Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

ZKZ

Version number: GHS 6.0
Replaces version of: 2020-11-25 (GHS 5)

Revision: 2021-05-23

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

1.1 Product identifier

Trade name **ZKZ**

Product number 8-04-1000

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

Relevant identified uses Industrial use

1.3 Details of the supplier of the safety data sheet

23 Pa'amei Aviv St P.O. 1074
43905 Givat Hen
Israel
Telephone: +972 507305819
e-mail: lior@eybna.com
Website: http://www.eybna.com/

e-mail (competent person) lior@eybna.com (Lior Chatow)

1.4 Emergency telephone number

+1 4158544820

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Section	Hazard class	Category	Hazard class and category	Hazard statement
2.6	flammable liquid	3	Flam. Liq. 3	H226
3.1O	acute toxicity (oral)	4	Acute Tox. 4	H302
3.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
3.3	serious eye damage/eye irritation	2	Eye Irrit. 2	H319
3.4S	skin sensitisation	1	Skin Sens. 1	H317
3.10	aspiration hazard	1	Asp. Tox. 1	H304
4.1A	hazardous to the aquatic environment - acute hazard	1	Aquatic Acute 1	H400
4.1C	hazardous to the aquatic environment - chronic hazard	1	Aquatic Chronic 1	H410

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources. Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

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

- Signal word danger

- Pictograms

GHS02, GHS07, GHS08, GHS09

- Hazard statements

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.
H410	Very toxic to aquatic life with long lasting effects.

- Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/....
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331	Do NOT induce vomiting.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.

- Hazardous ingredients for labelling: Alpha-Pinene, Beta-Myrcene, Beta-Pinene, D-Limonene, Linalool, L-borneol, Citral

2.3 Other hazards

of no significance

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture)

3.2 Mixtures

Description of the mixture

Name of substance	Identifier	Wt%	Classification acc. to GHS
Beta-Myrcene	CAS No 123-35-3 EC No 204-622-5	25 – < 50	Flam. Liq. 3 / H226 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Asp. Tox. 1 / H304 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
Alpha-Pinene	CAS No 80-56-8 EC No 201-291-9	10 – < 25	Flam. Liq. 3 / H226 Acute Tox. 4 / H302 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Asp. Tox. 1 / H304 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410

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Name of substance	Identifier	Wt%	Classification acc. to GHS
Beta-Caryophyllene	CAS No 87-44-5 EC No 201-746-1	5 – < 10	Acute Tox. 4 / H302
Beta-Pinene	CAS No 127-91-3 18172-67-3 EC No 242-060-2	5 – < 10	Flam. Liq. 3 / H226 Acute Tox. 4 / H302 Acute Tox. 4 / H312 Acute Tox. 4 / H332 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1B / H317 Asp. Tox. 1 / H304 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
D-Limonene	CAS No 5989-27-5 68606-81-5 EC No 227-813-5	5 – < 10	Flam. Liq. 3 / H226 Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Asp. Tox. 1 / H304 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
Alpha-Humulene	CAS No 6753-98-6	1 – < 5	Acute Tox. 4 / H302
Ethyl Butyrate	CAS No 105-54-4 EC No 203-306-4	1 – < 5	Flam. Liq. 3 / H226 Eye Irrit. 2 / H319
Isoamyl acetate	CAS No 123-92-2 EC No 204-662-3	1 – < 5	Flam. Liq. 3 / H226
Linalool	CAS No 78-70-6 EC No 201-134-4	1 – < 5	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1B / H317 STOT SE 3 / H335
Alpha-Bisabolol	CAS No 23089-26-1 EC No 245-423-3	1 – < 5	Aquatic Chronic 2 / H411
Phytol	CAS No 150-86-7 7541-49-3 EC No 416-120-5	1 – < 5	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 STOT SE 3 / H335 Aquatic Chronic 4 / H413
β-Ocimene	CAS No 13877-91-3 EC No 237-641-2	1 – < 5	Flam. Liq. 3 / H226 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410

