

## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations  
Issue date: 1/26/2024 Version: 1.0

### SECTION 1: Identification

#### 1.1. Identification

Product form : Mixture  
Product name : The Foliage Fragrance Oil  
Product code : DDF0698

#### 1.2. Recommended use and restrictions on use

No additional information available

#### 1.3. Supplier

Black Tie Barn LLC  
1317 E County Road H  
Suite E  
Liberty, MO 64068  
<https://www.blacktiebarn.com>

### 2.1. Classification of the substance or mixture

#### GHS US classification

Flammable liquids, Category 4	H227	Combustible liquid
Skin corrosion/irritation, Category 2	H315	Causes skin irritation.
Serious eye damage/eye irritation, Category 2	H319	Causes serious eye irritation.
Skin sensitisation, Category 1	H317	May cause an allergic skin reaction.

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) :

Warning

Hazard statements (GHS US) :

H227 - Combustible liquid  
H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H319 - Causes serious eye irritation.

Precautionary statements (GHS US) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.  
P264 - Wash hands, forearms and face thoroughly after handling.

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P272 - Contaminated work clothing must not be allowed out of the workplace.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P302+P352 - If on skin: Wash with plenty of water. P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P321 - Specific treatment (see supplemental first aid instruction on this label).  
P332+P313 - If skin irritation occurs: Get medical advice/attention.  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P362+P364 - Take off contaminated clothing and wash it before reuse.  
P363 - Wash contaminated clothing before reuse.  
P370+P378 - In case of fire: Use media other than water to extinguish.  
P403+P235 - Store in a well-ventilated place. Keep cool. P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	%	GHS US classification
Eugenol	CAS-No.: 97-53-0	10–15	Eye Irrit. 2, H319 Skin Sens. 1B, H317
cinnamaldehyde	CAS-No.: 104-55-2	5 – 10	Acute Tox. 4 (Dermal), H312 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1A, H317
d-Limonene	CAS-No.: 5989-27-5	5 – 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304
benzyl benzoate	CAS-No.: 120-51-4	5 – 10	Acute Tox. 4 (Oral), H302
coumarin	CAS-No.: 91-64-5	1 – 5	Skin Sens. 1B, H317
2-phenylethanol	CAS-No.: 60-12-8	1 – 5	Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319
Ethyl methylphenylglycidate	CAS-No.: 77-83-8	1 – 5	Skin Sens. 1B, H317
beta-Caryophyllene	CAS-No.: 87-44-5	1 – 5	Skin Sens. 1B, H317 Asp. Tox. 1, H304
alpha-Methylbenzyl acetate	CAS-No.: 93-92-5	1 – 5	Flam. Liq. 4, H227 Acute Tox. 4 (Oral), H302
4-(p-Hydroxyphenyl)-2-butanone	CAS-No.: 5471-51-2	1 – 5	Acute Tox. 4 (Oral), H302

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Name	Product identifier	%	GHS US classification
delta-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one	CAS-No.: 57378-68-4	0.1 – 0.5	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Skin Sens. 1A, H317

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

### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

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 : 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

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

#### 5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

#### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### SECTION 6: Accidental release measures

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

##### 6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area.

##### 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 release to the environment.

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

Methods for cleaning up : Take up liquid spill into absorbent material.  
Other information : Dispose of materials or solid residues at an authorized site.

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### 6.4. Reference to other sections

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. Wear personal protective equipment.  
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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

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

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

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No additional information available

#### d-Limonene (5989-27-5)

No additional information available

#### 2-phenylethanol (60-12-8)

No additional information available

#### alpha-Methylbenzyl acetate (93-92-5)

No additional information available

#### cinnamaldehyde (104-55-2)

No additional information available

#### Eugenol (97-53-0)

No additional information available

#### delta-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one (57378-68-4)

No additional information available

#### beta-Caryophyllene (87-44-5)

No additional information available

#### Ethyl methylphenylglycidate (77-83-8)

No additional information available

#### coumarin (91-64-5)

No additional information available

#### benzyl benzoate (120-51-4)

No additional information available

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### 4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)

