SAFETY DATA SHEET (SDS)

Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Regulation (EU) 2020/878 and GHS.Version: 10.0

Lemon Essential Oil

SECTION 01: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Description	Details
Product name:	Lemon Essential Oil
EC No (EC/EINECS/ELINCS):	284-515-8
CAS:	8008-56-8
REACH registration No.:	01-2119495512-35
Product code:	020113

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

Relevant identified uses

Main use category: Industrial use
Use of the substance/mixture: Flavor ingredient
Fragrance ingredient

1.3. Supplier

Aromology Trading LLC
G05 Al Ghazal Building
Nadd Al Hamar
Dubai, United Arab Emirates

Website: www.aromology.com
Email: info@aromology.com
Telephone: +971 505197601

SECTION 02: Hazards identification

2.1. Classification of the substance or mixture

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

Classification	Code
Flammable liquids, Category 3	H226
Skin corrosion/irritation, Category 2	H315
Skin sensitisation, Category 1	H317

Classification	Code
Reproductive toxicity, Category 2	H361
Aspiration hazard, Category 1	H304
Hazardous to the aquatic environment – Chronic Hazard, Category 2	H411

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. Causes skin irritation. May cause an allergic skin reaction. May be fatal if swallowed and enters airways. Very toxic to aquatic life with long lasting effects.

2.2. Label elements

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

Hazard pictograms (CLP): GHS02, GHS07, GHS08, GHS09
Signal word (CLP): Danger

Hazard statements (CLP)

Code	Statement
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H361	Suspected of damaging fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)

Code	Statement
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.

2.3. Other hazards

Contains no PBT and/or vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

SECTION 03: Composition/information on ingredients

3.1. Substances

Description	Details
Substance type	UVCB
Name	Lemon, ext.
CAS	8008-56-8
EC No (EC/EINECS/ELINCS)	284-515-8

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Limonene	CAS: 5989-27-5/138-86-3/5989-54-8; EC No (EC/EINECS/ELINCS): 227-813-5; EC index number: 601-096-00-2	50 – 80	Flam. Liq. 3, H226; Skin Irrit. 2, H315; Skin Sens. 1B, H317; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 3, H412
beta-Pinene	CAS: 127-91-3; EC No (EC/EINECS/ELINCS): 204-872-5	10 – 20	Flam. Liq. 3, H226; Skin Irrit. 2, H315; Skin Sens. 1B, H317; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 1, H410
p-Mentha-1,4-diene	CAS: 99-85-4; EC No (EC/EINECS/ELINCS): 202-794-6	10 – 20	Repr. 2, H361; Flam. Liq. 3, H226; Asp. Tox. 1, H304; Aquatic Chronic 2, H411
citral	CAS: 5392-40-5; EC No (EC/EINECS/ELINCS): 226-394-6; EC index number: 605-019-00-3	1 – 5	Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317
alpha-Pinene	CAS: 80-56-8; EC No (EC/EINECS/ELINCS): 201-291-9	1 – 5	Acute Tox. 4 (Oral), H302 (ATE=500 mg/kg bodyweight); Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Asp. Tox. 1, H304; Flam. Liq. 3, H226; Skin Irrit. 2, H315; Skin Sens. 1B, H317
Myrcene	CAS: 123-35-3; EC No (EC/EINECS/ELINCS): 204-622-5	1 – 5	Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 2, H411
l-.β.-Bisabolene	CAS: 495-61-4; EC No (EC/EINECS/ELINCS): n.a.	0.1 – 1	Skin Irrit. 2, H315; Skin Sens. 1B, H317; Asp. Tox. 1, H304; Aquatic Chronic 2, H411; Acute Tox. 4 (Inhalation), H332
p-Cymene	CAS: 99-87-6; EC No (EC/EINECS/ELINCS): 202-796-7; EC index number: 601-094-00-1	0.1 – 1	Repr. 2, H361; Flam. Liq. 3, H226; Asp. Tox. 1, H304; Aquatic Chronic 2, H411; Acute Tox. 3 (Inhalation), H331 (ATE=0.5 mg/l/4h)
Geranyl	CAS: 105-87-3; EC No	0.1	Skin Sens. 1B, H317; Skin Irrit. 2,