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Name of substance	Identifier	Wt%	Classification acc. to GHS
Nerolidol	CAS No 7212-44-4 EC No 230-597-5	1 – < 5	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 STOT SE 3 / H335 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
Alpha-Terpineol	CAS No 98-55-5 118-60-5 EC No 202-680-6 204-263-4	< 1	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 STOT SE 3 / H335 Aquatic Acute 1 / H400
Camphene	CAS No 79-92-5 EC No 201-234-8	< 1	Flam. Sol. 2 / H228 Eye Irrit. 2 / H319 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
Citral	CAS No 5392-40-5 EC No 226-394-6	< 1	Skin Irrit. 2 / H315 Skin Sens. 1 / H317 Asp. Tox. 1 / H304 Aquatic Chronic 3 / H412
L-borneol	CAS No 507-70-0 EC No 208-080-0	< 1	Flam. Sol. 1 / H228 Acute Tox. 4 / H302 Skin Sens. 1 / H317 Aquatic Chronic 3 / H412

Name of substance	Specific Conc. Limits	M-Factors	ATE	Exposure route
Alpha-Pinene	-	-	500 $^{mg}/_{kg}$	oral
Beta-Caryophyllene	-	-	500 $^{mg}/_{kg}$	oral
Beta-Pinene	-	-	500 $^{mg}/_{kg}$ 1,100 $^{mg}/_{kg}$ 11 $^{mg}/_{l}$/4h	oral dermal inhalation: vapour
Alpha-Humulene	-	-	500 $^{mg}/_{kg}$	oral
Alpha-Terpineol	-	M-factor (acute) = 10.0	-	
L-borneol	-	-	1,310 $^{mg}/_{kg}$	oral

For full text of abbreviations: see SECTION 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. Solvent vapours are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.

Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO2)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- Specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapours are heavier than air, spread along floors and form explosive mixtures with air. Vapours may form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

- Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

- Ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of substance	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
EU	Isoamyl acetate	123-92-2	IOELV	50	270	100	540				2000/39/EC
GB	Alpha-Pinene	80-56-8	WEL		800						EH40/2005

Notation

Ceiling-C	ceiling value is a limit value above which exposure should not occur
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Relevant DNELs of components of the mixture

Name of substance	Name of substance	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Alpha-Pinene	Proprietary Monoterpene	DNEL	3.8 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Alpha-Pinene	Proprietary Monoterpene	DNEL	0.542 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Beta-Pinene	Proprietary Monoterpene	DNEL	5.69 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Beta-Pinene	Proprietary Monoterpene	DNEL	0.8 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant DNELs of components of the mixture

Name of substance	Name of substance	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Beta-Pinene	Proprietary Monoterpene	DNEL	54 µg/cm²	human, dermal	worker (industry)	chronic - local effects
D-Limonene	Proprietary Monoterpene	DNEL	66.7 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
D-Limonene	Proprietary Monoterpene	DNEL	9.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Ethyl Butyrate	Proprietary Ester	DNEL	49.3 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Ethyl Butyrate	Proprietary Ester	DNEL	2.33 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Isoamyl acetate	Proprietary Ester	DNEL	20.8 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Isoamyl acetate	Proprietary Ester	DNEL	2.95 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Linalool	Proprietary Monoterpenic Alcohol	DNEL	2.8 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Linalool	Proprietary Monoterpenic Alcohol	DNEL	16.5 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
Linalool	Proprietary Monoterpenic Alcohol	DNEL	2.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Linalool	Proprietary Monoterpenic Alcohol	DNEL	5 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects
Phytol	Proprietary Diterpenic Alcohol	DNEL	8.8 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Phytol	Proprietary Diterpenic Alcohol	DNEL	5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Nerolidol	Proprietary Sesquiterpenic Alcohol	DNEL	10 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Nerolidol	Proprietary Sesquiterpenic Alcohol	DNEL	2.8 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Nerolidol	Proprietary Sesquiterpenic Alcohol	DNEL	122.5 µg/cm²	human, dermal	worker (industry)	chronic - local effects
Alpha-Terpineol	Proprietary Monoterpenic Alcohol	DNEL	9.03 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Alpha-Terpineol	Proprietary Monoterpenic Alcohol	DNEL	158 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Camphene	Proprietary Monoterpene	DNEL	110.2 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Camphene	Proprietary Monoterpene	DNEL	110.2 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects

