

MATERIAL SAFETY DATA SHEET

Complies with Reg. (EU) 2020/878

Revision n. 05
Date of issue 05/07/2023
(Replaces revision n. 04
date of issue 02/01/2023)

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

1.1 Product identifier

Trade name: MANDARIN ESSENTIAL OIL
Trade code: 01458A

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

Raw material with food and cosmetic application
Do not use for purposes other than those listed

1.3 Details of the supplier of the safety data sheet

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1.4 Emergency telephone number

Pavia – CAV IRCCS Fondazione Maugeri – tel. 038224444
Milano – CAV Ospedale Niguarda Ca' Granda – tel. 0266101029
Bergamo – CAV Azienda Ospedaliera Papa Giovanni XXII – tel. 800883300
Roma – CAV Policlinico Gemelli – tel. 063054343
Roma – CAV Policlinico Umberto I – tel. 0649978000
Napoli – CAV Ospedale Cardarelli – tel. 0817472870

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Reg. (EC) 1272/2008 (CLP):

-  GHS02 – Flam. Liq. 3 – H226. Flammable liquid and vapour
-  GHS08 – Asp. Tox. 1 – H304. May be fatal if swallowed and enters airways
-  GHS07 – Skin Irrit. 2 – H315. Causes skin irritation
-  GHS07 – Skin Sens. 1 – H317. May cause an allergic skin reaction
-  GHS09 – Aquatic Chronic 2 – H411. Toxic to aquatic life with long lasting effects

2.2 Label elements

Labelling according to Reg. (EC) 1272/2008 (CLP):

Pictogram, signal Word Code(s):



GHS02, GHS08, GHS07, GHS09 – Danger

Hazard statement Code(s):

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

Supplemental Hazard statement Code(s):

None

Precautionary statements:

P210.Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233.Keep container tightly closed
P240.Ground/bond container and receiving equipment
P241.Use explosion-proof electrical/ventilating/lighting/equipment
P242.Use only non-sparking tools
P243.Take precautionary measures against static discharge
P261.Avoid breathing dust/fume/gas/mist/vapours/spray
P264.Wash hands thoroughly after handling
P272.Contaminated work clothing should not be allowed out of the workplace
P273.Avoid release to the environment
P280.Wear protective gloves/protective clothing/eye protection/face protection
P301+P310.IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302+P352.IF ON SKIN: Wash with plenty of soap and water
P303+P361+P353.IF ON SKIN (or hair): remove/take off immediately all contaminated clothing. Rinse skin with water/shower
P331.Do NOT induce vomiting
P332+P313.If skin irritation occurs: Get medical advice/attention
P333+P313.If skin irritation or rash occurs: Get medical advice/attention
P362+P364.Take off contaminated clothing and wash it before reuse
P370+P378.In case of fire: use CO₂, powder extinguisher or nebulized water to extinguish
P391.Collect spillage
P403+P235.Store in a well-ventilated place. Keep cool
P405.Store locked up
P501.Dispose of contents/container in accordance with local/regional/international regulations

2.3 Other hazards

Based on the information available, the product does not contain PBT or vPvB substances in percentage greater than 0,1%

SECTION 3. Composition/information on ingredients

3.1 Substances

Components	%	CAS	EINECS/ELINCS	Classification in accordance with Reg. (CE) 1272/2008
Citrus nobilis peel oil and/or Citrus reticulata peel oil	100	8008-31-9 / 84929-38-4	- 284-521-0	Flam. Liq. 3 H226, Asp. Tox. 1 H304, Skin Irrit. 2 H315, Skin Sens. 1 H317, Aquatic Chronic 2 H411

Pag. 2/12

3.2 Mixtures

Not applicable

The full text of the hazard statements (H) is given in section 16 of the sheet

SECTION 4. First aid measures

4.1 Description of first aid measures

General indications: the symptoms of poisoning can appear after many hours, for this reason it is necessary to monitor a doctor in the 48 hours following the accident

In case of skin contact: immediately take off contaminated clothing. Areas of the body that have - or are only even suspected of having - come into contact with the product must be rinsed immediately with plenty of running water and possibly with soap. In case of persistent skin irritation consult a doctor

