OIL, JAPANESE CITRON*

Safety Data Sheet

according to Regulation (EU) 2015/830

Issue date: 11/1/2019 Revision date: 11/1/2019 Supersedes: 11/1/2019 Version: 1.2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Mixture
Product name	: OIL, JAPANESE CITRON*
CAS-No.	: N/A
Product code	: 90-3031-82
Product group	: Trade product

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

No additional information available

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

The Lebermuth Company
4004 Technology Drive
46628 South Bend, IN - 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: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation Category 2	H315
Skin sensitization, Category 1	H317
Aspiration hazard Category 1	H304
Hazardous to the aquatic environment - Chronic Hazard Category 2	H411

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Causes skin irritation. May cause an allergic skin reaction. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS07 GHS08 GHS09

Signal word (CLP) : Danger

Hazardous ingredients : BETA PINENE; β-Caryophyllene; DIBENZYL ETHER; GERANIOL; GERANYL ACETATE ; LINALOOL; LINALYL ACETATE; GRAPEFRUIT OIL; LEMON OIL; LEMON OIL TERPENES; ORANGE OIL; ORANGE OIL

Hazard statements (CLP) : H304 - May be fatal if swallowed and enters airways.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements (CLP) : P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P302+P352 - IF ON SKIN: Wash with plenty of water.
P321 - Specific treatment (see supplemental first aid instruction on this label).
P331 - Do NOT induce vomiting.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P391 - Collect spillage.
P405 - Store locked up.
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
No additional information available

SECTION 3: Composition/Information on ingredients
3.1. Substances
Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
BENZYL BENZOATE	(CAS-No.) 120-51-4 (EC-No.) 204-402-9 (EC Index-No.) 607-085-00-9	25 - 50	Acute Tox. 4 (Oral), H302 Aquatic Chronic 2, H411
ORANGE OIL	(CAS-No.) 8028-48-6 (EC-No.) 232-433-8	5 - 10	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 2, H411
LEMON OIL	(CAS-No.) 8008-56-8 (EC-No.) 284-515-8	1 - 5	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
LINALOOL	(CAS-No.) 78-70-6 (EC-No.) 201-134-4 (EC Index-No.) 603-235-00-2	1 - 5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1B, H317
2-tert-Butylcyclohexyl acetate	(CAS-No.) 88-41-5 (EC-No.) 201-828-7	1 - 5	Aquatic Chronic 2, H411
ORANGE OIL	(CAS-No.) 8028-48-6 (EC-No.) 232-433-8	1 - 5	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
GRAPEFRUIT OIL	(CAS-No.) 8016-20-4 (EC-No.) 289-904-6	1 - 5	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
AMYL ACETATE substance with a Community workplace exposure limit	(CAS-No.) 628-63-7 (EC-No.) 211-047-3 (EC Index-No.) 607-130-00-2	1 - 5	Flam. Liq. 3, H226
LEMON OIL TERPENES	(CAS-No.) 68917-33-9 (EC-No.) 614-796-8	1 - 5	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1, H317 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
GAMMA UNDECALACTONE	(CAS-No.) 104-67-6 (EC-No.) 203-225-4	1 - 5	Aquatic Chronic 3, H412

GERANYL ACETATE	(CAS-No.) 105-87-3 (EC-No.) 203-341-5	0.1 - 1	Skin Irrit. 2, H315 Skin Sens. 1, H317 Aquatic Chronic 3, H412
1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta-γ-2-benzopyran	(CAS-No.) 1222-05-5 (EC-No.) 214-946-9 (EC Index-No.) 603-212-00-7	0.1 - 1	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
BUTYL ACETATE substance with a Community workplace exposure limit	(CAS-No.) 123-86-4 (EC-No.) 204-658-1 (EC Index-No.) 607-025-00-1	0.1 - 1	Flam. Liq. 3, H226 STOT SE 3, H336
7-acetyl-1,1,3,4,4,6-hexamethyltetralin	(CAS-No.) 1506-02-1 (EC-No.) 216-133-4	0.1 - 1	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
β-Caryophyllene	(CAS-No.) 87-44-5 (EC-No.) 201-746-1	0.1 - 1	Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Chronic 4, H413
LINALYL ACETATE	(CAS-No.) 115-95-7 (EC-No.) 204-116-4	0.1 - 1	Skin Irrit. 2, H315 Skin Sens. 1B, H317
DIBENZYL ETHER	(CAS-No.) 103-50-4 (EC-No.) 203-118-2	0.1 - 1	Skin Sens. 1B, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
GERANIOL	(CAS-No.) 106-24-1 (EC-No.) 203-377-1	0.1 - 1	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317
BETA PINENE	(CAS-No.) 127-91-3 (EC-No.) 204-872-5	0.072 - 0.108	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Skin Sens. 1B, H317 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Call a physician immediately.

