LEMON OIL

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

product trade name:	**Lemon Essential Oil**
EC name/registration name:	Lemon, ext.
EC number:	284-515-8
CAS number (EC inventory):	84929-31-7
REACh Registration Number:	01-2119495512-35-0001

1.2 Relevant identified uses of the substance and uses advised against

relevant uses:	odour agent / flavouring agent - ingredient for industrial manufacturing.
uses advised against:	not for personal use in this form or concentration.

1.3 Details of the supplier of the safety data sheet

company:	Ecoflores, ul. Waksmundzka 34, 34-400 Nowy Targ, Poland
telephone number:	+48-604-508-229
www:	www.ecoflores.eu
email:	kontalt@ecoflores.eu

1.4 Emergency telephone number

poison control center: 112

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance

Reg. (EC) No 1272/2008:	Flam. Liq. 3	Asp. Tox. 1	Skin Irrit. 2	Skin Sens. 1	Aquatic Chronic 2
hazard categories:	FL3	AH1	SCI2	SS1	EHC2
hazard statements:	H226	H304	H315	H317	H411
hazard pictograms:	GHS02	GHS08	GHS07		GHS09

2.2 Label elements

hazard pictograms:

signal word: danger

hazard statements: H226, H304, H315, H317, H411

precautionary statement: P210, P241, P262, P273, P280, P301/310, P303/361/353, P331, P405, P501

2.3 Other hazards

Ecological information:

according to Annex XIII of REACH Regulation, the substance contains no constituent considered either Persistent, Bioaccumulative and Toxic (PBT), or very Persistent and very Bioaccumulative (vPvB) at a concentration equal to or greater than 0.1%.

The substance contains no constituent identified as having endocrine disrupting properties according to REACH Article 59(1) or in accordance with the criteria set out in Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0.1%.

Toxicological information:

the substance contains no constituent identified as having endocrine disrupting properties according to REACH Article 59(1) or Commission Delegated regulation (EU) 2017/2100 at a concentration equal to or greater than 0.1%.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

botanical origin:	*Citrus limon,* (L) BURM. f.
production process:	essential oil extracted by physical means from the outer part of fresh lemon fruits peel.
chemical identification & grade:	100% Natural Complex Substance
EU chemical name:	Lemon, ext.
EC number:	284-515-8
CAS number (EC inventory):	84929-31-7
other CAS number:	8008-56-8
REACh Status:	registered substance
REACh tonnage band:	between 100 to 1000 tonnes/year

3.1.1 Substance: main constituents & typical values

common name	**EINECS**	**CAS**	**Hazards classification**	**content (typical %)**
Limonene (VOC component)	227-813-5	5989-27-5	Flam. Liq. 3;H226|Skin Irrit. 2;H315|Skin Sens. 1B;H317|Asp. Tox. 1;H304|Aquatic Acute 1;H400|Aquatic Chronic 3;H412	59÷74
β-pinene	204-872-5	127-91-3	Flam. Liq. 3;H226|Skin Irrit. 2;H315|Skin Sens. 1B;H317|Asp. Tox. 1;H304|Aquatic Acute 1;H400|Aquatic Chronic 1;H410	8÷18
γ-terpinene	202-794-6	99-85-4	Skin Irrit. 3;H316|Flam. Liq. 3;H226|Asp. Tox. 1;H304|Acute Tox. 5 (Oral);H303	6÷11

α-pinene	201-291-9	80-56-8	Flam. Liq. 3;H226|Acute Tox. 4 (Oral);H302|Skin Irrit. 2;H315|Skin Sens. 1B;H317|Asp. Tox. 1;H304|Aquatic Acute 1;H400|Aquatic Chronic 1;H410	1÷4
citral	226-394-6	5392-40-5	Acute Tox. 5 (Dermal);H313|Skin Irrit. 2;H315|Eye Irrit. 2A;H319|Skin Sens. 1;H317|Aquatic Acute 2;H401	1÷3.5

4. FIRST AID MEASURES

4.1 Description of first aid measures

inhalation: move to fresh air for at least 15 minutes, in case of complaints seek medical attention.
contact with the skin: remove contaminated clothing and wash with water and soap the contaminated part, make sure you have eliminated the contamination - in case of complaints seek medical attention.
contact with the eyes: abundant eye-wash for several minutes with pure water, make sure you have eliminated the contamination, in case of complaints seek medical attention.
ingestion: ask **immediately** medical assistance - mouth washing with water and **do not provoke vomiting**.