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
acetate	(EC/EINECS/ELINCS): 203-341-5	– 1	H315; Aquatic Chronic 3, H412
Terpinolene	CAS: 586-62-9; EC No (EC/EINECS/ELINCS): 209-578-0	0.1 – 1	Skin Sens. 1B, H317; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 1, H410
Neryl acetate	CAS: 141-12-8; EC No (EC/EINECS/ELINCS): 205-459-2	0.1 – 1	Skin Sens. 1B, H317
Linalool	CAS: 78-70-6; EC No (EC/EINECS/ELINCS): 201-134-4; EC index number: 603-235-00-2	0.1 – 1	Eye Irrit. 2, H319; Skin Irrit. 2, H315; Skin Sens. 1B, H317
beta-Phellandrene	CAS: 555-10-2; EC No (EC/EINECS/ELINCS): 209-081-9	0.1 – 1	Asp. Tox. 1, H304; Flam. Liq. 3, H226; Skin Sens. 1, H317
Citronellal	CAS: 106-23-0; EC No (EC/EINECS/ELINCS): 203-376-6	0.1 – 1	Eye Irrit. 2, H319; Skin Irrit. 2, H315; Skin Sens. 1B, H317
Alpha-thujene	CAS: 2867-05-2; EC No (EC/EINECS/ELINCS): 220-686-7	0.1 – 1	Not classified
alpha-Terpineol	CAS: 98-55-5; EC No (EC/EINECS/ELINCS): 202-680-6	0.1 – 1	Skin Irrit. 2, H315; Eye Irrit. 2, H319
beta-Caryophyllene	CAS: 87-44-5; EC No (EC/EINECS/ELINCS): 201-746-1	0.1 – 1	Asp. Tox. 1, H304; Skin Sens. 1B, H317
Nonanal	CAS: 124-19-6; EC No (EC/EINECS/ELINCS): 204-688-5	0.1 – 1	Aquatic Chronic 3, H412
p-Mentha-1,3-diene	CAS: 99-86-5; EC No (EC/EINECS/ELINCS): 202-795-1; EC index number: 601-095-00-7	0.1 – 1	Flam. Liq. 3, H226; Acute Tox. 4 (Oral), H302 (ATE=1680 mg/kg bodyweight); Asp. Tox. 1, H304; Aquatic Chronic 2, H411; Skin Sens. 1, H317; Eye Irrit. 2, H319
Octanal	CAS: 124-13-0; EC No (EC/EINECS/ELINCS): 204-683-8	0.1 – 1	Flam. Liq. 3, H226; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Aquatic Chronic 3, H412
trans beta-Ocimene	CAS: 3779-61-1; EC No (EC/EINECS/ELINCS): 223-241-5	0.1 – 1	Flam. Liq. 3, H226; Skin Irrit. 2, H315; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 2, H411
Geraniol	CAS: 106-24-1; EC No (EC/EINECS/ELINCS): 203-377-1; EC index number: 603-241-00-5	0.1 – 1	Skin Irrit. 2, H315; Eye Dam. 1, H318; Skin Sens. 1, H317
delta-3-Carene	CAS: 13466-78-9; EC No (EC/EINECS/ELINCS): 236-719-3	< 0.1	Skin Sens. 1, H317; Skin Irrit. 2, H315; Flam. Liq. 3, H226; Asp. Tox. 1, H304; Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h); Aquatic Chronic 2, H411
4-Carvomenthenol	CAS: 562-74-3; EC No (EC/EINECS/ELINCS): 209-235-5	< 0.1	Acute Tox. 4 (Inhalation), H332 (ATE=1.5 mg/l/4h); Acute Tox. 4 (Oral), H302; Eye Irrit. 2, H319; Skin

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
			Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H336

SECTION 04: First aid measures

4.1. Description of first aid measures

First-aid measures general: Call a physician immediately. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing. Allow affected person to breathe fresh air. Allow the victim to rest.

First-aid measures after skin contact: If skin irritation or rash occurs: Get medical advice/attention. Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash with plenty of water/.... Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention. Specific treatment (see supplemental first aid instruction on this label). If skin irritation or rash occurs:

First-aid measures after eye contact: Rinse eyes with water as a precaution. Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.

First-aid measures after ingestion: Do not induce vomiting. Call a physician immediately. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER/doctor.

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

Symptoms/effects: Suspected of damaging fertility or the unborn child.
Symptoms/effects after inhalation: May cause an allergic skin reaction.
Symptoms/effects after skin contact: Irritation. May cause an allergic skin reaction. Causes skin irritation.
Symptoms/effects after ingestion: Risk of lung oedema. May be fatal if swallowed and enters airways.

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

Treat symptomatically.

SECTION 05: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Fire extinguishing agents: no data available. Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard: Flammable liquid and vapour.
Explosion hazard: May form flammable/explosive vapour-air mixture.
Hazardous decomposition products in case of fire: Toxic fumes may be released.

5.3. Advice for firefighters

Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.

Protection during firefighting: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 06: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

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/vapours/spray. Evacuate unnecessary personnel.

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". Equip cleanup crew with proper protection.

Emergency procedures: Stop release. Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. 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. Collect spills and put it into appropriated container. Notify authorities if product enters sewers or public waters. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

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. See Section 8. Exposure controls and personal protection.

SECTION 07: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed: Handle empty containers with care because residual vapours are flammable.

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. Ground/bond container and receiving equipment. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Avoid contact with skin and eyes. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. No open flames. No smoking. Take precautionary measures against static discharge. Use only non-sparking tools. Avoid breathing dust/fume/gas/mist/vapours/spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

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

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment.

Storage conditions: Store in a well-ventilated place. Keep cool. Store locked up. Keep only in the original container in a cool, well ventilated place away from : Keep container tightly closed.

Incompatible products: Strong bases. Strong acids.
Incompatible materials: Sources of ignition. Direct sunlight. Heat sources.
Maximum storage period: 12 months
Storage temperature: ≤ 12 °C

Storage area: Store in a well-ventilated place.
Special rules on packaging: Keep in the dark. Store tightly closed in a dry, cool and well-ventilated place. Product must only be kept in the original packaging.

7.3. Specific end use(s)

No additional information available

SECTION 08: Exposure controls/personal protection

8.1. Control parameters

National occupational exposure and biological limit values

delta-3-Carene (13466-78-9)	USA - ACGIH - Occupational Exposure Limits
Local name	Δ-3-Carene
ACGIH OEL TWA	20 ppm
Remark (ACGIH)	TLV® Basis: Lung irr. Notations: DSEN; A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024

citral (5392-40-5)	USA - ACGIH - Occupational Exposure Limits
Local name	Citral
ACGIH OEL TWA	5 ppm (IFV - Inhalable fraction and vapor)
Remark (ACGIH)	TLV® Basis: Body weight eff; URT irr; eye dam. Notations: Skin; DSEN; A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024

8.2. Exposure controls

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

Personal protection equipment
Personal protective equipment: Avoid all unnecessary exposure.
Personal protective equipment symbol(s): Protective gloves and protective clothing.

Eye and face protection
Eye protection: Safety glasses. Chemical goggles or safety glasses

Skin protection
Skin and body protection: Wear suitable protective clothing
Hand protection: Wear protective gloves.

Respiratory protection
Respiratory protection: [In case of inadequate ventilation] wear respiratory protection.

Environmental exposure controls
Environmental exposure controls: Avoid release to the environment.
Other information: Do not eat, drink or smoke during use.