Relevant DNELs of components of the mixture

Name of substance	Name of substance	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Camphene	Proprietary Monoterpene	DNEL	0.21 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Camphene	Proprietary Monoterpene	DNEL	1.25 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects
Citral	Proprietary Aldehyde	DNEL	9 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Citral	Proprietary Aldehyde	DNEL	1.7 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Citral	Proprietary Aldehyde	DNEL	140 µg/cm²	human, dermal	worker (industry)	chronic - local effects
L-borneol	Proprietary Monoterpenic Alcohol	DNEL	17.63 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
L-borneol	Proprietary Monoterpenic Alcohol	DNEL	10 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant PNECs of components of the mixture

Name of substance	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
Alpha-Pinene	PNEC	0.606 µg/l	aquatic organisms	freshwater	short-term (single instance)
Alpha-Pinene	PNEC	0.061 µg/l	aquatic organisms	marine water	short-term (single instance)
Alpha-Pinene	PNEC	0.2 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Alpha-Pinene	PNEC	157 µg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Alpha-Pinene	PNEC	15.7 µg/kg	aquatic organisms	marine sediment	short-term (single instance)
Alpha-Pinene	PNEC	31.7 µg/kg	terrestrial organisms	soil	short-term (single instance)
Beta-Pinene	PNEC	1.004 µg/l	aquatic organisms	freshwater	short-term (single instance)
Beta-Pinene	PNEC	0.1 µg/l	aquatic organisms	marine water	short-term (single instance)
Beta-Pinene	PNEC	3.26 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Beta-Pinene	PNEC	0.337 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Beta-Pinene	PNEC	0.034 mg/kg	aquatic organisms	marine sediment	short-term (single instance)

Relevant PNECs of components of the mixture

Name of substance	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
Beta-Pinene	PNEC	0.067 mg/kg	terrestrial organisms	soil	short-term (single instance)
D-Limonene	PNEC	14 µg/l	aquatic organisms	freshwater	short-term (single instance)
D-Limonene	PNEC	1.4 µg/l	aquatic organisms	marine water	short-term (single instance)
D-Limonene	PNEC	1.8 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
D-Limonene	PNEC	3.85 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
D-Limonene	PNEC	0.385 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
D-Limonene	PNEC	0.763 mg/kg	terrestrial organisms	soil	short-term (single instance)
Ethyl Butyrate	PNEC	29.7 µg/l	aquatic organisms	freshwater	short-term (single instance)
Ethyl Butyrate	PNEC	2.97 µg/l	aquatic organisms	marine water	short-term (single instance)
Ethyl Butyrate	PNEC	23.6 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Ethyl Butyrate	PNEC	0.173 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Ethyl Butyrate	PNEC	17.3 µg/kg	aquatic organisms	marine sediment	short-term (single instance)
Ethyl Butyrate	PNEC	17.1 µg/kg	terrestrial organisms	soil	short-term (single instance)
Isoamyl acetate	PNEC	0.022 mg/l	aquatic organisms	freshwater	short-term (single instance)
Isoamyl acetate	PNEC	0.002 mg/l	aquatic organisms	marine water	short-term (single instance)
Isoamyl acetate	PNEC	100 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Linalool	PNEC	0.2 mg/l	aquatic organisms	freshwater	short-term (single instance)
Linalool	PNEC	0.02 mg/l	aquatic organisms	marine water	short-term (single instance)
Linalool	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Linalool	PNEC	2.22 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)

Relevant PNECs of components of the mixture

Name of substance	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
Linalool	PNEC	0.222 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Linalool	PNEC	0.327 mg/kg	terrestrial organisms	soil	short-term (single instance)
Phytol	PNEC	55.7 µg/l	aquatic organisms	freshwater	short-term (single instance)
Phytol	PNEC	55.7 µg/l	aquatic organisms	marine water	short-term (single instance)
Phytol	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Phytol	PNEC	18.6 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Phytol	PNEC	18.6 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Phytol	PNEC	6.55 mg/kg	terrestrial organisms	soil	short-term (single instance)
Nerolidol	PNEC	0.001 mg/l	aquatic organisms	freshwater	short-term (single instance)
Nerolidol	PNEC	0 mg/l	aquatic organisms	marine water	short-term (single instance)
Nerolidol	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Nerolidol	PNEC	0.07 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Nerolidol	PNEC	0.007 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Nerolidol	PNEC	0.014 mg/kg	terrestrial organisms	soil	short-term (single instance)
Alpha-Terpineol	PNEC	68 µg/l	aquatic organisms	freshwater	short-term (single instance)
Alpha-Terpineol	PNEC	6.8 µg/l	aquatic organisms	marine water	short-term (single instance)
Alpha-Terpineol	PNEC	2.6 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Alpha-Terpineol	PNEC	1.85 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Alpha-Terpineol	PNEC	0.185 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Alpha-Terpineol	PNEC	0.329 mg/kg	terrestrial organisms	soil	short-term (single instance)