No additional information available

### 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:

Protective gloves

#### Eye protection:

Safety glasses

#### Skin and body protection:

Wear suitable protective clothing

#### Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

#### Personal protective equipment symbol(s):



## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Liquid  
Colour : Mixture contains one or more component(s) which have the following colour(s):  
Colourless Light yellow to colourless On exposure to air: yellow-brown Colourless to light yellow  
White Light yellow  
Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.  
Mixture contains one or more component(s) which have the following odour:  
Fruity odour Almond odour Lemon odour Mild odour Floral odour Strong odour Cinnamon odour  
Characteristic odour Irritating/pungent odour Pleasant odour Aromatic odour  
Odour threshold : No data available  
pH : No data available  
Melting point : Not applicable  
Freezing point : No data available  
Boiling point : No data available  
Flash point : 163 °F  
Relative evaporation rate (butylacetate=1) : No data available  
Flammability (solid, gas) : Not applicable.  
Vapour pressure : No data available  
Relative vapour density at 20°C : No data available  
Relative density : No data available  
Solubility : No data available  
Partition coefficient n-octanol/water (Log Pow) : No data available  
Auto-ignition temperature : No data available

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Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available

### 9.2. Other information

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.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 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

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

#### d-Limonene (5989-27-5)

LD50 oral rat	> 2000 mg/kg bodyweight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	> 5000 mg/kg bodyweight (Equivalent or similar to OECD 402, 24 h, Rabbit, Read-across, Dermal, 7 day(s))

#### 2-phenylethanol (60-12-8)

LD50 oral rat	1603 mg/kg bodyweight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	2535 mg/kg bodyweight (Equivalent or similar to OECD 402, 24 h, Rabbit, Male / female, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 4.63 mg/l (4 h, Rat, Male / female, Experimental value, Inhalation (aerosol), 14 day(s))

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<b>2-phenylethanol (60-12-8)</b>	
ATE US (oral)	1603 mg/kg bodyweight
ATE US (dermal)	2500 mg/kg bodyweight
ATE US (dust,mist)	1.38 mg/l/4h
<b>alpha-Methylbenzyl acetate (93-92-5)</b>	
LD50 oral rat	> 5000 mg/kg Source: National Library of Medicine
LD50 dermal rabbit	> 5000 mg/kg Source: National Library of Medicine
ATE US (oral)	2000 mg/kg bodyweight
<b>cinnamaldehyde (104-55-2)</b>	
LD50 oral rat	2220 mg/kg (Rat, Oral)
LD50 dermal rat	> 2000 mg/kg Source: IUCLID
LD50 dermal rabbit	1260 ml/kg (24 h, Rabbit, Male / female, Experimental value, Dermal)
LC50 Inhalation - Rat	68.88 mg/l (4 h, Rat, Male / female, QSAR, Inhalation)
LC50 Inhalation - Rat [ppm]	68.88871 ppm Animal: rat, Guideline: other:Not Applicable;OECD Guideline 403 (Acute Inhalation Toxicity)
ATE US (oral)	2200 mg/kg bodyweight
ATE US (dermal)	1100 mg/kg bodyweight
ATE US (vapours)	68.88 mg/l/4h
ATE US (dust,mist)	68.88 mg/l/4h
<b>Eugenol (97-53-0)</b>	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method)
ATE US (oral)	2500 mg/kg bodyweight
<b>delta-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one (57378-68-4)</b>	
ATE US (oral)	1400 mg/kg bodyweight
<b>Ethyl methylphenylglycidate (77-83-8)</b>	
LD50 oral rat	5470 mg/kg (Rat, Male / female, Weight of evidence, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg bodyweight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal)
ATE US (oral)	5470 mg/kg bodyweight
<b>coumarin (91-64-5)</b>	
LD50 oral rat	680 mg/kg bodyweight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	293 mg/kg bodyweight Animal: rat, Guideline: other:no data
ATE US (oral)	500 mg/kg bodyweight
ATE US (dermal)	293 mg/kg bodyweight