SECTION 09: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Description	Details
Physical state	Liquid
Colour	Pale yellow to dark green.
Appearance	Liquid.
Odour	Caracteristic of outer part of fresh citrus.
Odour threshold	Not available
Melting point	Not applicable
Freezing point	Not available
Boiling point	Not available
Flammability	Flammable liquid and vapour.
Lower explosion limit	Not available
Upper explosion limit	Not available
Flash point (closed cup)	49 °C
Auto-ignition temperature	Not available
Decomposition temperature	Not available
pH	Not available
Viscosity, kinematic	< 20.5 mm²/s
Solubility	Not available
Partition coefficient n-octanol/water (Log Kow)	Not available
Vapour pressure	Not available
Vapour pressure at 50°C	Not available
Density	Not available
Specific gravity (20°C)	0.8500 – 0.8580
Relative vapour density at 20°C	Not available
Particle characteristics	Not applicable

Component	Property	Result
beta-Pinene (127-91-3)	Boiling point	158 – 166 °C
	Flash point (closed cup)	39 °C
	Auto-ignition temperature	255 °C
	Vapour pressure	2.93 mm Hg
alpha-Pinene (80-56-8)	Boiling point	155.95 °C Atm. press.: 1013,25 mBar

Component	Property	Result
	Flash point (closed cup)	31 °C
	Auto-ignition temperature	255 °C
	Vapour pressure	4.75 mm Hg
p-Mentha-1,4-diene (99-85-4)	Boiling point	181.8 °C Atm. press.: 100,7 kPa
	Flash point (closed cup)	51.8 °C
	Auto-ignition temperature	359 °C Source: ECHA
	Vapour pressure	1.09 mm Hg at 25 °C Source: National Library of Medicine
p-Cymene (99-87-6)	Boiling point	172 °C Source: International Uniform ChemicaL Information Database
	Flash point (closed cup)	47 °C
	Auto-ignition temperature	435 °C
	Vapour pressure	1.47 mm Hg Source: National Institute of Technology and Evaluation
alpha-Terpineol (98-55-5)	Boiling point	218.9 °C Atm. press.: 1 atm
	Flash point (closed cup)	91 °C
	Auto-ignition temperature	275 °C Source: ECHA
	Vapour pressure	6.48 Pa Temp.: 23 °C
l-.β.-Bisabolene (495-61-4)	Boiling point	274 – 275 °C (760 mm Hg, Source: thegoodscentcompany.com)
	Flash point (closed cup)	> 93 °C
	Vapour pressure	0.009 mm Hg (25°C, Source: thegoodscentcompany.com)
Neryl acetate (141-12-8)	Boiling point	235 °C Source: National Library of Medicine
	Flash point (closed cup)	106 °C
Geranyl acetate (105-87-3)	Boiling point	243.97 °C Atm. press.: 1013,25 hPa
	Flash point (closed cup)	110 °C
	Vapour pressure	0.013 hPa Temp.: 20 °C
Geraniol (106-24-1)	Boiling point	230 °C

Component	Property	Result
	Flash point (closed cup)	108 °C
Linalool (78-70-6)	Boiling point	196.3 °C Atm. press.: 99,2 kPa Decomposition: 'no' Decomp. temp.: 196,3 °C
	Flash point (closed cup)	77 °C
	Auto-ignition temperature	235 °C Source: International Chemical Safety Cards
	Vapour pressure	27 Pa Temp.: 298 K
p-Mentha-1,3-diene (99-86-5)	Boiling point	173 °C Atm. press.: 1 atm
	Flash point (closed cup)	47 °C
	Vapour pressure	0.8 mm Hg at 25°C Source: The Chemical Database, The Department of Chemistry at the University of Akron
beta-Phellandrene (555-10-2)	Boiling point	171 – 174 °C (760 mm Hg; Source:thegoodscentscompany.com)
	Flash point (closed cup)	44 °C
	Vapour pressure	1.573 mm Hg (760 mm Hg; Source:thegoodscentscompany.com)
beta-Caryophyllene (87-44-5)	Boiling point	262 (253 – 262) °C Atm. press.: 1013 hPa
	Flash point (closed cup)	105.5 °C
	Vapour pressure	6 Pa
Citronellal (106-23-0)	Boiling point	47 °C at 1 mmHg Source: AKRON
	Flash point (closed cup)	74 °C
	Vapour pressure	0.22 mm Hg Source: AKRON
delta-3-Carene (13466-78-9)	Boiling point	167 – 170 °C Source: AKRON
	Flash point (closed cup)	47 °C
	Vapour pressure	3.72 mm Hg at 25 °C Source: NLM;ChemIDplus
Myrcene (123-35-3)	Boiling point	167 °C
	Flash point (closed cup)	45 °C
	Vapour pressure	267.98 Pa Temp.: 25 °C

Component	Property	Result
Nonanal (124-19-6)	Boiling point	194.85 °C Atm. press.: 101,325 kPa Decomposition: 'no'
	Flash point (closed cup)	76 °C
	Vapour pressure	2 hPa Temp.: 20 °C
Octanal (124-13-0)	Boiling point	175 °C
	Flash point (closed cup)	54 °C
	Auto-ignition temperature	190 °C
	Vapour pressure	1.18 mm Hg
4-Carvomenthenol (562-74-3)	Flash point (closed cup)	79 °C
Terpinolene (586-62-9)	Boiling point	193.85 °C Atm. press.: 985 hPa Decomposition: 'no'
	Flash point (closed cup)	61 °C
	Vapour pressure	0.74 mm Hg at 25°C Source: National Library of Medicine/Hazardous Substances Data Bank
citral (5392-40-5)	Boiling point	≈ 230 °C Atm. press.: 1013 hPa Decomposition: 'yes' Decomp. temp.: 180 °C
	Flash point (closed cup)	98 °C
	Auto-ignition temperature	225 °C Source: ECHA
	Vapour pressure	4.6 Pa at 20°C Source: ECHA
Limonene (5989-27-5/138-86-3/5989-54-8)	Boiling point	175.5 – 176 °C at 763 mmHg Source: HSDB
	Flash point (closed cup)	51 °C
	Auto-ignition temperature	245 °C Source: ECHA Registered substances
	Vapour pressure	1.98 mm Hg

9.2. Other information

Other safety characteristics
Refractive index (20°C): 1.4730 – 1.4760

SECTION 10: Stability and reactivity

10.1. Reactivity
Flammable liquid and vapour.

10.2. Chemical stability
Flammable liquid and vapour. May form flammable/explosive vapour-air mixture.

10.3. Possibility of hazardous reactions
Not established.

10.4. Conditions to avoid
Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition. Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks.

