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	Issue date: 13-10-2021
PeelPioneers	Revision date: 2-11-2023
	According: EC 1907/2006

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

1.1 Product identifier

Trade name : Orange oil
 Synonyms : Orange terpene, orange oil, d-limonene

CAS number : 8008-57-9
 EC number : 232-433-8
 Registration number (REACH) : 01-2119529223-47-0051

1.2 Relevant identified uses and uses advised against

Relevant identified uses : Cleaning solvent, cleaning additive, fragrance additive
 Uses advised against : Not applicable

1.3 Details of the supplier of the safety data sheet

Supplier : PeelPioneers B.V.
 Only representative : Koenendelseweg 29a 5222 BG Hertogenbosch-
 Non-Community manufacturer /
 formulator : -

1.4 Emergency telephone number : PeelPioneers: 0031-6-55362343

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

EC Index number : 232-433-8
 CLP Regulation (EC 1272/2008) : substance



2.2 Label elements

Signal word : H226 Flammable liquid and vapour
 H315 Causes skin irritation
 H317 May cause an allergic skin reaction
 H304 May be fatal if swallowed and enters airways
 H400 Very toxic to aquatic life
 H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s) : 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.
 P301 + P310 If swallowed, immediately call a poison center
 P302 + P352 If on skin, wash with plenty of water
 P333 + P313 if skin irritation or a rash occurs: get medical advice

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

3.2 Mixture

Chemical name	CAS number	EC number	%	Hazard statements (CLP 1272/2008)
d-limonene	5989-27-5	227-813-5	>95%	H226, H315, H317, H400 and H410
Myrcene	123-35-3	204-622-5	1-5%	N/A
Decanal	112-31-2	203-957-4	1-2,5%	N/A
Octanal	124-13-0	204-683-8	1-2,5%	N/A
Citral	5392-40-5	226-394-6	1-2,5%	N/A

The full text of each relevant hazard statement is listed in Section 16.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	: remove victim to fresh air and keep at rest in a position comfortable for breathing. If the victim feels unwell, contact a toxicological information center or a doctor. Bring this SDS.
Contact with skin	: Wash exposed skin with sufficient amount of water to remove the material. Take off and isolate contaminated clothing and shoes. In case of skin irritation: contact a doctor. Bring this SDS.
Contact with eyes	: Wash carefully with water for several minutes. In case of use of contact lenses, remove them, if possible. Keep washing. If eyes irritation continues: Contact a doctor. Bring this SDS
Ingestion	: Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse the victims mouth with water in abundance. If the victim feels unwell, contact a toxicological information center or a doctor. Bring this SDS

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects:	: Breathing difficulties. May cause allergic skin reaction. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, light-headedness, chest pain, muscle pain or flushing
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SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media	: Compatible with foam, water mist, powder and carbon dioxide (CO ₂)
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire

5.2 Special hazards arising from the substance or mixture

: the combustion or the chemical containers may form toxic and irritant gasses such as carbon monoxide and carbon dioxide

5.3 Advice for firefighters

: use self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing. Containers and tanks involved in the fire should be cooled with water mist

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SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective

equipment & emergency procedures: For non-emergency personnel: Do not smoke. Avoid exposure to the product. If necessary use personal protective equipment as described in section 8. For emergency responders: use personal protective equipment as described in section 8.

6.2 Environmental precautions

: Avoid that spilled materials reaches waterways or sewage system.

6.3 Methods and material for containment and cleaning up

: Use water mist or vapor suppressing foam to reduce the dispersion of vapors. Use natural barriers or spill containment. Collect spilled material and put it into containers. Adsorb the remaining product with dried sand, vermiculite or any other inert material. Put the adsorbed material in appropriate containers and remove them to a safe place. Use tools that do not cause sparks to collect absorbed material. For final destination, proceed pursuant to Section 13 of this SDS

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

: Safe handling of the substance or mixture: Handle in a well ventilated area or with general system of ventilation/local exhaust. Avoid vapors and mists formation General hygiene: Wash hands and face thoroughly after handling and before eating, drinking, smoking or going to the bathroom.

7.2 Conditions for safe storage, including any incompatibilities

: Technical measures for prevention of fire and explosion: store in a safe cabinet where flammable liquids can be stored Adequate conditions: Store in a well ventilated place away from sunlight. Keep container closed. Keep away from high temperatures. Keep stored at room temperature not exceeding 35°C (95°F). To prevent oxidation: use nitrogen blanket if necessary

7.3 Specific end use(s)

: Ingredient for cleaning agents

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Health values (threshold values for professional use)

Derived no-effect level	Threshold value	Way of exposure	Time of exposure
DNEL	66,7 mg/m ³	Respiration	Chronical
DNEL	9,5 mg/kg	Skin	Chronical

Environmental values

Predicted no-effect concentration	Threshold value	Organism	Source	Time of exposure
PNEC	14 µg/L	Aquatic organisms	Fresh water	Short term (one time)
PNEC	1,4 µg/L	Aquatic organisms	Sea water	Short term (one time)
PNEC	1,8 mg/L	Aquatic organisms	Water treatment plant	Short term (one time)
PNEC	3,85 mg/kg	Aquatic organisms	Fresh water sediment	Short term (one time)
PNEC	0,385 mg/kg	Aquatic organisms	Sea water sediment	Short term (one time)
PNEC	0,763 mg/kg	Terrestrial organisms	soil	Short term (one time)