4.2 Most important symptoms and effects, both acute and delayed

symptoms: inhalation: can cause slight headache - contact: can cause bloodshot eyes - can cause slight skin rash.
acute and delayed effects: no post-disorder effects are reported.

4.3 Indication of any immediate medical attention and special treatment needed

immediate medical assistance: see point 4.1.
immediate/special treatment: see point 4.1.
first aid specific means: eye wash fountain / safety shower should be available in the work area.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

suitable extinguishing media: SMALL FIRE: use CO_2, foam, dry powder - LARGE FIRE: use water spray or fog - cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
unsuitable extinguishing media: pressurized water jet.

5.2 Special hazards arising from the substance

vapours may form explosive mixture with air - in case of fire, the following can be released: carbon monoxide (CO), carbon dioxide (CO_2), smoke, soot.

5.3 Advice for firefighters

standard procedure for chemical fires - spray extinguishing media to base of flames - use adequate protections for respiratory apparatus, avoid vapour inhalation.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

for non emergency personnel: in an emergency (i.e. unintentional release of the substance exceeding the DNEL) respiratory protection (Gas filter A, Colour code brown) must be worn. Consider the maximum duration for wear. Use insulating device for respiratory protection with an independent air supply if the concentration is above the usage this for filter devices or for oxygen concentrations below 17 volume % or in circumstances which are unclear - use adequate protections solvent resistant: security shoes, bodysuit, gloves and protective goggles (see section 8).
for emergency responders: as per non emergency personnel.
emergency procedures: remove any ignition source and ensure adequate ventilation in working areas following accidental releases.

6.2 Environmental precautions

keep away from drains - keep away from surface and ground water.

6.3 Methods and material for containment and cleaning up

keep away from heat and use non-combustible absorbing sawdust (sand, specific binder). Refer to section 13 for the appropriate methods of waste treatment.

6.4 Reference to other sections

see section 4, 8 & 13

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

safe handling: during handling keep original container closed - avoid contact with skin and eyes - wear adequate protective gloves and eye/face protection - avoid any sources of ignition - avoid exposing to high temperature during processing - maintain adequate local and general ventilation where product is handled.
hygiene at work: do not ingest or apply to the skin as such - no smoking - remove contaminated clothing - good personal washing routines should be followed - if at risk of contamination, foods, beverages and other articles of consumption must not be stored or consumed at the work areas.

7.2 Conditions for safe storage, including any incompatibilities

container:	to be stored in stainless steel drums, preferably under inert atmosphere (nitrogen) with minimum head space, protected from day-light. • **take note**: the container used during transportation must be considered only as a temporary container and it must not be considered in any case adequate for medium or long term warehousing.
conditions:	stored in a dry, aerated place, away from any heat source and ignition source.
temperature:	from 5 °C to 21 °C.

7.3 Specific end uses

use as odour agent / flavouring agent - the information of this section are not related to the use of the product in combination with any other material or any other process altering its characteristics.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Control parameters

occupational exposure limit: Component with limit values that require monitoring at the workplace:
CAS 5989-27-5, (R)-p-mentha-1,8-diene
AGW (Germany): 110 mg/m³, 20 ppm, 2(II); DFG, Sh, Y

8.2 Exposure control

see Exposure Scenario in annex.

8.2.1 Appropriate engineering controls

where appropriate, use closed system to transfer and process this material - if appropriate, isolate mixing rooms and other areas where this material is used or openly handled - maintain these areas under negative air pressure relative to the rest of the plant.

8.2.2 Individual protection measures, such as personal protective equipment


eye/face protection:	protective goggles with built-in-frame tested to EN166 (should be checked regularly).
skin protection - hand:	suitable gloves tested to EN374 (should be checked regularly) - always use with clean, dry hands.
skin protection - other:	protective work clothing solvent resistant (should be checked regularly).
respiratory protection:	not necessary in adequate local with general ventilation - avoid breathing vapors.
thermal hazards:	none.