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<b>benzyl benzoate (120-51-4)</b>	
LD50 oral rat	> 2000 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rabbit	> 2000 mg/kg bw/day (Modification of Draize 1959 method, 4 h, Rabbit, Experimental value, Dermal)
ATE US (oral)	1500 mg/kg bodyweight
ATE US (dermal)	4000 mg/kg bodyweight
<b>4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)</b>	
LD50 oral rat	1320 mg/kg Source: Corporate Solution From Thomson Micromedex
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
ATE US (oral)	1320 mg/kg bodyweight
Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitisation	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
<b>d-Limonene (5989-27-5)</b>	
IARC group	3 - Not classifiable
<b>Eugenol (97-53-0)</b>	
IARC group	3 - Not classifiable
<b>coumarin (91-64-5)</b>	
IARC group	3 - Not classifiable
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
<b>2-phenylethanol (60-12-8)</b>	
NOAEL (dermal, rat/rabbit, 90 days)	510 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)
<b>alpha-Methylbenzyl acetate (93-92-5)</b>	
NOAEL (oral, rat, 90 days)	150 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
<b>cinnamaldehyde (104-55-2)</b>	
NOAEL (oral, rat, 90 days)	200 mg/kg bodyweight Animal: rat, Guideline: other:
<b>Eugenol (97-53-0)</b>	
NOAEL (subchronic, oral, animal/male, 90 days)	≥ 900 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: other:OECD Guideline 451 (Carcinogenicity Studies)
NOAEL (subchronic, oral, animal/female, 90 days)	450 mg/kg bodyweight Animal: mouse, Animal sex: female, Guideline: other:OECD Guideline 451 (Carcinogenicity Studies)
<b>Ethyl methylphenylglycidate (77-83-8)</b>	
NOAEL (dermal, rat/rabbit, 90 days)	> 1000 mg/kg bodyweight Animal: rat, Guideline: other:OECD Guideline 421 (Reproduction / Developmental Toxicity Screening Test)



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### coumarin (91-64-5)

NOAEL (subchronic, oral, animal/female, 90 days) > 138.3 mg/kg bodyweight Animal: mouse, Animal sex: female

### benzyl benzoate (120-51-4)

NOAEL (dermal, rat/rabbit, 90 days) 781 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 410 (Repeated Dose Dermal Toxicity: 21/28-Day Study)

### 4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)

NOAEL (oral, rat, 90 days) ≈ 600 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 407 (Repeated Dose 28-Day Oral Toxicity Study in Rodents)

Aspiration hazard : Not classified  
Viscosity, kinematic : No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

### d-Limonene (5989-27-5)

LC50 - Fish [1]	720 µg/l (Equivalent or similar to OECD 203, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value)
EC50 - Crustacea [1]	0.307 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Semi-static system, Fresh water, Experimental value, GLP)
LC50 - Fish [2]	702 µg/l Test organisms (species): Pimephales promelas
EC50 - Crustacea [2]	0.51 mg/l Test organisms (species): Daphnia magna
NOEC (chronic)	0.115 mg/l Test organisms (species): other:For freshwater invertebrates, species frequently include Daphnia magna or Daphnia pulex. Duration: '16 d'

### 2-phenylethanol (60-12-8)

LC50 - Fish [1]	215 – 464 mg/l (DIN 38412: German standard methods for the examination of water, waste water and sludge, 96 h, Leuciscus idus, Static system, Fresh water, Experimental value, Nominal concentration)
EC50 - Crustacea [1]	287.17 mg/l (EU Method C.2, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
ErC50 algae	1300 mg/l (DIN 38412: German standard methods for the examination of water, waste water and sludge, 72 h, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, Nominal concentration)

### alpha-Methylbenzyl acetate (93-92-5)

LC50 - Fish [1]	21 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	37 mg/l Test organisms (species): Daphnia magna
LC50 - Fish [2]	18.32 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)

### cinnamaldehyde (104-55-2)

LC50 - Fish [1]	4.15 mg/l (EU Method C.1, 96 h, Danio rerio, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	3.21 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)

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<b>cinnamaldehyde (104-55-2)</b>	
NOEC chronic fish	15159 mg/l Test organisms (species): other: Duration: '28 d'
<b>Eugenol (97-53-0)</b>	
LC50 - Fish [1]	13 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	1.05 mg/l Test organisms (species): Daphnia magna
<b>beta-Caryophyllene (87-44-5)</b>	
EC50 - Crustacea [1]	> 0.17 mg/l Test organisms (species): Daphnia magna
<b>Ethyl methylphenylglycidate (77-83-8)</b>	
LC50 - Fish [1]	4.2 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	52 mg/l Test organisms (species): Daphnia magna
ErC50 algae	36 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
<b>coumarin (91-64-5)</b>	
LC50 - Fish [1]	2.94 mg/l (96 h, Pimephales promelas, QSAR, Lethal)
EC50 - Crustacea [1]	24.3 – 36.9 mg/l (48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)
LC50 - Fish [2]	1324 mg/l Test organisms (species):
NOEC (chronic)	0.5 mg/l Test organisms (species): Duration: '21 d'
NOEC chronic fish	0.191 mg/l Test organisms (species): Duration: '30 d'
<b>benzyl benzoate (120-51-4)</b>	
LC50 - Fish [1]	2.32 mg/l (EU Method C.1, 96 h, Danio rerio, Semi-static system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	3.09 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
<b>4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)</b>	
LC50 - Fish [1]	75.746 mg/l Test organisms (species):
EC50 - Crustacea [1]	< 100 mg/l Test organisms (species): Daphnia magna

