

Calculated absorption / water-soil

KOC: 1151

Log KOC: 3.06

-----

Pulegone: No data is available on the degradability of this product.

-----

Menthol: Biodegradability:

Readily biodegradable

100%/28d, Modified OECD screening test

Readily biodegradable

79%/28d, Closed bottle test, OECD 301-D. (BOD[28]/COD)

**Bioaccumulative potential**

-----

Terpinolene: No data available.

-----

Linalool: Significant accumulation in organisms is not to be expected.

-----

Camphene: Cyprinus carpio (Carp) - 56 d at 25°C - 0.015 mg/l

Bioconcentration factor (BCF): 432 - 922 (OECD Test Guideline 305C)

-----

Menthol: Partition coefficient n-octanol / water (log Kow)

3.3

**Mobility in soil**

-----

Terpinolene: No data available.

**Results of PBT and vPvB assessment**

-----

Terpinolene: No data available.

**Other adverse effects**

-----  
Terpinolene: No data available.

-----  
Limonene: EC50 Water Flea (*Daphnia pulex*) 69.6 mg/l, 48 hours

LC50 Fathead minnow (*Pimephales promelas*) 0.619 - 0.796 mg/l, 96 hours

LC50 Rainbow trout, donaldson trout (*Oncorhynchus mykiss*) 35 mg/l, 4 days

EC50 Activated sludge 3.94 mg/l

-----  
Alpha Bisabolol: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

**SECTION 13: Disposal considerations****Disposal of the product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Contact a licensed professional waste disposal service to dispose of this material.

**Disposal of contaminated packaging**

Offer surplus and non-recyclable solutions to a licensed disposal company.

**Waste treatment**

No data available.

**Sewage disposal**

No data available.

**SECTION 14: Transport information****DOT (US)**

UN Number:

Class:

Packing Group:

Proper Shipping Name:

Reportable quantity (RQ):

Marine pollutant:

Poison inhalation hazard:

**IMDG**

UN Number:

Class:  
Packing Group:  
EMS Number:  
Proper Shipping Name:

**IATA**

UN Number:  
Class:  
Packing Group:  
Proper Shipping Name:

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations specific for the product in question****CAA Section 112 HAPs List**

Not regulated.

**CAA Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**CAA Section 112r Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any reproductive harm. This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm. This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm. This product does not contain any chemicals known to State of the California to cause cancer, birth defects, or any other reproductive harm.

**CERCLA Hazardous Substance List (40 CFR 1910.1001-1050)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**Massachusetts Right to Know Components**

No components are subject to the Massachusetts Right to Know Act. Chemical name:  $\alpha$ -Pinene  
CAS number: 80-56-8. No components are are subject to the Massachusetts Right to Know Act.

**New Jersey Right to Know Components**

3,7-Dimethylocta-1,3,6-triene CAS No: 13877-91-3. Chemical Name: 7-Methyl-3-methyleneocta-1,6-diene,  
CAS Number: 123-35-3. Chemical Name: Caryophyllene  
CAS Number: 87-44-5. (-)-Pin-2(10)-ene, CAS No: 127-91-3. 2-Hexadecen-1-ol,3,7,11,15-tetramethyl- CAS-No:  
7541-49-3. Chemical Name: Humulene  
CAS Number: 6753-98-6. 3,3-Dimethyl-8,9-dinorbornan-2-ol CAS-No. 1632-73-1. Chemical Name: Camphene  
CAS Number: 79-92-5. Cineole, CAS No. 470-82-6. (-)-alpha-Cedrene, CAS-No. 469-61-4. Chemical name:  $\alpha$ -  
Pinene  
CAS number: 80-56-8



**OSHA Hazards**

Irritant.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**Pennsylvania Right to Know Components**

3,7-Dimethylocta-1,3,6-triene CAS No: 13877-91-3. Chemical Name: 7-Methyl-3-methyleneocta-1,6-diene,

CAS Number: 123-35-3. Chemical Name: Caryophyllene

CAS Number: 87-44-5. (-)-Pin-2(10)-ene, CAS No: 127-91-3. 2-Hexadecen-1-ol,3,7,11,15-tetramethyl- CAS-No: 7541-49-3. Chemical Name: Humulene

CAS Number: 6753-98-6. 3,3-Dimethyl-8,9-dinorbornan-2-ol CAS-No. 1632-73-1. Chemical Name: Camphene

CAS Number: 79-92-5. Cineole, CAS No. 470-82-6. (-)-alpha-Cedrene, CAS-No. 469-61-4. Chemical name:  $\alpha$ -Pinene

CAS number: 80-56-8

**Right to Know Components (Pennsylvania, New Jersey, Massachusetts)**

Terpineol, CAS No. 8000-41-7

**Right to Know Components (Pennsylvania, New Jersey)**

p-Mentha-1,4(8)-diene, CAS No. 586-62-9. 3,7,11-Trimethyldodeca-1,6,10-trien-3-ol,mixed isomers, CAS-No. 7212-44-4

**SARA 302 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 302 Extremely Hazardous Substance**

Not listed.

**SARA 304 Emergency Release Notification**

Not regulated.

**SARA 311 / 312**

No SARA hazards.

**SARA 311 / 312 Hazardous Chemical**

Yes. No. Yes.

**SARA 311 / 312 Hazards**

Fire Hazard. Fire hazard, acute health hazard. Fire hazard, acute health hazard. Acute Health Hazard. Acute Health Hazard. Fire hazard, acute health hazard, chronic health hazard.

**SARA 311/312**

Fire hazard.

**SARA 311/312 Hazardous Chemical**

No.

**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard. Fire hazard, acute health hazard.

**SARA 313 (TRI Reporting)**

Not regulated.

**SARA 313 Components**

This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313. This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.



**SARA Hazard Categories**

Immediate Hazard - Yes  
Delayed Hazard - No  
Fire Hazard - Yes  
Pressure Hazard - No  
Reactivity Hazard - No. Immediate Hazard - Yes  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No. Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - Yes  
Pressure Hazard - No  
Reactivity Hazard - No. Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

**SDWA**

Not regulated.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D)**

Not regulated.

**US California Proposition 65 - CRT: Listed Date / Carcinogenic Substance**

p-Menth-4(8)-en-3-one (CAS 89-82-7)

Listed: April 18, 2014 Carcinogenic.

**US California Proposition 65 CRT: Listed Substance**

Not listed.

**US Federal Regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**US Federal Regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**US Massachusetts RTK - Substance List**

Not regulated.

**US New Jersey Work and Community Right-to-Know Act**

Not listed.

**US Pennsylvania Worker and Community Right-to-Know Law**

Not listed.

**US Rhode Island RTK**

Not regulated.

**US. California Proposition 65 - CRT: Listed Substance**





p-Menth-4(8)-en-3-one (CAS 89-82-7)

**US. California Proposition 65 CRT: Listed Substance**

Not listed.

**US. Massachusetts RTK - Substance List**

Not regulated.

**US. New Jersey Worker and Community Right-to-Know Act**

CARVENE (CAS 5989-27-5). Not listed.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**US. Pennsylvania Worker and Community Right-to-Know Law**

Not listed.

**US. Pennsylvania Worker and Community Right-to-Know Law**

Not listed.

**US. Rhode Island RTK**

Not regulated.

## SECTION 16: Other information

True Terpenes cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufactures, and technical groups and is considered to be accurate to the best of True Terpenes' knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.