10.5. Incompatible materials
Strong acids. Strong bases.

10.6. Hazardous decomposition products
fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

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

Component	Endpoint	Result
beta-Pinene (127-91-3)	LD50 oral rat	4700 mg/kg Source: NLM,THOMSON
alpha-Pinene (80-56-8)	LD50 oral rat	2100 mg/kg Source: International Uniform ChemicaL Information Database
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal))
	ATE CLP (oral)	500 mg/kg bodyweight
p-Mentha-1,4-diene (99-85-4)	LD50 oral rat	3650 mg/kg Source: National Library of Medicine
	LD50 oral	3650 mg/kg bodyweight
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
p-Cymene (99-87-6)	LD50 oral rat	3669 mg/kg Source: Corporate Solution From Thomson Micromedex
	LD50 oral	4750 mg/kg bodyweight
	LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: other:
	LC50 Inhalation - Rat (Vapours)	9.7 mg/l/4h

Component	Endpoint	Result
	ATE CLP (gases)	700 ppmv/4h
	ATE CLP (vapours)	3 mg/l
	ATE CLP (dust,mist)	0.5 mg/l/4h
alpha-Terpineol (98-55-5)	LD50 oral rat	4300 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 2900 - 5700
	LD50 oral	4300 mg/kg bodyweight
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
	ATE CLP (oral)	4300 mg/kg bodyweight
l-.β.-Bisabolene (495-61-4)	LC50 Inhalation - Rat (Dust/Mist)	1.5 mg/l/4h
	ATE CLP (gases)	4500 ppmv/4h
	ATE CLP (vapours)	11 mg/l/4h
	ATE CLP (dust,mist)	1.5 mg/l/4h
Neryl acetate (141-12-8)	LD50 oral rat	> 5000 mg/kg Source: National Library of Medicine
	LD50 dermal rabbit	> 5000 mg/kg Source: National Library of Medicine
Geranyl acetate (105-87-3)	LD50 oral rat	6330 mg/kg bodyweight Animal: rat, 95% CL: 5450 - 7340
	ATE CLP (oral)	6330 mg/kg bodyweight
Geraniol (106-24-1)	LD50 oral rat	3600 mg/kg bodyweight Animal: rat, 95% CL: 2840 - 4570
	LD50 oral	3600 mg/kg bodyweight
	LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit
	ATE CLP (oral)	3600 mg/kg bodyweight
Linalool (78-70-6)	LD50 oral rat	2790 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 2440 - 3180
	LD50 oral	2790 mg/kg
	LD50 dermal rabbit	5610 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), 95% CL: 3578 - 8374
	ATE CLP (oral)	2790 mg/kg bodyweight
	ATE CLP (dermal)	5610 mg/kg bodyweight

Component	Endpoint	Result
p-Mentha-1,3-diene (99-86-5)	LD50 oral rat	1680 mg/kg Source: Corporate Solution From Thomson Micromedex
	LD50 oral	1680 mg/kg bodyweight
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
	ATE CLP (oral)	1680 mg/kg bodyweight
beta-Caryophyllene (87-44-5)	LD50 oral	> 5000 mg/kg bodyweight Animal: mouse, Animal sex: male
Citronellal (106-23-0)	LD50 oral rat	2420 mg/kg Source: NLM;ChemIDplus, TOMES;LOLI;
	LD50 oral	2500 mg/kg
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat
	LD50 dermal rabbit	2500 – 5000 mg/kg bodyweight Animal: rabbit
	ATE CLP (oral)	2420 mg/kg bodyweight
	ATE CLP (dermal)	2500 mg/kg bodyweight
delta-3-Carene (13466-78-9)	LD50 oral rat	4800 mg/kg
	LD50 oral	4800 mg/kg bodyweight
	LC50 Inhalation - Rat (Dust/Mist)	1.5 mg/l/4h
	ATE CLP (gases)	4500 ppmv/4h
	ATE CLP (vapours)	11 mg/l/4h
	ATE CLP (dust,mist)	1.5 mg/l/4h
Myrcene (123-35-3)	LD50 oral rat	> 11390 mg/kg bodyweight Animal: rat
	LD50 oral	> 3380 mg/kg bodyweight Animal: mouse
	LD50 dermal rabbit	> 5000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
Octanal (124-13-0)	LD50 oral rat	4617 mg/kg bodyweight Animal: rat, Animal sex: male
	LD50 dermal rabbit	5207 mg/kg bodyweight Animal: rabbit, Animal sex: male
	LC50 Inhalation - Rat	> 0.83 mg/l air Animal: rat, Animal sex: male
	ATE CLP (oral)	4617 mg/kg bodyweight
	ATE CLP (dermal)	5207 mg/kg bodyweight
4-Carvomenthenol (562-74-3)	LD50 oral rat	1300 mg/kg
	LD50 oral	1300 mg/kg