### 12.2. Persistence and degradability

<b>d-Limonene (5989-27-5)</b>	
Persistence and degradability	Readily biodegradable in water.
ThOD	3.29 g O <sub>2</sub> /g substance
<b>2-phenylethanol (60-12-8)</b>	
Persistence and degradability	Biodegradable in the soil. Readily biodegradable in water.
Biochemical oxygen demand (BOD)	1.45 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	2.5 g O <sub>2</sub> /g substance
ThOD	2.6 g O <sub>2</sub> /g substance

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### cinnamaldehyde (104-55-2)

Persistence and degradability	Readily biodegradable in water.
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### Ethyl methylphenylglycidate (77-83-8)

Persistence and degradability	Not readily biodegradable in water.
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### coumarin (91-64-5)

Persistence and degradability	Readily biodegradable in water.
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### benzyl benzoate (120-51-4)

Persistence and degradability	Readily biodegradable in water.
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## 12.3. Bioaccumulative potential

### d-Limonene (5989-27-5)

BCF - Fish [1]	864.8 l/kg (BCFBAF v3.01, Pisces, QSAR, Fresh weight)
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Partition coefficient n-octanol/water (Log Pow)	4.38 (Experimental value, Equivalent or similar to OECD 117, 37 °C)
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Bioaccumulative potential	Potential for bioaccumulation ( $4 \leq \text{Log Kow} \leq 5$ ).
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### 2-phenylethanol (60-12-8)

Partition coefficient n-octanol/water (Log Pow)	1.3 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 20 °C)
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Bioaccumulative potential	Low potential for bioaccumulation ( $\text{Log Kow} < 4$ ).
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### alpha-Methylbenzyl acetate (93-92-5)

Partition coefficient n-octanol/water (Log Pow)	2.5 Source: Quantitative Structure Activity Relation
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### cinnamaldehyde (104-55-2)

Partition coefficient n-octanol/water (Log Pow)	2.107 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
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Bioaccumulative potential	Low potential for bioaccumulation ( $\text{Log Kow} < 4$ ).
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### Eugenol (97-53-0)

Partition coefficient n-octanol/water (Log Pow)	2.27 Source: ChemIDplus
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### Ethyl methylphenylglycidate (77-83-8)

Partition coefficient n-octanol/water (Log Pow)	2.4 – 2.8 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
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Bioaccumulative potential	Low potential for bioaccumulation ( $\text{Log Kow} < 4$ ).
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### coumarin (91-64-5)

Partition coefficient n-octanol/water (Log Pow)	1.51 (Estimated value, 25 °C)
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Bioaccumulative potential	Low potential for bioaccumulation ( $\text{Log Kow} < 4$ ).
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### benzyl benzoate (120-51-4)

BCF - Fish [1]	193.4 l/kg (BCFBAF v3.01, Pisces, Calculated value)
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Partition coefficient n-octanol/water (Log Pow)	3.97 (Experimental value, 25 °C)
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Bioaccumulative potential	Low potential for bioaccumulation ( $\text{Log Kow} < 4$ ).
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### 4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)

Partition coefficient n-octanol/water (Log Pow)	0.94 Source: The Chemical Database, The Department of Chemistry at the University of Akron
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### 12.4. Mobility in soil

#### d-Limonene (5989-27-5)

Surface tension	No data available in the literature
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.049 – 3.801 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for mobility in soil.

#### 2-phenylethanol (60-12-8)

Surface tension	59.7 mN/m (20 °C, 1 g/l, OECD 115: Surface Tension of Aqueous Solutions)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.5 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)
Ecology - soil	Highly mobile in soil.

#### alpha-Methylbenzyl acetate (93-92-5)

Mobility in soil	2.242 Source: Quantitative Structure Activity Relation
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#### cinnamaldehyde (104-55-2)

Surface tension	45.3 mN/m (20 °C, Experimental value)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.958 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)
Ecology - soil	Highly mobile in soil.

