



OIL, VIOLET SUGAR*

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : OIL, VIOLET SUGAR*
CAS-No. : N/A
Product code : 91-1042-88

1.2. Recommended use and restrictions on use

1.3. Supplier

The Lebermuth Company
4004 Technology Drive
South Bend, IN 46628 - United States
T 574-259-7000 - F 574-258-7450
info@lebermuth.com - www.lebermuth.com

1.4. Emergency telephone number

Emergency number : CHEMTREC - USA: 800-424-9300 International: +1 703-527-3887 / 1-800-424-9300
CCN 13010

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquids Category 4	Combustible liquid
Skin corrosion/irritation Category 2	Causes skin irritation
Serious eye damage/eye irritation Category 2	Causes serious eye irritation
Skin sensitization, Category 1	May cause an allergic skin reaction
Reproductive toxicity Category 2	Suspected of damaging fertility or the unborn child

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



GHS07

GHS08

Signal word (GHS US) :

Warning

Hazard statements (GHS US) :

Combustible liquid
Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
Suspected of damaging fertility or the unborn child

Precautionary statements (GHS US) :

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wash hands, forearms and face thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
Specific treatment (see supplemental first aid instruction on this label).
If skin irritation occurs: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.

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Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.
In case of fire: Use media other than water to extinguish.
Store in a well-ventilated place. Keep cool.
Store locked up.
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
BENZYL BENZOATE	(CAS-No.) 120-51-4	25 – 50	Acute Tox. 4 (Oral), H302
VANILLIN	(CAS-No.) 121-33-5	5 – 10	Eye Irrit. 2A, H319
ORANGE TERPENES	(CAS-No.) 68647-72-3	5 – 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Asp. Tox. 1, H304
LINALOOL	(CAS-No.) 78-70-6	1 – 5	Flam. Liq. 4, H227 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1B, H317
ETHYL MALTOL	(CAS-No.) 4940-11-8	1 – 5	Acute Tox. 4 (Oral), H302
CITRONELLOL	(CAS-No.) 106-22-9	1 – 5	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1B, H317
ETHYL VANILLIN	(CAS-No.) 121-32-4	1 – 5	Eye Irrit. 2B, H320
PIPERONAL	(CAS-No.) 120-57-0	1 – 5	Skin Sens. 1B, H317
3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde	(CAS-No.) 31906-04-4	1 – 5	Skin Sens. 1A, H317
LINALYL ACETATE	(CAS-No.) 115-95-7	1 – 5	Flam. Liq. 4, H227 Skin Irrit. 2, H315 Eye Irrit. 2, H319
ALPHA HEXYL CINNAMALDEHYDE	(CAS-No.) 101-86-0	1 – 5	Skin Sens. 1B, H317
p-t-Butyl- α -methylhydrocinnamic aldehyde	(CAS-No.) 80-54-6	0.1 – 1	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Repr. 2, H361
ORANGE OIL	(CAS-No.) 8008-57-9	0.1 – 1	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304
CITRAL	(CAS-No.) 5392-40-5	0.1 – 1	Flam. Liq. 4, H227 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Skin Sens. 1, 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 general	: IF exposed or concerned: Get medical advice/attention.
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. Take off contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion	: Call a poison center/doctor/physician if you feel unwell.

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4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after skin contact : Irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact : Eye irritation.

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

Fire hazard : Combustible liquid.
Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

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. No open flames, no sparks, and no smoking. Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapors/spray.

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. Notify authorities if product enters sewers or public waters.
Other information : Dispose of materials or solid residues at an authorized site.

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. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear personal protective equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapors/spray.
Hygiene measures : Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. 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. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OIL, VIOLET SUGAR* (N/A)

No additional information available

ETHYL VANILLIN (121-32-4)

No additional information available

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VANILLIN (121-33-5)	
No additional information available	
ETHYL MALTOL (4940-11-8)	
No additional information available	
ALPHA HEXYLCINNAMALDEHYDE (101-86-0)	
No additional information available	
BENZYL BENZOATE (120-51-4)	
No additional information available	
CITRAL (5392-40-5)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Citral
ACGIH OEL TWA [ppm]	5 ppm
Remark (ACGIH)	Body weight eff; URT irr; eye dam; Skin; DSEN; A4 (Not classifiable as a Human Carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories)
CITRONELLOL (106-22-9)	
No additional information available	
p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
No additional information available	
LINALOOL (78-70-6)	
No additional information available	
LINALYL ACETATE (115-95-7)	
No additional information available	
3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (31906-04-4)	
No additional information available	
ORANGE TERPENES (68647-72-3)	
No additional information available	
ORANGE OIL (8008-57-9)	
No additional information available	
PIPERONAL (120-57-0)	
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:

Wear respiratory protection.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: PALE YELLOW TO YELLOW
Odor	: CHARACTERISTIC, MATCHING RETAINER SAMPLE
Odor threshold	: No data available
pH	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: 83 °C
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: 1.024 (1.014 – 1.034)
Solubility	: Insoluble.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

Refractive index	: 1.516 (1.506 – 1.526)
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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

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

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

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Acute toxicity (inhalation) : Not classified

ETHYL VANILLIN (121-32-4)	
LD50 oral rat	> 3160 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Remarks on results: other:
LD50 dermal rat	> 2000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
ATE US (oral)	3000 mg/kg body weight
VANILLIN (121-33-5)	
LD50 oral rat	3300 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Male / female, Experimental value, Oral, 14 day(s))
LD50 dermal rat	> 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s))
ATE US (oral)	3300 mg/kg body weight
ETHYL MALTOL (4940-11-8)	
LD50 oral rat	1220 mg/kg body weight (Equivalent or similar to OECD 401, Rat, Experimental value, Oral)
LD50 dermal rabbit	> 5000 mg/kg body weight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Remarks on results: no indication of skin irritation up to the relevant limit dose level
ATE US (oral)	1200 mg/kg body weight
ALPHA HEXYLCINNAMALDEHYDE (101-86-0)	
ATE US (oral)	3100 mg/kg body weight
BENZYL BENZOATE (120-51-4)	
LD50 oral rat	> 2000 mg/kg body weight (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 body weight
ATE US (dermal)	4000 mg/kg body weight
CITRAL (5392-40-5)	
ATE US (dermal)	2250 mg/kg body weight
CITRONELLOL (106-22-9)	
LD50 oral rat	3450 mg/kg (Rat, Inconclusive, insufficient data, Oral)
LD50 dermal rabbit	2650 mg/kg (Rabbit, Inconclusive, insufficient data, Dermal)
ATE US (oral)	3450 mg/kg body weight
ATE US (dermal)	2650 mg/kg body weight
p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
ATE US (oral)	1390 mg/kg body weight
LINALOOL (78-70-6)	
LD50 oral rat	2790 mg/kg (Rat)
LD50 dermal rat	5610 mg/kg (Rat)
LD50 dermal rabbit	> 5000 mg/kg (Rabbit)
ATE US (oral)	2790 mg/kg body weight
ATE US (dermal)	5610 mg/kg body weight
ORANGE TERPENES (68647-72-3)	
LD50 oral rat	> 2000 mg/kg body weight (OECD 423: Acute Oral Toxicity – Acute Toxic Class Method, Rat, Female, Read-across, Oral)
LD50 dermal rabbit	> 5000 mg/kg body weight (Equivalent or similar to OECD 402, Rabbit, Weight of evidence, Dermal)
ORANGE OIL (8008-57-9)	
LD50 oral rat	> 5000 mg/kg body weight (Rat; Equivalent or similar to OECD 401; Experimental value)
LD50 dermal rabbit	> 5000 mg/kg body weight (Rabbit; Experimental value; Equivalent or similar to OECD 402)
PIPERONAL (120-57-0)	
LD50 oral rat	2700 mg/kg body weight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), Remarks on results: other:., 95% CL: 2350 - 3100

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PIPERONAL (120-57-0)	
LD50 dermal rat	> 5000 mg/kg body weight Animal: rat, Guideline: other:, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Remarks on results: other:
ATE US (oral)	2700 mg/kg body weight

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

ORANGE TERPENES (68647-72-3)	
IARC group	3 - Not classifiable

Reproductive toxicity : Suspected of damaging fertility or the unborn child.

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

ETHYL MALTOL (4940-11-8)	
NOAEL (oral,rat,90 days)	≥ 200 mg/kg body weight Animal: rat, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

CITRONELLOL (106-22-9)	
NOAEL (oral,rat,90 days)	2000 mg/kg body weight Animal: rat, Guideline: other:
NOAEC (inhalation,rat,dust/mist/fume,90 days)	0.063 mg/l air Animal: rat, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

PIPERONAL (120-57-0)	
NOAEL (oral,rat,90 days)	300 mg/kg body weight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test), Guideline: other:

Aspiration hazard : Not classified
Viscosity, kinematic : No data available
Symptoms/effects after skin contact : Irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact : Eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

ETHYL VANILLIN (121-32-4)	
LC50 - Fish [1]	87.6 mg/l Test organisms (species): Pimephales promelas
EC50 - Crustacea [1]	26.2 mg/l Test organisms (species): Daphnia magna
LOEC (chronic)	10 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	5.9 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