8.2.3 Environmental exposure controls

see Exposure Scenario in annex.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

physical form:	liquid
colour:	yellow to yellow-greenish
odour:	citrus
odour threshold:	N/D
pH:	N/A
initial boiling point (& range):	160 °C (±20 °C) at 1016 hPa
melting point/freezing point:	N/A
flash point:	53.5 °C (128.5 °F)
evaporation rate:	N/D
upper/lower explosive limits:	N/D
vapour pressure:	218.8 Pa at 25 °C
vapour density:	N/D
relative density d_4^{20}:	0.85 (±0.01)
solubility:	in alcohol & other oils / negligible in H_2O
partition coefficient n-octanol/H_2O:	3.33 - 6.3
auto-ignition temperature:	235 °C at 1012.2 - 1016.5 hPa
decomposition temperature:	N/D
viscosity:	1.09 mPa*s (dynamic) / ~1.28 mm^2/s (static) at 20 °C
explosive properties:	none
oxidizing properties:	none

9.2 Other information

9.2.1. Information with regard to physical hazard classes

none

9.2.2. Other safety characteristics

none

10. STABILITY AND REACTIVITY

10.1 Reactivity

substance not reactive with water - substance not reactive if used according to storage & handling conditions & identified uses (see subsection 1.2).

10.2 Chemical stability

substance stable if used according to storage & handling conditions & identified uses (see subsection 1.2). ● **shelf life**: 365 days, as per recommended storage & handling conditions (see section 7).

10.3 Possibility of hazardous reactions
none if used according to storage & handling conditions & identified uses (see subsection 1.2).

10.4 Conditions to avoid
avoid exposure to heat.

10.5 Incompatible materials
highly oxidizing agents.

10.6 Hazardous decomposition products
no known hazardous decomposition products under recommended storage & handling conditions - in case of combustion: carbon monoxide (CO), carbon dioxide (CO_2).

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

acute toxicity:	LD50: >5000 mg/kg bw (oral rat, similar to OECD 401) LD50: >10000 mg/kg bw (dermal rabbit, similar to OECD 402)
skin corrosion/irritation:	irritating (test according to OECD guideline 404)
serious eye damage/irritation:	not classified as irritating to the eye (tested according to OECD guideline no. 405)
respiratory sensitisation:	no data available
skin sensitisation:	sensitizing based on read across to limonene (tested according to OECD guideline 429)
germ cell mutagenicity:	not mutagenic (mammalian cell gene mutation assay OECD Guideline No. 476), not clastogenic (OECD Guideline 473), not mutagenic (Ames test OECD 471)
carcinogenicity:	conclusive but not sufficient for classification; limonene tested according to OECD Guideline 451 shows nephrocarcinogenicity in the male rat, of which the mechanism is not relevant for humans.
reproductive toxicity:	conclusive but not sufficient for classification (based on read across to limonene in prenatal developmental toxicity studies with rats, mice and rabbits)
STOT-single exp.:	conclusive but not sufficient for classification
STOT-repeated exp.:	NOAEL and LOAEL resp. 100 and 1000 mg/kg bw/day (read across to limonene OECD test 409 with beagle dogs).
aspiration hazard:	no data available

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties
the substance contains no constituent identified as having endocrine disrupting properties according to REACh Article 59(1) or Commission Delegated regulation (EU) 2017/2100 at a concentration equal to or greater than 0.1%.

11.2.2 Other information
no data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity
algae/aquatic plants (acute tox.): 72h-ELr50 Desmodesmus subspicatus 150 mg/l (WAF). 72h-NOECr ~50 mg/l (OECD 201, WAF)
fish (acute tox.): 96h-EL50 Danio rerio 5.65 mg/l / 96h-LC50 2.76 mg/l (OECD 203, WAF)
aquatic invertebrates (acute tox.): 48h-EL50 Daphnia magna 1.1 mg/l / NOEL 0.48 mg/l (OECD 202, WAF)

12.2 Persistence and degradability
this oil is to be considered as a readily biodegradable substance. Based on its ready biodegradability, oil does not fulfill the criteria for persistence.

12.3 Bioaccumulative potential
as the constituents are readily biodegradable, it is likely that they will also be biotransformed in higher organisms so bioaccumulation is actually not expected.

12.4 Mobility in soil
this substance is considered as a readily biodegradable NCS. Based on the ready biodegradability of the NCS, simulation tests in surface water, sediment and soil are not required.

12.5 Results of PBT and vPvB assessment
according to Annex XIII of REACh Regulation, the substance contains no constituent considered either Persistent, Bioaccumulative and Toxic (PBT), or very Persistent and very Bioaccumulative (vPvB) at a concentration equal to or greater than 0.1%.

12.6 Endocrine disrupting properties
the substance contains no constituent considered to have endocrine disrupting properties according to REACh Article 59(1) or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0.1%.

12.7 Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

the containers used for this product must completely empty before disposal. Dispose product and/or contaminated packaging in accordance with federal, state and local environmental control regulations - disposal through the waste water is illegal.