Component	Endpoint	Result
	LD50 dermal rabbit	> 2500 mg/kg
	LC50 Inhalation - Rat	> 1.11 mg/l air Animal: rat, Guideline: OECD Guideline 436 (Acute Inhalation Toxicity: Acute Toxic Class Method)
	ATE CLP (dermal)	2500 mg/kg bodyweight
	ATE CLP (dust,mist)	1.5 mg/l/4h
trans beta-Ocimene (3779-61-1)	LD50 oral	5000 mg/kg bodyweight
Terpinolene (586-62-9)	LD50 oral rat	4.39 ml/kg Source: ECHA
	LD50 oral	3775 mg/kg
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
	LD50 dermal rabbit	> 4300 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)
	ATE CLP (oral)	4390 mg/kg bodyweight
citral (5392-40-5)	LD50 oral rat	≈ 6800 mg/kg bodyweight Animal: rat
	LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat
	LD50 dermal rabbit	2250 mg/kg
	ATE CLP (dermal)	2250 mg/kg bodyweight
Limonene (5989-27-5/138-86-3/5989-54-8)	LD50 oral rat	5000 mg/kg Source: National Library of Medicine/Hazardous Substances Data Bank
	LD50 dermal rabbit	> 5000 mg/kg Source: National Library of Medicine
	ATE CLP (oral)	5000 mg/kg bodyweight

Skin corrosion/irritation: Causes skin irritation.

Component	Property	Result
4-Carvomenthenol (562-74-3)	pH	6.8 – 7.1 Temp.: 20 °C
citral (5392-40-5)	pH	< 5 Source: HSDB

Serious eye damage/irritation: Not classified
Additional information: Based on available data, the classification criteria are not met

Component	Property	Result
4-Carvomenthenol (562-74-3)	pH	6.8 – 7.1 Temp.: 20 °C

Component	Property	Result
citral (5392-40-5)	pH	< 5 Source: HSDB

Respiratory or skin sensitisation: May cause an allergic skin reaction.
Germ cell mutagenicity: Not classified
Additional information: Based on available data, the classification criteria are not met
Carcinogenicity: Not classified
Additional information: Based on available data, the classification criteria are not met

Component	Endpoint	Result
Geraniol (106-24-1)	NOAEL (chronic, oral, animal/male, 2 years)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies), Remarks on results: other:Effect type: toxicity (migrated information)
Citronellal (106-23-0)	NOAEL (chronic, oral, animal/male, 2 years)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies), Remarks on results: other:Effect type: toxicity (migrated information)
Myrcene (123-35-3)	IARC group	2B - Possibly carcinogenic to humans
citral (5392-40-5)	NOAEL (chronic, oral, animal/male, 2 years)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies), Remarks on results: other:Effect type: toxicity (migrated information)
Limonene (5989-27-5/138-86-3/5989-54-8)	IARC group	3 - Not classifiable

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

Component	Endpoint	Result
p-Mentha-1,4-diene (99-85-4)	NOAEL (animal/male, F0/P)	250 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
	NOAEL (animal/female, F0/P)	100 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)

STOT-single exposure: Not classified
Additional information: Based on available data, the classification criteria are not met

Component	Endpoint	Result
4-Carvomenthenol (562-74-3)	STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure: Not classified
Additional information: Based on available data, the classification criteria are not met

Component	Endpoint	Result
alpha-Terpineol (98-55-5)	NOAEL (oral, rat, 90 days)	≥ 314 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Geranyl acetate (105-87-3)	NOAEL (oral, rat, 90 days)	2000 mg/kg bodyweight Animal: rat, Guideline: other:Specifications for the Conduct of Studies to Evaluate the Toxic and Carcinogenic Potential of Chemical, Biological, and Physical Agents in Laboratory Animals for the National Toxicology Program (NTP)
Geraniol (106-24-1)	NOAEL (dermal, rat/rabbit, 90 days)	300 mg/kg bodyweight Animal: rat, Guideline: other:OECD Guideline 421 (Reproduction/Developmental Toxicity Screening test), Guideline: other:EPA OPPTS 870.3550 (Reproduction/Developmental Toxicity Screening Test)
Linalool (78-70-6)	NOAEL (dermal, rat/rabbit, 90 days)	250 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)
Citronellal (106-23-0)	LOAEC (inhalation, rat, gas, 90 days)	68 ppm Animal: rat, Animal sex: female
	NOAEL (oral, rat, 90 days)	100 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
	NOAEC (inhalation, rat, gas, 90 days)	34 ppm Animal: rat, Animal sex: female
	NOAEL (subchronic, oral, animal/male, 90 days)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
Myrcene (123-35-3)	LOAEL (oral, rat, 90 days)	250 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
	NOAEL (subchronic, oral, animal/male, 90 days)	500 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
	NOAEL (subchronic, oral, animal/female, 90 days)	250 mg/kg bodyweight Animal: mouse, Animal sex: female, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
citral (5392-40-5)	LOAEC (inhalation, rat, gas, 90 days)	68 ppm Animal: rat, Animal sex: female
	NOAEL (oral, rat, 90 days)	100 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)
	NOAEC (inhalation, rat, gas, 90 days)	34 ppm Animal: rat, Animal sex: female

Component	Endpoint	Result
	NOAEL (subchronic, oral, animal/male, 90 days)	60 mg/kg bodyweight Animal: mouse, Animal sex: male, Guideline: OECD Guideline 453 (Combined Chronic Toxicity / Carcinogenicity Studies)

Aspiration hazard: May be fatal if swallowed and enters airways.

Component	Property	Result
LEMON E.O. ITALY (8008-56-8)	Viscosity, kinematic	< 20.5 mm^2/s
Linalool (78-70-6)	Viscosity, kinematic	5.192 mm^2/s

11.2. Information on other hazards

Other information
Potential adverse human health effects and symptoms: Based on available data, the classification criteria are not met

---

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general: Very toxic to aquatic life with long lasting effects.
Ecology - water: 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.