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 eyes with water as a precaution.

First-aid measures after ingestion : Do not induce vomiting. Call a physician immediately.

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

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

Symptoms/effects after ingestion : Risk of lung edema.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

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. Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapours/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

For containment : Collect spillage.

Methods for cleaning up : Take up liquid spill into absorbent material.

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. Avoid contact with skin and eyes. Wear personal protective equipment. Avoid breathing dust/fume/gas/mist/vapours/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 locked up. Store in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

BETA PINENE (127-91-3)	
Belgium - Occupational Exposure Limits	
Local name	Essence de térébenthine et monoterpènes sélectionés
Limit value (ppm)	20 ppm
Spain - Occupational Exposure Limits	
Local name	β-pineno
VLA-ED (mg/m³)	113 mg/m³
VLA-ED (ppm)	20 ppm
USA - ACGIH - Occupational Exposure Limits	
ACGIH TWA (ppm)	20 ppm

AMYL ACETATE (628-63-7)	
EU - Occupational Exposure Limits	
Local name	Pentylacetate
IOELV TWA (mg/m³)	270 mg/m³
IOELV TWA (ppm)	50 ppm
IOELV STEL (mg/m³)	540 mg/m³
IOELV STEL (ppm)	100 ppm
Belgium - Occupational Exposure Limits	
Local name	Acétates de pentyle tous isomères # Pentyl acetaat, alle isomeren
Limit value (mg/m³)	270 mg/m³
Limit value (ppm)	50 ppm
Short time value (mg/m³)	540 mg/m³
Short time value (ppm)	100 ppm
France - Occupational Exposure Limits	
Local name	Acétate de pentyle (acétate de n-amyle)
VME (mg/m³)	270 mg/m³

VME (ppm)	50 ppm
VLE (mg/m³)	540 mg/m³
VLE (ppm)	100 ppm
Note (FR)	Valeurs règlementaires contraignantes
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	Pentylacetat
Occupational exposure limit value (mg/m³)	270 mg/m³
Occupational exposure limit value (ppm)	50 ppm
TRGS 900 Remark	DFG,EU,Y
Italy - Occupational Exposure Limits	
Local name	Acetato di pentile
OEL TWA (mg/m³)	270 mg/m³
OEL TWA (ppm)	50 ppm
OEL STEL (mg/m³)	540 mg/m³
OEL STEL (ppm)	100 ppm
Spain - Occupational Exposure Limits	
Local name	Acetato de n-amilo
VLA-ED (mg/m³)	270 mg/m³
VLA-ED (ppm)	50 ppm
VLA-EC (mg/m³)	540 mg/m³
VLA-EC (ppm)	100 ppm
Notes	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país).
United Kingdom - Occupational Exposure Limits	
Local name	Pentyl acetate
WEL TWA (mg/m³)	270 mg/m³ all isomers
WEL TWA (ppm)	50 ppm all isomers
WEL STEL (mg/m³)	541 mg/m³ all isomers
WEL STEL (ppm)	100 ppm all isomers
USA - ACGIH - Occupational Exposure Limits	
Local name	Pentyl acetate, all isomers
ACGIH TWA (ppm)	50 ppm

BUTYL ACETATE (123-86-4)	
EU - Occupational Exposure Limits	
Local name	n-butyl acetate
Notes	SCOEL Recommendations (Ongoing)
Belgium - Occupational Exposure Limits	
Local name	Acétate de n-butyle # n-Butylacetaat
Limit value (mg/m³)	723 mg/m³
Limit value (ppm)	150 ppm
Short time value (mg/m³)	964 mg/m³
Short time value (ppm)	200 ppm

France - Occupational Exposure Limits	
Local name	Acétate de n-butyle
VME (mg/m³)	710 mg/m³
VME (ppm)	150 ppm
VLE (mg/m³)	940 mg/m³
VLE (ppm)	200 ppm
Note (FR)	Valeurs recommandées/admises
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	n-Butylacetat
Occupational exposure limit value (mg/m³)	300 mg/m³
Occupational exposure limit value (ppm)	62 ppm
TRGS 900 Remark	AGS,Y
Spain - Occupational Exposure Limits	
Local name	Acetato de n-butilo
VLA-ED (mg/m³)	724 mg/m³
VLA-ED (ppm)	150 ppm
VLA-EC (mg/m³)	965 mg/m³
VLA-EC (ppm)	200 ppm
United Kingdom - Occupational Exposure Limits	
Local name	Butyl acetate
WEL TWA (mg/m³)	724 mg/m³
WEL TWA (ppm)	150 ppm
WEL STEL (mg/m³)	966 mg/m³
WEL STEL (ppm)	200 ppm
USA - ACGIH - Occupational Exposure Limits	
Local name	n-Butyl acetate
ACGIH TWA (ppm)	150 ppm
ACGIH STEL (ppm)	200 ppm
Remark (ACGIH)	Eye & URT irr