VANILLIN (121-33-5)	
LC50 - Fish [1]	57 mg/l (Equivalent or similar to OECD 203, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value)

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VANILLIN (121-33-5)	
EC50 - Crustacea [1]	36.79 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
LC50 - Fish [2]	123 mg/l Test organisms (species): Pimephales promelas
ErC50 algae	120 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
LOEC (chronic)	10 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	5.9 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
ETHYL MALTOL (4940-11-8)	
LC50 - Fish [1]	> 85 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Oncorhynchus mykiss, Semi-static system, Fresh water, Experimental value)
EC50 - Crustacea [1]	27 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)
ErC50 algae	7.2 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
BENZYL BENZOATE (120-51-4)	
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)
CITRONELLOL (106-22-9)	
LC50 - Fish [1]	14.66 mg/l (DIN 38412-15, 96 h, Leuciscus idus, Static system, Fresh water, Experimental value)
EC50 - Crustacea [1]	17.48 mg/l (48 h, Daphnia magna, Static system, Fresh water, Experimental value)
p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
LC50 - Fish [1]	2.04 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Danio rerio, Flow-through system, Fresh water, Experimental value, GLP)
EC50 - Crustacea [1]	10.7 mg/l (Other, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)
LINALOOL (78-70-6)	
EC50 - Crustacea [1]	59 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna)
EC50 - Other aquatic organisms [1]	\geq 100 mg/l (3 h; Activated sludge)
LC50 - Fish [2]	27.8 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Salmo gairdneri)
Threshold limit - Algae [1]	88.3 mg/l (EC50; 96 h)
ORANGE TERPENES (68647-72-3)	
LC50 - Fish [1]	720 μ g/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Pimephales promelas, Flow-through system, Fresh water, Experimental value, Lethal)
EC50 - Crustacea [1]	0.36 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
ErC50 algae	0.32 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, GLP)
ORANGE OIL (8008-57-9)	
LC50 - Fish [1]	702 μ g/l (LC50; Equivalent or similar to OECD 203; 96 h; Pimephales promelas; Flow-through system; Fresh water; Read-across)
EC50 - Crustacea [1]	0.67 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)
PIPERONAL (120-57-0)	
LC50 - Fish [1]	2.5 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Cyprinus carpio, Static system, Fresh water, Experimental value)
EC50 - Crustacea [1]	52 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value)
ErC50 algae	31 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value)

12.2. Persistence and degradability

VANILLIN (121-33-5)	
Persistence and degradability	Readily biodegradable in water.

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ETHYL MALTOL (4940-11-8)	
Persistence and degradability	Readily biodegradable in water.
BENZYL BENZOATE (120-51-4)	
Persistence and degradability	Readily biodegradable in water.
CITRONELLOL (106-22-9)	
Persistence and degradability	Readily biodegradable in water.
Chemical oxygen demand (COD)	2.05 g O ₂ /g substance
ThOD	2.961 g O ₂ /g substance
p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
Persistence and degradability	Readily biodegradable in water.
LINALOOL (78-70-6)	
Persistence and degradability	Readily biodegradable in water.
Biochemical oxygen demand (BOD)	1.531 g O ₂ /g substance
Chemical oxygen demand (COD)	2.808 g O ₂ /g substance
ORANGE TERPENES (68647-72-3)	
Persistence and degradability	Readily biodegradable in water.
ThOD	3.29 g O ₂ /g substance
PIPERONAL (120-57-0)	
Persistence and degradability	Biodegradable in the soil. Readily biodegradable in water.
ThOD	1.71 g O ₂ /g substance

12.3. Bioaccumulative potential

VANILLIN (121-33-5)	
Partition coefficient n-octanol/water (Log Pow)	1.17 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
ETHYL MALTOL (4940-11-8)	
Partition coefficient n-octanol/water (Log Pow)	2.9 (Practical experience/observation, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
BENZYL BENZOATE (120-51-4)	
BCF - Fish [1]	193.4 l/kg (BCFBAF v3.01, Pisces, Calculated value)
Partition coefficient n-octanol/water (Log Pow)	3.97 (Experimental value, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).
CITRONELLOL (106-22-9)	
BCF - Fish [1]	82.59 l/kg (BCFBAF v3.00, Estimated value)
Partition coefficient n-octanol/water (Log Pow)	3.41 (Practical experience/observation, EU Method A.8: Partition Coefficient, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).
p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
Partition coefficient n-octanol/water (Log Pow)	4.2 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 24 °C)
Bioaccumulative potential	Potential for bioaccumulation (4 ≤ Log Kow ≤ 5).
LINALOOL (78-70-6)	
Partition coefficient n-octanol/water (Log Pow)	2.84 – 3.145
Bioaccumulative potential	Bioaccumable.
ORANGE TERPENES (68647-72-3)	
BCF - Fish [1]	864.8 – 1022 (Pisces, QSAR, Fresh weight)
Partition coefficient n-octanol/water (Log Pow)	4.38 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 37 °C)
Bioaccumulative potential	Potential for bioaccumulation (4 ≤ Log Kow ≤ 5).
ORANGE OIL (8008-57-9)	
BCF - Other aquatic organisms [1]	32 – 395 (BCF; BCFWIN)