Substance	Endpoint	Result
LEMON E.O. ITALY (8008-56-8)	LC50 - Fish [1]	5.65 mg/l
	EC50 - Crustacea [1]	1.1 mg/l
	EC50 72h - Algae [1]	8 mg/l
beta-Pinene (127-91-3)	LC50 - Fish [1]	0.624 mg/l Source: ECOSAR
alpha-Pinene (80-56-8)	LC50 - Fish [1]	0.28 mg/l Source: International Uniform ChemicaL Information Database
	EC50 - Crustacea [1]	0.475 mg/l Test organisms (species): Daphnia magna
p-Mentha-1,4-diene (99-85-4)	LC50 - Fish [1]	0.263 mg/l Source: Ecological Structure Activity Relationships
	EC50 - Crustacea [1]	10189 mg/l Test organisms (species): Daphnia magna
	EC50 72h -	> 10.82 mg/l Test organisms (species):

Substance	Endpoint	Result
	Algae [1]	Scenedesmus capricornutum
	EC50 96h - Algae [1]	0.249 mg/l Source: Ecological Structure Activity Relationships
p-Cymene (99-87-6)	LC50 - Fish [1]	48 mg/l Source: ECOTOX
	EC50 - Crustacea [1]	3.7 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	4.03 mg/l Test organisms (species): Scenedesmus capricornutum
	EC50 72h - Algae [2]	2.01 mg/l Test organisms (species): Scenedesmus capricornutum
	EC50 96h - Algae [1]	22 mg/l Source: The ECOTOXicology database
alpha-Terpineol (98-55-5)	LC50 - Fish [1]	70 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
	EC50 - Crustacea [1]	73 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	≈ 68 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
	EC50 72h - Algae [2]	≈ 17 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
Neryl acetate (141-12-8)	LC50 - Fish [1]	0.552 mg/l Source: Ecological Structure Activity Relationships
	EC50 96h - Algae [1]	0.405 mg/l Source: Ecological Structure Activity Relationships
Geranyl acetate (105-87-3)	LC50 - Fish [1]	68.12 mg/l Test organisms (species): Leuciscus idus
	EC50 - Crustacea [1]	14.1 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	3.72 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
Geraniol (106-24-1)	LC50 - Fish [1]	≈ 22 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
	EC50 - Crustacea [1]	10.8 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	13.1 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
Linalool (78-70-6)	LC50 - Fish [1]	27.8 mg/l Test organisms (species): Oncorhynchus

Substance	Endpoint	Result
		mykiss (previous name: Salmo gairdneri)
	EC50 - Crustacea [1]	59 mg/l Test organisms (species): Daphnia magna
	EC50 96h - Algae [1]	88.3 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
	EC50 96h - Algae [2]	156.7 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
p-Mentha-1,3-diene (99-86-5)	LC50 - Fish [1]	0.263 mg/l Source: Ecological Structure Activity Relationships
	EC50 - Crustacea [1]	1.7 mg/l Test organisms (species): Daphnia magna
	EC50 96h - Algae [1]	0.249 mg/l Source: Ecological Structure Activity Relationships
beta-Caryophyllene (87-44-5)	EC50 - Crustacea [1]	> 0.17 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	> 0.033 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
Citronellal (106-23-0)	LC50 - Fish [1]	≈ 22 mg/l Test organisms (species): Leuciscus idus
	EC50 - Crustacea [1]	8.7 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	13.33 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
	EC50 72h - Algae [2]	6.74 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
	EC50 96h - Algae [1]	13.33 mg/l Source: ECHA
delta-3-Carene (13466-78-9)	LC50 - Fish [1]	0.53 mg/l Source: ECOSAR
	EC50 96h - Algae [1]	0.648 mg/l Source: ECOSAR
Myrcene (123-35-3)	LC50 - Fish [1]	0.92 mg/l Source: NITE
	EC50 - Crustacea [1]	1.47 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	0.342 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
	EC50 72h -	0.31 mg/l Test organisms (species):

Substance	Endpoint	Result
	Algae [2]	Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
Nonanal (124-19-6)	LC50 - Fish [1]	2.1 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
	LC50 - Fish [2]	1.45 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
	EC50 - Crustacea [1]	1.54 mg/l Test organisms (species): Daphnia magna
Octanal (124-13-0)	LC50 - Fish [1]	6.114 mg/l Source: ECOSAR
	EC50 - Crustacea [1]	1.54 mg/l Test organisms (species): Daphnia magna
	EC50 96h - Algae [1]	12.991 mg/l Source: ECOSAR
4-Carvomenthenol (562-74-3)	LC50 - Fish [1]	8.004 mg/l Source: EPI SUITE
	EC50 - Other aquatic organisms [1]	26.6 mg/l Test organisms (species):
	EC50 96h - Algae [1]	4.651 mg/l Source: EPI SUITE
Terpinolene (586-62-9)	LC50 - Fish [1]	0.805 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
	EC50 - Crustacea [1]	0.634 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	0.692 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
	EC50 72h - Algae [2]	0.302 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
citral (5392-40-5)	LC50 - Fish [1]	6.78 mg/l Test organisms (species): Leuciscus idus
	EC50 - Crustacea [1]	6.8 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	103.8 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
Limonene (5989-27-5/138-86-3/5989-54-8)	LC50 - Fish [1]	0.7 mg/l Source: The ECOTOXicology database
	LC50 - Fish [2]	702 µg/l Test organisms (species): Pimephales

Substance	Endpoint	Result
		promelas
	EC50 - Crustacea [1]	0.307 mg/l Source: ECHA Registered substances
	EC50 - Crustacea [2]	0.51 mg/l Test organisms (species): Daphnia magna
	EC50 72h - Algae [1]	0.32 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
	EC50 72h - Algae [2]	0.214 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