#### Eugenol (97-53-0)

Mobility in soil	409 Source: HSDB
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#### Ethyl methylphenylglycidate (77-83-8)

Mobility in soil	268.1 Source: EPI Suite
Surface tension	59 mN/m (19.6 °C, 0.79 g/l, OECD 115: Surface Tension of Aqueous Solutions)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.34 – 2.74 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value, GLP)
Ecology - soil	Low potential for adsorption in soil.

#### coumarin (91-64-5)

Mobility in soil	140 Source: National Library of Medicine/Hazardous Substances Data Bank
Surface tension	No data available in the literature
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.63 (log Koc, QSAR)
Ecology - soil	Highly mobile in soil.

#### benzyl benzoate (120-51-4)

Surface tension	27 mN/m (210 °C)
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.8 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value, GLP)

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### benzyl benzoate (120-51-4)

Ecology - soil

Low potential for mobility in soil.

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

## SECTION 14: Transport information

### 14.1. UN number

DOT NA No : UN1169  
UN-No. (TDG) : Not applicable  
UN-No. (IMDG) : Not applicable  
UN-No. (IATA) : Not applicable

### 14.2. UN proper shipping name

Proper Shipping Name (DOT) : Extracts, aromatic, liquid  
Proper Shipping Name (TDG) : Not applicable  
Proper Shipping Name (IMDG) : Not applicable  
Proper Shipping Name (IATA) : Not applicable

### 14.3. Transport hazard class(es)

#### DOT

Transport hazard class(es) (DOT) : 3  
Hazard labels (DOT) : 3



#### TDG

Transport hazard class(es) (TDG) : Not applicable

#### IMDG

Transport hazard class(es) (IMDG) : Not applicable

#### IATA

Transport hazard class(es) (IATA) : Not applicable

### 14.4. Packing group

Packing group (DOT) : III  
Packing group (TDG) : Not applicable  
Packing group (IMDG) : Not applicable  
Packing group (IATA) : Not applicable

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### 14.5. Environmental hazards

Other information : No supplementary information available.

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT) : UN1169  
DOT Special Provisions (49 CFR 172.102) : B1 - If the material has a flash point at or above 38 C (100 F) and below 93 C (200 F), then the bulk packaging requirements of 173.241 of this subchapter are applicable. If the material has a flash point of less than 38 C (100 F), then the bulk packaging requirements of 173.242 of this subchapter are applicable.  
IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).  
T2 - 1.5 178.274(d)(2) Normal..... 178.275(d)(3)  
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling =  $97 / (1 + a (tr - tf))$  Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.  
DOT Packaging Exceptions (49 CFR 173.xxx) : 150  
DOT Packaging Non Bulk (49 CFR 173.xxx) : 203  
DOT Packaging Bulk (49 CFR 173.xxx) : 242  
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 60 L  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 220 L  
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### TDG

Emergency Response Guide (ERG) Number : 127

#### IMDG

No data available

#### IATA

No data available

### 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

### 15.2. International regulations

#### CANADA

##### d-Limonene (5989-27-5)

Listed on the Canadian DSL (Domestic Substances List)

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### 2-phenylethanol (60-12-8)

Listed on the Canadian DSL (Domestic Substances List)

### alpha-Methylbenzyl acetate (93-92-5)

Listed on the Canadian DSL (Domestic Substances List)

### cinnamaldehyde (104-55-2)

Listed on the Canadian DSL (Domestic Substances List)

### Eugenol (97-53-0)

Listed on the Canadian DSL (Domestic Substances List)

### delta-1-(2,6,6-Trimethyl-3-cyclohexen-1-yl)-2-buten-1-one (57378-68-4)

Listed on the Canadian DSL (Domestic Substances List)

### beta-Caryophyllene (87-44-5)

Listed on the Canadian DSL (Domestic Substances List)

### Ethyl methylphenylglycidate (77-83-8)

Listed on the Canadian DSL (Domestic Substances List)

### coumarin (91-64-5)

Listed on the Canadian DSL (Domestic Substances List)

### benzyl benzoate (120-51-4)

Listed on the Canadian DSL (Domestic Substances List)

### 4-(p-Hydroxyphenyl)-2-butanone (5471-51-2)

Listed on the Canadian DSL (Domestic Substances List)

### EU-Regulations

No additional information available

### National regulations

No additional information available

### 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

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### Full text of H-statements

H226	Flammable liquid and vapour.
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Full text of H-statements	
H227	Combustible liquid
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Safety Data Sheet (SDS), USA

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.