8.2. Exposure controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

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

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Color	: No data available
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: No data available
Flash point	: 61 °C
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: 0.948 (0.938 - 0.958)
Solubility	: Insoluble.
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

9.2. Other information

Refractive index : 1.482 (1.472 - 1.492)

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

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 oral	1500 mg/kg body weight
LD50 dermal rabbit	> 2 ml/kg (Modification of Draize 1959 method, 4 h, Rabbit, Experimental value, Dermal)
LD50 dermal	4000 mg/kg body weight

BETA PINENE (127-91-3)	
LD50 oral rat	4700 mg/kg (Rat, Oral)

DIBENZYL ETHER (103-50-4)	
LD50 oral	2500 mg/kg body weight

GERANIOL (106-24-1)	
LD50 oral rat	3600 mg/kg body weight (Rat; Experimental value)
LD50 oral	3600 mg/kg body weight
LD50 dermal rabbit	> 5000 mg/kg body weight (Rabbit; Experimental value)

GERANYL ACETATE (105-87-3)	
LD50 oral rat	6300 mg/kg (Rat, Oral)

LINALOOL (78-70-6)	
LD50 oral rat	2790 mg/kg (Rat)
LD50 oral	2790 mg/kg body weight
LD50 dermal rat	5610 mg/kg (Rat)
LD50 dermal rabbit	> 5000 mg/kg (Rabbit)

2-tert-Butylcyclohexyl acetate (88-41-5)	
LD50 oral	4600 mg/kg body weight

ORANGE OIL (8028-48-6)	
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)

7-acetyl-1,1,3,4,4,6-hexamethyltetralin (1506-02-1)	
LD50 oral	1000 mg/kg body weight

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Toxic to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

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 Daphnia 1	3.09 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
EC50 72h algae [mg/l] 1	0.475 mg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Growth rate)

BETA PINENE (127-91-3)	
LC50 fish 1	0.557 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Cyprinus carpio, Semi-static system, Fresh water, Weight of evidence, GLP)

EC50 Daphnia 1	1.248 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna, Semi-static system, Fresh water, Weight of evidence, GLP)
ErC50 (algae)	0.826 mg/l (OECD 201: Alga, Growth Inhibition Test, 72 h, Pseudokirchneriella subcapitata, Static system, Fresh water, Weight of evidence, GLP)

GERANIOL (106-24-1)	
LC50 fish 1	> 9.8 mg/l (LC50; 96 h)

GERANYL ACETATE (105-87-3)	
LC50 fish 1	68.12 mg/l (DIN 38412: German standard methods for the examination of water, waste water and sludge, 96 h, Leuciscus idus, Static system, Fresh water, Read-across)
EC50 Daphnia 1	14.1 mg/l (EU Method C.2, 48 h, Daphnia magna, Static system, Fresh water, Experimental value, GLP)
EC50 72h algae [mg/l] 1	3.72 mg/l (OECD 201: Alga, Growth Inhibition Test, Desmodesmus subspicatus, Static system, Fresh water, Experimental value, GLP)

LINALOOL (78-70-6)	
LC50 fish 2	27.8 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Salmo gairdneri)
EC50 Daphnia 1	59 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna)
EC50 other aquatic organisms 1	>= 100 mg/l (3 h; Activated sludge)
Threshold limit algae 1	88.3 mg/l (EC50; 96 h)

LINALYL ACETATE (115-95-7)	
LC50 fish 1	11 mg/l (OECD 203: Fish, Acute Toxicity Test, 96 h, Cyprinus carpio)
EC50 Daphnia 1	15 mg/l (OECD 202: Daphnia sp. Acute Immobilisation Test, 48 h, Daphnia magna)
EC50 72h algae [mg/l] 1	16 mg/l (OECD 201: Alga, Growth Inhibition Test, Scenedesmus subspicatus)

ORANGE OIL (8028-48-6)	
LC50 fish 1	702 µg/l (LC50; Equivalent or similar to OECD 203; 96 h; Pimephales promelas; Flow-through system; Fresh water; Read-across)
EC50 Daphnia 1	0.67 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)

12.2. Persistence and degradability

BENZYL BENZOATE (120-51-4)	
Persistence and degradability	Readily biodegradable in water.