Relevant PNECs of components of the mixture

Name of substance	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
Camphene	PNEC	0.001 mg/l	aquatic organisms	freshwater	short-term (single instance)
Camphene	PNEC	0 mg/l	aquatic organisms	marine water	short-term (single instance)
Camphene	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Camphene	PNEC	0.026 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Camphene	PNEC	0.003 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Camphene	PNEC	0.021 mg/kg	terrestrial organisms	soil	short-term (single instance)
Citral	PNEC	0.007 mg/l	aquatic organisms	freshwater	short-term (single instance)
Citral	PNEC	0.001 mg/l	aquatic organisms	marine water	short-term (single instance)
Citral	PNEC	1.6 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Citral	PNEC	0.125 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Citral	PNEC	0.013 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Citral	PNEC	0.021 mg/kg	terrestrial organisms	soil	short-term (single instance)
L-borneol	PNEC	1.71 µg/l	aquatic organisms	freshwater	short-term (single instance)
L-borneol	PNEC	0.171 µg/l	aquatic organisms	marine water	short-term (single instance)
L-borneol	PNEC	1 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
L-borneol	PNEC	0.139 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
L-borneol	PNEC	0.017 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
L-borneol	PNEC	0.013 mg/kg	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	
Odour	characteristic
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling range	121 °C at 972.4 hPa
Flammability	flammable liquid in accordance with GHS criteria
Lower and upper explosion limit	not determined
Flash point	28 °C at 972.3 hPa
Auto-ignition temperature	237 °C (auto-ignition temperature (liquids and gases))
Decomposition temperature	not relevant
pH (value)	not determined
Kinematic viscosity	not determined
Solubility(ies)	not determined

Partition coefficient

Partition coefficient n-octanol/water (log value)	this information is not available

Vapour pressure	1,750 Pa at 20 °C

Density and/or relative density

Density	not determined
Relative vapour density	information on this property is not available

Particle characteristics	not relevant (liquid)

9.2 Other information

Information with regard to physical hazard classes	there is no additional information
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". The mixture contains reactive substance(s). Risk of ignition.

If heated:

Risk of ignition

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

10.5 Incompatible materials

Oxidisers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

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

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Harmful if swallowed.

- Acute toxicity estimate (ATE)

Oral 1,177 $^{mg}/_{kg}$

Acute toxicity estimate (ATE) of components of the mixture

Name of substance	Exposure route	ATE
Alpha-Pinene	oral	500 $^{mg}/_{kg}$
Beta-Caryophyllene	oral	500 $^{mg}/_{kg}$
Beta-Pinene	oral	500 $^{mg}/_{kg}$
Beta-Pinene	dermal	1,100 $^{mg}/_{kg}$
Beta-Pinene	inhalation: vapour	11 $^{mg}/_{l}$/4h
Alpha-Humulene	oral	500 $^{mg}/_{kg}$
L-borneol	oral	1,310 $^{mg}/_{kg}$

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

11.2 Information on other hazards

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute) of components of the mixture