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8.2 Exposure controls

Engineering controls : Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

- a) Eye / face protection : Laboratory goggles
- b) Skin / hand protection : Wear appropriate gloves. Appropriate gloves are gloves checked according to EN 374 for chemicals. Gloves should be checked to be impermeable. Gloves should be made from acrylonitrile (thickness of 0,35 mm). Next to this one should wear long sleeved clothing and closed shoes
- c) Respiratory protection : If exposure limits are exceeded, a NIOSH approved vapor mask should be worn
- d) Other : N/A

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	: Orange colour
Odour	: Orange, citrus
Odour threshold	: No information available
pH	: No information available
Melting point / freezing point	: -74 °C
Initial boiling point and boiling range	: 175 °C
Flash point	: 52 °C
Evaporation rate	: Moderate/ fast
Flammability (solid, gas)	: Not applicable
Upper / lower flammability or	
Lower explosion limit (LEL)	: 0,7 vol% (39 g/m ³)
Upper explosion limit (UEL)	: 6,1% (345 g/m ³)
Vapour pressure	: 2 mm/Hg
Specific gravity	: 0,838-0,843
Solubility in water	: Insoluble
Auto-ignition temperature	: 255 °C
Viscosity	: 0,844 mPas @25 °C

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity : Oxidizing reactions

10.2 Chemical stability : Stable under normal atmospheric conditions and temperature

10.3 Possibility of hazardous reactions : None known

10.4 Conditions to avoid : Excess heat, keep away from open flames, hot surfaces and sources of ignition

10.5 Incompatible materials : air or oxygen (as oxidation reactions will occur)

10.6 Hazardous decomposition products: Carbon monoxide (CO) and carbon dioxide (CO₂)

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SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity	: Single exposure: It is not expected that the product presents specific target organ toxicity by single exposure LD ₅₀ 4400 mg/ kg (rat, oral)
Corrosion/irritation	: Causes skin irritation with redness, pain and dryness.
Sensitisation	: May cause an allergic skin reaction with dermatitis and itching. It is not expected that the product presents sensitization respiratory.
Repeated dose toxicity	: No information available
Aspiration hazard	: No information available
Mutagenicity	: The information located does not suggest that d-limonene is mutagenic
Carcinogenicity	: it is not expected that the product causes cancer
Reproductive toxicity	: It is not expected that the product presents reproductive toxicity.

11.2 Other information : The toxicological properties have not yet been fully investigated.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity	: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. LC50 = 35 mg/L, 96h (Oncorhynchus mykiss) LC50 = 0,619-0,796 mg/ L 96h (Pimephales promelas)
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12.2 Persistence and degradability : Readily biodegradable

12.3 Bio accumulative potential : An estimated BCF of 660 suggests the potential for bioconcentration in aquatic organisms is high.

12.4 Mobility in soil : Is not likely mobile in the environment due to low water solubility

12.5 Other adverse effects : There are not known other environmental effects for this product

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods : Must be disposed of as hazardous waste in compliance with local regulations. The treatment and disposal should be evaluated for each specific product. Keep the product remains in its original and properly closed containers. Disposal should be performed as established for the product.

SECTION 14. TRANSPORT INFORMATION

14.1 Transport by road (ADR), inland waterways (AND) and by rail (RID)

UN number	: 2319
Proper shipping name	: TERPENE HYDROCARBONS
Transport hazard class(es)	: 3 (flammable liquids)
Environmental hazards	: Flammable liquid + aquatic toxic
Classification code	: F1
Packaging group:	: III
GEVI	: 30
Limited quantity (LQ):	: 5 L


14.2 Transport by sea (IMDG)

UN number	: 2319
Proper shipping name	: TERPENE HYDROCARBONS
Transport hazard class(es)	: 3 (flammable liquids)
Environmental hazards	: Toxic to aquatic environment
Classification code	: F1
Packaging group:	: III
GEVI	: 30
Limited quantity (LQ):	: 5 L


14.4 Transport by air (ICAO / IATA)

UN number	: 2319
Proper shipping name	: TERPENE HYDROCARBONS
Transport hazard class(es)	: 3 (flammable liquids)
Packing group	: III


SECTION 15. REGULATORY INFORMATION
15.1 Safety, health and environmental regulations/legislation (EC)

EC 649/2012/ EU list of dangerous Substances (PIC)	Not listed
EC 1005/2009/ EU list of substances that deplete ozone layer	Not listed
EC 850/2004/ EU list of persistent Contaminated Substances (POP)	Not listed

National laws	: Substance is listed in EINECS/ ELINGS/ NLP (Europe) and REACH (Europe)
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SECTION 16. OTHER INFORMATION
16.1 Revision comments

A line in the margin combined with text rendered in red indicates a relevant amendment from the previous version.

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16.2 References and sources for data : Bibliographic references: Globally Harmonized System of Classification and Labelling of Chemicals (GHS). 6. Rev. ed. New York: United Nations, 2015

16.3 Other information and disclaimer

PeelPioneers BV has compiled the information and recommendations contained in this document based on the characteristics of the product in its current stage of development. After finished the development of the product, there may exist differences in the information presented herein due to manufacture of the product on an industrial scale. Therefore, we reserve the rights to upgrade the documents according to the latest knowledge

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