14. TRANSPORT INFORMATION

14.1 UN Number

1197

14.2 UN proper shipping name

extracts, liquid, for flavour or aroma

14.3 Transport hazard class

Class 3

14.3.1 Transport hazard symbols

for IMDG-ADR/RID: fish and tree - flame
for ICAO/IATA: flame

14.4 Packing group

III

14.5 Environmental hazards

marine pollutant

14.6 Special precautions for user

this product contains constituents flammables & dangerous for the environment - in case of pouring out, make sure to label new package accordingly, reproducing original label with relevant symbols.

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

not applicable

15. REGULATORY INFORMATION

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

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
Commission Regulation (EU) 2020/878 of 18 June 2020 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

15.2 Chemical Safety Assessment

a Chemical Safety Assessment according to the rules stipulated in the REACh directive has been performed.

16. OTHER INFORMATION

a Revision

Version 2RME07
(Revision Number: 2 - Revision Date: January 19, 2021)

- Section 2. Hazards Identification – *H Phrases precedence revised*
- Section 3.1.1 Substance: main constituents & typical values – *GHS/CLP Classification update for listed components*
- Section 7.2 Conditions for safe storage, including any incompatibilities – *Recommended storage temperature updated from 5 °C÷20°C to 3 °C÷7°C*
- Section 9. PHYSICAL AND CHEMICAL PROPERTIES – *Flashpoint updated from 49°C to 53.5°C*

Version 3RME07
(Revision Number: 3 - Revision Date: May 25, 2023)

- Updates to Sections: 2, 8, 9, 11, 12, 14 ,15 according to Reg. (EU) No 2020/878

b Legend

CLP: Regulation (EC) No 1272/2008 / **CSR**: Chemical Safety Report / **Asp. Tox.**: aspiration hazard / **Aquatic Chronic**: aquatic hazard / **Skin Irrit.**: skin irritation hazard / **Skin Sens.**: skin sensitization hazard / **Flam. Liq.**: flammable liquid hazard / **WAF:** Water Accommodated Fractions / **LD50:** Lethal Dose 50 / **LL50:** Lethal Loading 50 / **EL50:** Effective Loading 50 / **NOAEL:** No-Observed Adverse Effect Level / **NOEL:** No-Observed Effect Level / **LOEL:** Lowest Observed Effetct Level / **OECD:** Organization for Economic Co-operation and Development

c Literature references and source of data

RIFM - FEMA database / CSR Lemon Oil

d List of relevant hazard and precautionary statements

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
H411 toxic to aquatic life with long lasting effects
P210 keep away from heat/sparks/open flames/hot surfaces – no smoking
P241 use explosion-proof electrical/ventilating/lighting/equipment

P262 do not get in eyes, on skin or on clothing
P273 avoid release to the environment
P280 wear protective gloves/eye protection/face protection
P301/310 if swallowed: immediately call a poison center or doctor/physician
P303/361/353 if on skin (or hair): remove/take off immediately all contaminated clothing. rinse skin with water/shower
P331 do not induce vomiting
P405 store locked up
P501 dispose product/container in accordance with applicable regulations

e Inventories & other

	CAS	ID	NOTE
EINECS	84929-31-7	284-515-8	
TSCA	8008-56-8	-	
IECSC	8008-56-8	-	
KECI	8008-56-8	KE-27013	
DSL	8008-56-8	-	
AICS	8008-56-8	-	
ENCS - ISHL	8008-56-8	11-(1)-711	
NZIOC	8008-56-8	-	
PICCS	8008-56-8	-	
RIFM	8008-56-8	136-G2.5	
FEMA	8008-56-8	2625	
FDA	-	182.20	
CoE	-	139	
HS Code	-	3301131000	EU TARIC

f Further information

the information on this SDS is correct to the best of our knowledge, covering the involved product at the date of its publication. They apply to the product as such as per the described specifications. The information are not related to the use of the product in combination with any other material or any other process altering its characteristics. The end user should apply to the existing normative and laws covering the use of the product, the hygiene and security at work. The container used during transportation must be considered only as a temporary container and it must not be considered in any case adequate for medium or long term warehousing. Upon receipt, our product must be stored as soon as possible in compliance with section 7 of this SDS. The information given in this SDS is in accordance with the Reg. (EU) No 2020/878.

ANNEX

a Exposure Scenarios

ES_Lemon_Oil ➔