Name of substance	Endpoint	Value	Species	Exposure time
Beta-Myrcene	EC50	1.47 $^{mg}/_{l}$	aquatic invertebrates	48 h
Beta-Myrcene	ErC50	0.342 $^{mg}/_{l}$	algae	72 h
Alpha-Pinene	LC50	0.303 $^{mg}/_{l}$	fish	96 h
Alpha-Pinene	EC50	0.475 $^{mg}/_{l}$	aquatic invertebrates	48 h
D-Limonene	LC50	720 $^{µg}/_{l}$	fish	96 h
D-Limonene	EC50	688 $^{µg}/_{l}$	fish	96 h
D-Limonene	ErC50	0.32 $^{mg}/_{l}$	algae	72 h
Ethyl Butyrate	LC50	≥100 $^{mg}/_{l}$	fish	96 h
Ethyl Butyrate	EC50	116.6 $^{mg}/_{l}$	aquatic invertebrates	48 h
Isoamyl acetate	LC50	<46 $^{mg}/_{l}$	fish	96 h
Isoamyl acetate	EC50	42 $^{mg}/_{l}$	aquatic invertebrates	48 h
Linalool	LC50	27.8 $^{mg}/_{l}$	fish	96 h
Linalool	EC50	59 $^{mg}/_{l}$	aquatic invertebrates	48 h
Linalool	ErC50	156.7 $^{mg}/_{l}$	algae	96 h
Alpha-Bisabolol	EC50	2.2 $^{mg}/_{l}$	aquatic invertebrates	48 h
Alpha-Bisabolol	ErC50	3.8 $^{mg}/_{l}$	algae	72 h
Phytol	LC50	>100 $^{mg}/_{l}$	fish	96 h
Phytol	EC50	>100 $^{mg}/_{l}$	aquatic invertebrates	48 h
Phytol	ErC50	>1.34 $^{mg}/_{l}$	algae	72 h

Aquatic toxicity (acute) of components of the mixture

Name of substance	Endpoint	Value	Species	Exposure time
β-Ocimene	EC50	1.47 mg/l	aquatic invertebrates	48 h
β-Ocimene	ErC50	0.342 mg/l	algae	48 h
Nerolidol	LC50	1.43 mg/l	fish	96 h
Nerolidol	EC50	510.3 µg/l	aquatic invertebrates	48 h
Nerolidol	ErC50	2 mg/l	algae	72 h
Alpha-Terpineol	LC50	>82 mg/l	fish	96 h
Alpha-Terpineol	EC50	10 mg/l	aquatic invertebrates	48 h
Alpha-Terpineol	ErC50	>11 µg/l	algae	72 h
Camphene	LC50	0.72 mg/l	fish	96 h
Camphene	EC50	0.96 mg/l	aquatic invertebrates	24 h
Camphene	ErC50	>1,000 mg/l	algae	72 h
Citral	LC50	6.78 mg/l	fish	96 h
Citral	EC50	6.8 mg/l	aquatic invertebrates	48 h
Citral	ErC50	103.8 mg/l	algae	72 h
L-borneol	LC50	33.25 mg/l	fish	96 h
L-borneol	EC50	4.23 mg/l	aquatic invertebrates	48 h
L-borneol	ErC50	1.71 mg/l	algae	72 h

Aquatic toxicity (chronic) of components of the mixture

Name of substance	Endpoint	Value	Species	Exposure time
Beta-Pinene	EC50	326 mg/l	microorganisms	3 h
D-Limonene	EC50	<0.67 mg/l	fish	8 d
D-Limonene	LC50	0.41 mg/l	fish	8 d
Linalool	EC50	>100 mg/l	microorganisms	30 min
Alpha-Bisabolol	EC50	>1,000 mg/l	microorganisms	30 min
Phytol	EC50	>1,000 mg/l	microorganisms	180 min
Nerolidol	EC50	>1,000 mg/l	microorganisms	30 min
Camphene	EC50	>1,000 mg/l	microorganisms	3 h
Citral	EC50	160 mg/l	microorganisms	30 min

Aquatic toxicity (chronic) of components of the mixture

Name of substance	Endpoint	Value	Species	Exposure time
L-borneol	EC50	>100 $^{mg}/_{l}$	microorganisms	3 h

12.2 Persistence and degradability

Degradability of components of the mixture

Name of substance	CAS No	Process	Degradation rate	Time	Method	Source
Beta-Myrcene	123-35-3	oxygen depletion	76 %	28 d		ECHA
Alpha-Pinene	80-56-8	oxygen depletion	68 %	28 d		ECHA
Beta-Pinene	127-91-3 18172-67-3	oxygen depletion	76 %	28 d		ECHA
D-Limonene	5989-27-5 68606-81-5	carbon dioxide generation	58.8 %	14 d		ECHA
D-Limonene	5989-27-5 68606-81-5	oxygen depletion	80 %	28 d		ECHA
Ethyl Butyrate	105-54-4	oxygen depletion	50 %	42 d		ECHA
Linalool	78-70-6	oxygen depletion	40.9 %	5 d		ECHA
Alpha-Bisabolol	23089-26-1	oxygen depletion	≥70 – ≤80 %	28 d		ECHA
Phytol	150-86-7 7541-49-3	carbon dioxide generation	0 – 10 %	3 d		ECHA
β-Ocimene	13877-91-3	carbon dioxide generation	73 %	28 d		ECHA
Nerolidol	7212-44-4	oxygen depletion	70 – 80 %	28 d		ECHA
Alpha-Terpineol	98-55-5 118-60-5	oxygen depletion	60 %	5 d		ECHA
Citral	5392-40-5	oxygen depletion	>90 %	28 d		ECHA

12.3 Bioaccumulative potential

Data are not available.