12.2. Persistence and degradability

Substance	Persistence and degradability
LEMON E.O. ITALY (8008-56-8)	May cause long-term adverse effects in the environment.
beta-Pinene (127-91-3)	Rapidly degradable
alpha-Pinene (80-56-8)	Rapidly degradable
p-Mentha-1,4-diene (99-85-4)	Rapidly degradable
p-Cymene (99-87-6)	Rapidly degradable
alpha-Terpineol (98-55-5)	Rapidly degradable
l-.β.-Bisabolene (495-61-4)	Rapidly degradable
Neryl acetate (141-12-8)	Rapidly degradable
Geranyl acetate (105-87-3)	Rapidly degradable
Geraniol (106-24-1)	Rapidly degradable
Linalool (78-70-6)	Rapidly degradable
p-Mentha-1,3-diene (99-86-5)	Rapidly degradable
beta-Phellandrene (555-10-2)	Rapidly degradable
beta-Caryophyllene (87-44-5)	Rapidly degradable
Citronellal (106-23-0)	Rapidly degradable
delta-3-Carene (13466-78-9)	Rapidly degradable
Myrcene (123-35-3)	Rapidly degradable
Nonanal (124-19-6)	Rapidly degradable
Octanal (124-13-0)	Rapidly degradable
4-Carvomenthenol (562-74-3)	Rapidly degradable
trans beta-Ocimene (3779-61-1)	Rapidly degradable
Terpinolene (586-62-9)	Rapidly degradable
citral (5392-40-5)	Rapidly degradable

Substance	Persistence and degradability
Alpha-thujene (2867-05-2)	Rapidly degradable
Limonene (5989-27-5/138-86-3/5989-54-8)	Rapidly degradable

12.3. Bioaccumulative potential

LEMON E.O. ITALY (8008-56-8)
Bioaccumulative potential: Not established.

Component	Partition coefficient n-octanol/water (Log Pow)
beta-Pinene (127-91-3)	4.16
alpha-Pinene (80-56-8)	4.834 Source: International Uniform ChemicaL Information Database
p-Mentha-1,4-diene (99-85-4)	4.5 Source: NLM
p-Cymene (99-87-6)	4.1 Source: International Chemical Safety Cards
alpha-Terpineol (98-55-5)	2.98 Source: HSDB
Neryl acetate (141-12-8)	3.98 Source: National Library of Medicine
Geraniol (106-24-1)	3.56
Linalool (78-70-6)	2.97 Source: International Chemical Safety Cards
p-Mentha-1,3-diene (99-86-5)	4.25 Source: ChemIDplus
Citronellal (106-23-0)	3.48 Source: AKRON
delta-3-Carene (13466-78-9)	4.38 Source: NLM;ChemIDplus
Myrcene (123-35-3)	4.17
Octanal (124-13-0)	2.78
4-Carvomenthenol (562-74-3)	3.26 Source: NLM;ChemIDPlus
Terpinolene (586-62-9)	4.47 Source: National Library of Medicine/Hazardous Substances Data Bank
citral (5392-40-5)	2.76 Source: ECHA
Limonene (5989-27-5/138-86-3/5989-54-8)	4.57

12.4. Mobility in soil

Component	Mobility in soil
alpha-Pinene (80-56-8)	2600 Source: HSDB
alpha-Terpineol (98-55-5)	1000 Source: HSDB
Neryl acetate (141-12-8)	3.061 Source: Quantitative Structure Activity Relation
Linalool (78-70-6)	76 Source: HSDB
Citronellal (106-23-0)	652.1
delta-3-Carene (13466-78-9)	6324 Source: EPISUITE
4-Carvomenthenol (562-74-3)	207.4 Source: EPI SUITE

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Endocrine disrupting properties
No additional information available

12.7. Other adverse effects

LEMON E.O. ITALY (8008-56-8)	Details
Other information	Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation: Disposal must be done according to official regulations.

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

Product/Packaging disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Additional information: Flammable vapours may accumulate in the container. Handle empty containers with care because residual vapours are flammable.

Ecological waste information: Avoid release to the environment. Hazardous waste due to toxicity

SECTION 14: Transport information

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

Description	ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number	UN 1197	UN 1197	UN 1197	UN 1197	UN 1197
14.2. UN proper shipping name	EXTRACTS, LIQUID	EXTRACTS, LIQUID	Extracts, liquid	EXTRACTS, LIQUID	EXTRACTS, LIQUID
Transport document description	UN 1197 EXTRACTS, LIQUID, 3, III, (D/E), ENVIRONMENTALLY	UN 1197 EXTRACTS, LIQUID, 3, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS	UN 1197 Extracts, liquid, 3, III, ENVIRONMENTALLY HAZARDOUS	UN 1197 EXTRACTS, LIQUID, 3, III, ENVIRONMENTALLY HAZARDOUS	UN 1197 EXTRACTS, LIQUID, 3, III, ENVIRONMENTALLY HAZARDOUS

Description	ADR	IMDG	IATA	ADN	RID
	HAZARDOUS				
14.3. Transport hazard class(es)	3	3	3	3	3
Transport labels	Class 3 flammable liquid and environmentally hazardous substance marks	Class 3 flammable liquid and environmentally hazardous substance marks	Class 3 flammable liquid and environmentally hazardous substance marks	Class 3 flammable liquid and environmentally hazardous substance marks	Class 3 flammable liquid and environmentally hazardous substance marks
14.4. Packing group	III	III	III	III	III
14.5. Environmental hazards	Dangerous for the environment: Yes	Dangerous for the environment: Yes. Marine pollutant: Yes. EmS-No. (Fire): F-E. EmS-No. (Spillage): S-D	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes

No supplementary information available

14.6. Special precautions for user

Overland transport

Description	Details
Classification code (ADR)	F1
Special provisions (ADR)	601
Limited quantities (ADR)	5l
Excepted quantities (ADR)	E1
Packing instructions (ADR)	P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	MP19
Portable tank and bulk container instructions (ADR)	T2
Portable tank and bulk container special provisions (ADR)	TP1
Tank code (ADR)	LGBF
Vehicle for tank carriage	FL
Transport category (ADR)	3
Special provisions for carriage - Packages (ADR)	V12
Special provisions for carriage - Operation (ADR)	S2