In case of contact with eyes: rinse with water for an appropriate amount of time and keeping the eyelids open, then immediately consult an ophthalmologist. Protect the uninjured eye. Remove any contact lenses

In case of ingestion: call a doctor immediately. Do not give anything to an unconscious person

In case of inhalation: move away from the product and go to a ventilated area. Call the doctor immediately and show him the packaging or label. If the person has fainted, keep him in a stable position on his side during transport

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

If symptoms, apparently due to inhalation, contact with eyes, skin or ingestion of the product, arise and persist, consult a doctor. Show this safety data sheet to the doctor

SECTION 5. Firefighting measures

5.1 Extinguishing media

Advised extinguishing agents: water spray, CO₂, foam, dry chemical, depending on the materials involved in the fire

Extinguishing means to avoid: water jets. Use water jets only to cool the surfaces of the containers exposed to fire

5.2 Special hazards arising from the substance or mixture

In case of fire, carbon monoxide (CO) and carbon dioxide (CO₂) may be liberated; exposure to combustion or decomposition products can result in serious damage to health

5.3 Advice for firefighters

If necessary, wear respiratory protective equipment with independent air supply in case of fire. Collect the contaminated water used to extinguish the fire separately. Do not discharge it into the sewer system. If feasible from a safety point of view, move undamaged containers from the area of immediate danger

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Do not take any action involving any personal risk or without proper training. Evacuate the surrounding areas. Do not touch or walk on the spilled material

Wear suitable protective equipment (including personal protective equipment referred to in section 8 of this Safety Data Sheet) to prevent contamination of skin, eyes and personal clothing. Wear appropriate respirator when ventilation is inadequate

Do not inhale vapours. Avoid the dispersion of the product into the environment. Follow the appropriate internal procedures provided for personnel not authorized to intervene directly in the event of accidental release

6.1.2 For emergency responders

Stop the leak if there is no danger

Evacuate unauthorized personnel. Wear suitable protective equipment (see section 8 of this Safety Data Sheet).

Follow the appropriate internal procedures for authorized personnel. Isolate the danger area and deny entry.

Ventilate enclosed spaces before entering. Check the fumes/vapours

Keep unequipped people away. Eliminate any source of ignition (cigarettes, flames, sparks, etc.) or heat from the area where the leak occurred

6.2 Environmental precautions

Prevent the entering of product in sewers, surface water, ground water and neighboring areas

If the product has drained into a river, into the drainage system, or has contaminated the ground or vegetation, notify the competent authorities

Dispose of waste in compliance with current regulations

6.3 Methods and material for containment and cleaning up

Contain leaks with inert absorbent material (sand, vermiculite, diatomaceous earth)

Collect the majority of the remaining material and deposit it in containers for disposal

After collection, wash with water (if there are no contraindications) the area and materials involved

Ensure adequate ventilation of the place affected by the loss

The disposal of contaminated material must be made in accordance with the provisions of section 13

6.4 Reference to other sections

Refer to paragraphs 8 and 13 for more information

SECTION 7. Handling and storage

7.1 Precautions for safe handling

During handling and use, avoid contact and inhalation of vapors, prevent contact of the powder with ignition sources such as open flames, sparks, etc.

At work do not eat or drink

7.2 Conditions for safe storage, including any incompatibilities

Keep in original and tightly closed containers. Do not store in open or unlabeled containers

Keep containers upright and safe by avoiding the possibility of falls or collisions

Store in a cool place, away from sources of heat and direct exposure of sunlight

7.3 Specific end use(s)

No data available

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

Related to contained substances:

Citrus nobilis peel oil and/or Citrus reticulata peel oil – CAS: 8008-31-9 / 84929-38-4

DNEL

inhalation, workers: 23,3 mg/m³ long term, systemic effects

inhalation, general population: 5,8 mg/m³ long term, systemic effects

cutaneous, workers: 6,67 mg/kg bw/day long term, systemic effects

cutaneous, workers: 185,8 µg/cm² short term, local effects

cutaneous, general population: 3,33 mg/kg bw/day long term, systemic effects

cutaneous, general population: 92,9 µg/cm² short term, local effects

oral, general population: 3,33 mg/kg bw /day long term, systemic effects

PNEC

freshwater: 5,4 µg/l (assessment factor: 50)

sea water: 0,54 µg/l (assessment factor: 500)

microorganisms in wastewater treatment: 2,1 mg/l (assessment factor: 10)

freshwater sediment: 1,3 mg/kg (partition coefficient)

sea water sediment: 0,13 mg/kg (partition coefficient)

soil: 0,29 mg/kg (partition coefficient)