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ORANGE OIL (8008-57-9)	
Partition coefficient n-octanol/water (Log Pow)	2.78 – 4.88 (QSAR; KOWWIN)
PIPERONAL (120-57-0)	
Partition coefficient n-octanol/water (Log Pow)	1.2 (Practical experience/observation, OECD 117: Partition Coefficient (n-octanol/water), HPLC method, 35 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

VANILLIN (121-33-5)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.438 (log Koc, Experimental value)
Ecology - soil	Low potential for mobility in soil.

ETHYL MALTOL (4940-11-8)	
Ecology - soil	No (test)data on mobility of the substance available.

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)
Ecology - soil	Low potential for mobility in soil.

CITRONELLOL (106-22-9)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.85 (log Koc, EPIWIN 2.00, Estimated value)
Ecology - soil	Highly mobile in soil.

p-t-Butyl-α-methylhydrocinnamic aldehyde (80-54-6)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	3.11 (log Koc, PCKOCWIN v1.66, Calculated value)
Ecology - soil	Low potential for mobility in soil.

ORANGE TERPENES (68647-72-3)	
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	Adsorbs into the soil.

PIPERONAL (120-57-0)	
Ecology - soil	No (test)data on mobility of the substance available.

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

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

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Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

ETHYL VANILLIN (121-32-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

ALPHA HEXYLCINNAMALDEHYDE (101-86-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

BENZYL BENZOATE (120-51-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

CITRAL (5392-40-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

p-t-Butyl- α -methylhydrocinnamic aldehyde (80-54-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

LINALYL ACETATE (115-95-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (31906-04-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

ORANGE TERPENES (68647-72-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

ORANGE OIL (8008-57-9)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

ETHYL VANILLIN (121-32-4)

Listed on the Canadian DSL (Domestic Substances List)

VANILLIN (121-33-5)

Listed on the Canadian DSL (Domestic Substances List)

ETHYL MALTOL (4940-11-8)

Listed on the Canadian DSL (Domestic Substances List)

ALPHA HEXYLCINNAMALDEHYDE (101-86-0)

Listed on the Canadian DSL (Domestic Substances List)

BENZYL BENZOATE (120-51-4)

Listed on the Canadian DSL (Domestic Substances List)

CITRAL (5392-40-5)

Listed on the Canadian DSL (Domestic Substances List)

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CITRONELLOL (106-22-9)

Listed on the Canadian DSL (Domestic Substances List)

p-t-Butyl- α -methylhydrocinnamic aldehyde (80-54-6)

Listed on the Canadian DSL (Domestic Substances List)

LINALOOL (78-70-6)

Listed on the Canadian DSL (Domestic Substances List)

LINALYL ACETATE (115-95-7)

Listed on the Canadian DSL (Domestic Substances List)

3 and 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde (31906-04-4)

Listed on the Canadian DSL (Domestic Substances List)

ORANGE TERPENES (68647-72-3)

Listed on the Canadian DSL (Domestic Substances List)

ORANGE OIL (8008-57-9)

Listed on the Canadian DSL (Domestic Substances List)

PIPERONAL (120-57-0)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

No additional information available

National regulations

VANILLIN (121-33-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on INSQ (Mexican National Inventory of Chemical Substances)

ETHYL MALTOL (4940-11-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on INSQ (Mexican National Inventory of Chemical Substances)

CITRONELLOL (106-22-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on INSQ (Mexican National Inventory of Chemical Substances)

LINALOOL (78-70-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on INSQ (Mexican National Inventory of Chemical Substances)

ORANGE OIL (8008-57-9)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

PIPERONAL (120-57-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

 **WARNING:** This product can expose you to myrcene, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

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Full text of H-phrases:

H226	Flammable liquid and vapor
H227	Combustible liquid
H302	Harmful if swallowed
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
H320	Causes eye irritation
H361	Suspected of damaging fertility or the unborn child

SDS US (GHS HazCom 2012) - Lebermuth

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.