Description	Details
Hazard identification number (Kemler No.)	30
Orange plates	30 above 1197
Tunnel restriction code (ADR)	D/E
EAC code	3YE

Transport by sea

Description	Details
Special provisions (IMDG)	223, 955
Limited quantities (IMDG)	5L
Excepted quantities (IMDG)	E1
Packing instructions (IMDG)	P001, LP01
IBC packing instructions (IMDG)	IBC03
Tank instructions (IMDG)	T2
Tank special provisions (IMDG)	TP1
Stowage category (IMDG)	A
Properties and observations (IMDG)	Usually consist of alcoholic solutions. Miscibility with water depends upon the composition.
MFAG-No	127;128

Air transport

Description	Details
PCA Excepted quantities (IATA)	E1
PCA Limited quantities (IATA)	Y344
PCA limited quantity max net quantity (IATA)	10L
PCA packing instructions (IATA)	355
PCA max net quantity (IATA)	60L
CAO packing instructions (IATA)	366
CAO max net quantity (IATA)	220L
Special provisions (IATA)	A3
ERG code (IATA)	3L

Inland waterway transport

Description	Details
Classification code (ADN)	F1
Special provisions (ADN)	601
Limited quantities (ADN)	5L

Description	Details
Excepted quantities (ADN)	E1
Equipment required (ADN)	PP, EX, A
Ventilation (ADN)	VE01
Number of blue cones/lights (ADN)	0

Rail transport

Description	Details
Classification code (RID)	F1
Special provisions (RID)	601
Excepted quantities (RID)	E1
Packing instructions (RID)	P001, IBC03, LP01, R001
Mixed packing provisions (RID)	MP19
Portable tank and bulk container instructions (RID)	T2
Portable tank and bulk container special provisions (RID)	TP1
Tank codes for RID tanks (RID)	LGBF
Transport category (RID)	3
Special provisions for carriage – Packages (RID)	W12
Colis express (express parcels) (RID)	CE4
Hazard identification number (RID)	30

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

Regulation	Details
REACH Annex XVII (Restriction List)	Not listed on REACH Annex XVII
REACH Annex XIV (Authorisation List)	Not listed on REACH Annex XIV (Authorisation List)
REACH Candidate List (SVHC)	Contains no substance(s) listed on the REACH Candidate List
PIC Regulation (Prior Informed Consent)	Not listed on the PIC list (Regulation EU 649/2012)
POP Regulation (Persistent Organic Pollutants)	Not listed on the POP list (Regulation EU 2019/1021)

Regulation	Details
Ozone Regulation (2024/590)	Not listed on the Ozone Depletion list (Regulation EU 2024/590)
Council Regulation (EC) for the control of dual-use items	Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items
Explosives Precursors Regulation (2019/1148)	Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)
Drug Precursors Regulation (273/2004)	Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

National regulations

Germany

Description	Details
VOC ordinance (ChemVOCFarbV)	
Water hazard class (WGK)	WGK 3, Highly hazardous to water (Classification according to AwSV; ID No. 2884).
Major Accidents Ordinance (12. BImSchV)	Is not subject to the Major Accidents Ordinance (12. BImSchV)

Netherlands

Description	Details
SZW-lijst van kankerverwekkende stoffen	Lemon, ext. is listed
SZW-lijst van mutagene stoffen	Lemon, ext. is listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	The substance is not listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	The substance is not listed

Denmark

Description	Details
Class for fire hazard	Class II-1
Store unit	5 liter
Classification remarks	R10 <H226;H304;H315;H317;H361;H411>; 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. Pregnant/breastfeeding women working with the product must not be in direct

Description	Details
	contact with the product

Poland

Polish National Regulations

Act of 25 February 2011 on chemical substances and their mixtures (J. o L. No. 63, item 322 as amended; consolidated text J. o L. 2019, item 1225).

Act of 14 December 2012 on waste (J. o L. 2013, item 322 as amended; consolidated text J. o L. 2020, item 797).

The announcement of Marshal of the Sejm of the Republic of Poland dated 19 October 2016 concerning the consolidated text announcement of the decree on the management of packaging and packaging waste (J. o L. 2016, item 1863 as amended).

Decree of the Minister of Environment of 14 December 2014 on the catalogue of waste (J. o L. 2014, item 1923).

Act of 19 August 2011 on the Carriage of Dangerous Goods (J. o L. 2011 No. 227, item 1367 as amended; consolidated text J. o L. 2020, item 154).

Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 on the highest permissible concentration and intensity of noxious agents for health at work environment (J. o L. item 1286 as amended).

The announcement of Minister of Health dated 9 September 2016 concerning the consolidated text announcement of the decree of the Minister of Health of 30 December 2004 on health and safety at work related to exposure to chemical agents at work (J. o L. of 16 September 2016, item 1488)

Regulation of the Minister of Health of 2 February 2011 on tests and measurements of the noxious agents for health at work environment (J. o L. No. 33, item 166 as amended).

Regulation of the Minister of Environment of 9 December 2003 on particularly hazardous substances to the environment (J. o L. No. 217, item 2141).

ADR Agreement: Government Statement of 13 March 2023 on the entry into force of amendments to Annexes A and B to the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), signed in Geneva on 30 September 1957 (J. o. L. 2023, item 891)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

AROMOLOGY

Indication of changes

Section	Changed item	Comments
3	Composition/information on ingredients	Modified
9	Odour	Modified

Other information: None.

Full text of H- and EUH-statements

Classification or code	Description
Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
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
Asp. Tox. 1	Aspiration hazard, Category 1
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Repr. 2	Reproductive toxicity, Category 2
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
Skin Sens. 1B	Skin sensitisation, category 1B
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Narcosis
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.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H361	Suspected of damaging fertility or the unborn child.
H400	Very toxic to aquatic life.

Classification or code	Description
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.

Authorised by:
Fozia Khot
Director