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	BCF	Log KOW	BOD5/COD
Beta-Myrcene	123-35-3		4.82 (pH value: ~6.5, 30 °C)	
Beta-Pinene	127-91-3 18172-67-3		4.425 (25 °C)	
D-Limonene	5989-27-5 68606-81-5		4.38 (pH value: 7.2, 37 °C)	

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	BCF	Log KOW	BOD5/COD
Ethyl Butyrate	105-54-4	8	2.433 (pH value: 6.68, 25 °C)	
Isoamyl acetate	123-92-2	28.1	2.7 (35 °C)	
Linalool	78-70-6		2.9 (pH value: 7, 20 °C)	
Alpha-Bisabolol	23089-26-1		5.5 (25 °C)	
Phytol	150-86-7 7541-49-3	138	9.83 (pH value: 6.95, 25 °C)	
β-Ocimene	13877-91-3		5.4 (25 °C)	
Nerolidol	7212-44-4		4.5 (pH value: ~7, 24 °C)	
Alpha-Terpineol	98-55-5 118-60-5	123.7	>6 (pH value: 7.71, 40 °C)	
Camphene	79-92-5		4.22 (pH value: 7.2, 37 °C)	
Citral	5392-40-5	89.72	2.76 (25 °C)	
L-borneol	507-70-0		3.6 (20 °C)	

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

Information on this property is not available.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number or ID number

ADR/RID/ADN	UN 1993
IMDG-Code	UN 1993
ICAO-TI	UN 1993

14.2 UN proper shipping name

ADR/RID/ADN	FLAMMABLE LIQUID, N.O.S.
IMDG-Code	FLAMMABLE LIQUID, N.O.S.
ICAO-TI	Flammable liquid, n.o.s.
Technical name (hazardous ingredients)	Beta-Myrcene, Alpha-Pinene

14.3 Transport hazard class(es)

ADR/RID/ADN	3
IMDG-Code	3
ICAO-TI	3

14.4 Packing group

ADR/RID/ADN	III
IMDG-Code	III
ICAO-TI	III

14.5 Environmental hazards

hazardous to the aquatic environment

Environmentally hazardous substance (aquatic environment)	Beta-Myrcene

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information

Classification code	F1
Danger label(s)	3, fish and tree

Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 601

Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3Y

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	yes (hazardous to the aquatic environment) (Beta-Myrcene)
Danger label(s)	3, fish and tree

Special provisions (SP)	223, 274, 955
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-E
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	3

Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Industrial Emissions Directive (IED)

VOC content	94.46 %

National inventories

Country	Inventory	Status
US	TSCA	not all ingredients are listed

Legend
TSCA Toxic Substance Control Act

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2000/39/EC	Commission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC
Acute Tox.	Acute toxicity
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	European Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
Aquatic Acute	Hazardous to the aquatic environment - acute hazard
Aquatic Chronic	Hazardous to the aquatic environment - chronic hazard
Asp. Tox.	Aspiration hazard
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
COD	Chemical oxygen demand
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule

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Abbr.	Descriptions of used abbreviations
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
Flam. Liq.	Flammable liquid
Flam. Sol.	Flammable solid
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
IOELV	Indicative occupational exposure limit value
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
log KOW	n-Octanol/water
M-factor	Means a multiplying factor. It is applied to the concentration of a substance classified as hazardous to the aquatic environment acute category 1 or chronic category 1, and is used to derive by the summation method the classification of a mixture in which the substance is present
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
Skin Sens.	Skin sensitisation
STEL	Short-term exposure limit
STOT SE	Specific target organ toxicity - single exposure
TWA	Time-weighted average
VOC	Volatile Organic Compounds

Abbr.	Descriptions of used abbreviations
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures. Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.
Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H228	Flammable solid.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
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.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.