BETA PINENE (127-91-3)	
Persistence and degradability	Readily biodegradable in water.

GERANIOL (106-24-1)	
Persistence and degradability	Readily biodegradable in water.
ThOD	2.9 g O_2/g substance

GERANYL ACETATE (105-87-3)	
Persistence and degradability	Readily biodegradable in water.
ThOD	2.6 g O_2/g substance

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

LINALYL ACETATE (115-95-7)	
Persistence and degradability	Readily biodegradable in water.

12.3. Bioaccumulative potential

BENZYL BENZOATE (120-51-4)	
BCF fish 1	2.286 (BCFBAF v3.00, Pisces, QSAR)
Log Pow	3.97 (Experimental value, 25 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

BETA PINENE (127-91-3)	
BCF other aquatic organisms 1	1125 (BCFBAF v3.00, Fresh water, QSAR, Fresh weight)
Log Pow	4.425 (Experimental value, OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method, 25 °C)
Bioaccumulative potential	Potential for bioaccumulation (500 ≤ BCF ≤ 5000).

GERANIOL (106-24-1)	
Bioaccumulative potential	No bioaccumulation data available.

GERANYL ACETATE (105-87-3)	
BCF other aquatic organisms 1	1500 (Estimated value)
Log Pow	4.04 (Experimental value, OECD 117: Partition Coefficient (n-octanol/water), HPLC method)
Bioaccumulative potential	Potential for bioaccumulation (4 ≥ Log Kow ≤ 5).

LINALOOL (78-70-6)	
Log Pow	2.84 - 3.145
Bioaccumulative potential	Bioaccumable.

LINALYL ACETATE (115-95-7)	
Log Pow	3.93 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

ORANGE OIL (8028-48-6)	
BCF other aquatic organisms 1	32 - 395 (BCF; BCFWIN)
Log Pow	2.78 - 4.88 (QSAR; KOWWIN)

12.4. Mobility in soil

BENZYL BENZOATE (120-51-4)	
Surface tension	0.027 N/m (210 °C)
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)
Ecology - soil	Low potential for mobility in soil.

BETA PINENE (127-91-3)	
Log Koc	3.01 - 3.82 (log Koc, Calculated value)
Ecology - soil	Low potential for mobility in soil.

GERANYL ACETATE (105-87-3)	
Log Koc	3.06 (log Koc, SRC PCKOCWIN v2.0, Calculated value)
Ecology - soil	Low potential for mobility in soil.

LINALYL ACETATE (115-95-7)	
Ecology - soil	Adsorbs into the soil.

12.5. Results of PBT and vPvB assessment

Component	
(120-51-4)	This substance/mixture does not meet the PBT criteria of REACH, annex XIII This substance/mixture does not meet the vPvB criteria of REACH, annex XIII
(105-87-3)	This substance/mixture does not meet the PBT criteria of REACH, annex XIII This substance/mixture does not meet the vPvB criteria of REACH, annex XIII

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No. (ADR) : UN 3082
UN-No. (IMDG) : UN 3082
UN-No. (IATA) : UN 3082
UN-No. (ADN) : UN 3082
UN-No. (RID) : UN 3082

14.2. UN proper shipping name

Proper Shipping Name (ADR) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Proper Shipping Name (IMDG) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Proper Shipping Name (IATA) : Environmentally hazardous substance, liquid, n.o.s.
Proper Shipping Name (ADN) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Proper Shipping Name (RID) : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport document description (ADR) : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III, (-)
Transport document description (IMDG) : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III, MARINE POLLUTANT
Transport document description (IATA) : UN 3082 Environmentally hazardous substance, liquid, n.o.s., 9, III
Transport document description (ADN) : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III
Transport document description (RID) : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 9
Hazard labels (ADR) : 9

:

IMDG

Transport hazard class(es) (IMDG) : 9
Hazard labels (IMDG) : 9

:

IATA

Transport hazard class(es) (IATA) : 9

Hazard labels (IATA) : 9

:

ADN

Transport hazard class(es) (ADN) : 9

Hazard labels (ADN) : 9

:

RID

Transport hazard class(es) (RID) : 9

Hazard labels (RID) : 9

:

14.4. Packing group

Packing group (ADR) : III

Packing group (IMDG) : III

Packing group (IATA) : III

Packing group (ADN) : III

Packing group (RID) : III

14.5. Environmental hazards

Dangerous for the environment : Yes

Marine pollutant : Yes

Other information : No supplementary information available

14.6. Special precautions for user

Overland transport

Classification code (ADR) : M6

Special provision (ADR) : 274, 335, 375, 601

Limited quantities (ADR) : 5l

Excepted quantities (ADR) : E1

Packing instructions (ADR) : P001, IBC03, LP01, R001

Special packing provisions (ADR) : PP1

Mixed packing provisions (ADR) : MP19

Portable tank and bulk container instructions (ADR) : T4

Portable tank and bulk container special provisions (ADR) : TP1, TP29

Tank code (ADR) : LGBV

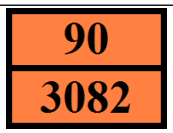
Vehicle for tank carriage : AT

Transport category (ADR) : 3

Special provisions for carriage - Packages (ADR) : V12

Special provisions for carriage - Loading, unloading and handling (ADR) : CV13

Hazard identification number (Kemler No.) : 90

Orange plates	: 
Tunnel restriction code (ADR)	: -
EAC	: •3Z

Transport by sea

Special provision (IMDG)	: 274, 335, 969
Packing instructions (IMDG)	: P001, LP01
Packing provisions (IMDG)	: PP1
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T4
Tank special provisions (IMDG)	: TP2, TP29
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-F
Stowage category (IMDG)	: A

Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provision (IATA)	: A97, A158, A197
ERG code (IATA)	: 9L

Inland waterway transport

Classification code (ADN)	: M6
Special provision (ADN)	: 274, 335, 375, 601
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: M6
Special provision (RID)	: 274, 335, 375, 601
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Special packing provisions (RID)	: PP1
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T4
Portable tank and bulk container special provisions (RID)	: TP1, TP29
Tank codes for RID tanks (RID)	: LGBV
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Special provisions for carriage - Loading, unloading and handling (RID)	: CW13, CW31
Colis express (express parcels) (RID)	: CE8
Hazard identification number (RID)	: 90

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:	
Reference code	Applicable on
3(a)	BETA PINENE ; AMYL ACETATE ; BUTYL ACETATE ; GRAPEFRUIT OIL ; LEMON OIL ; LEMON OIL TERPENES ; ORANGE OIL ; ORANGE OIL
3(b)	OIL, JAPANESE CITRON* ; BENZYL BENZOATE ; BETA PINENE ; β-Caryophyllene ; DIBENZYL ETHER ; GERANIOL ; GERANYL ACETATE ; LINALOOL ; LINALYL ACETATE ; BUTYL ACETATE ; GRAPEFRUIT OIL ; LEMON OIL ; LEMON OIL TERPENES ; ORANGE OIL ; ORANGE OIL
3(c)	OIL, JAPANESE CITRON* ; BENZYL BENZOATE ; BETA PINENE ; DIBENZYL ETHER ; GERANYL ACETATE ; 2-tert-Butylcyclohexyl acetate ; GRAPEFRUIT OIL ; LEMON OIL ; LEMON OIL TERPENES ; ORANGE OIL ; ORANGE OIL
40.	BETA PINENE ; AMYL ACETATE ; BUTYL ACETATE ; GRAPEFRUIT OIL ; LEMON OIL ; LEMON OIL TERPENES ; ORANGE OIL ; ORANGE OIL

Contains no REACH candidate substance

Contains no REACH Annex XIV substances.

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance(s) subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

15.1.2. National regulations

Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : GRAPEFRUIT PINK OIL,LEMON ARGENTINA OIL,ORANGE SWEET OIL,ORANGE 5X DECOLORIZED OIL are listed

SZW-lijst van mutagene stoffen : GRAPEFRUIT PINK OIL,LEMON ARGENTINA OIL,ORANGE SWEET OIL,ORANGE 5X DECOLORIZED OIL are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

Denmark

Class for fire hazard : Class III-1

Store unit : 50 liter

Classification remarks : Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Full text of H- and EUH-phrases:	
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Aquatic Chronic 4	Hazardous to the aquatic environment - Chronic Hazard Category 4
Asp. Tox. 1	Aspiration hazard Category 1
Eye Irrit. 2	Serious eye damage/eye irritation Category 2

Flam. Liq. 3	Flammable liquids Category 3
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization, Category 1
Skin Sens. 1B	Skin sensitization, category 1B
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H226	Flammable liquid and vapour
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
H336	May cause drowsiness or dizziness
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
H413	May cause long lasting harmful effects to aquatic life

SDS EU (REACH Annex II)

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.