8.2 Exposure controls

Eye and face protection: not needed for normal use. If it is necessary to protect the eyes and face, use equipment for eye protection tested and approved under appropriate government standards such as EN 166 (EU) and NIOSH (USA)

Hand protection: handle with gloves. Gloves must be inspected before being used to verify their integrity. Dispose contaminated gloves after use in accordance with applicable governmental regulations. Wash and dry your hands. The selected protective gloves have to satisfy the requirements in Directive 88/686/EEC and the standard EN 374 derived from it

Respiratory protection: not needed for normal use. If it is necessary to protect against dust, use a dust mask with filter type P2. Use respirators and components tested and approved by the relevant bodies, such as CEN (EU) and NIOSH (USA)

Body protection: wear normal work clothing

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical and chemical properties	Value
Physical state	Clear liquid

Colour	From yellow to dark yellow
Odour	Characteristic (citrus, fruity)
Melting point/freezing point	No data available
Boiling point or initial boiling point and boiling range	No data available
Flammability	No data available
Lower and upper explosion limit	No data available
Flash point	45 °C
Auto-ignition temperature	No data available
Decomposition temperature	No data available
pH	No data available
Kinematic viscosity	No data available
Solubility	Water insoluble Soluble in ethanol, oils and fats
Partition coefficient n-octanol/water (log value)	No data available
Vapour pressure	No data available
Density and/or relative density	0,840-0,860 g/ml
Relative vapour density	No data available
Particle characteristics	Not applicable

9.2 Other information

No data available

SECTION 10. Stability and reactivity

10.1 Reactivity

Avoid reactions with strong oxidizing substances

10.2 Chemical stability

No hazardous reactions if used and stored according to provisions

10.3 Possibility of hazardous reactions

No dangerous reactions are expected for changes in temperature and/or pressure

10.4 Conditions to avoid

Shocks and friction. Avoid storage in poorly ventilated places. Do not store the substance in direct sunlight. Avoid extreme humidity conditions

10.5 Incompatible materials

Strong acids, strong oxidizing substances, alkalis or strong bases

10.6 Hazardous decomposition products

In case of combustion, carbon oxides

SECTION 11. Toxicological information

In the absence of experimental toxicological data on the product, the possible health hazards are evaluated based on the properties of the contained substances, according to the criteria laid down by the relevant regulations for the classification. Therefore, consider the concentration of the individual hazardous substances possibly mentioned in section 3, to evaluate the toxicological effects resulting from exposure to the product

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

Acute toxicity

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

LD50 (oral, rat): > 5000 mg/kg bw (OECD Guideline 401 method)
LC50 (inhalation, rat): no data available
LD50 (dermal, rabbit): > 5000 mg/kg bw (OECD Guideline 402 method)

Corrosion/irritation of skin

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) meets the classification criteria for this hazard class:

Method: supporting study not performed following a Guideline and not in GLP, in vivo
Reliability (Klimisch score): 2 (reliable with restrictions)
Species: rabbit
Route of exposure: dermal
Results: irritant to skin

Serious eye damage/irritation

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

Method: OECD Guideline 405 (Acute Eye Irritation / Corrosion) in GLP, in vivo
Reliability (Klimisch score): 2 (reliable with restrictions)
Species: rabbit
Route of exposure: eyes
Results: non-irritant to eyes

Sensitization of respiratory tract or skin

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) meets the classification criteria for this hazard class:

Method: OECD Guideline 429 (Skin Sensitisation: Local Lymph Node Assay) in GLP, in vivo (LLNA)
Reliability (Klimisch score): 2 (reliable with restrictions)
Species: mouse
Route of exposure: dermal
Results: sensitizing to skin

Germ cell mutagenicity

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

Method: experimental study performed following OECD Guideline 471 (Bacterial Reverse Mutation Assay) in GLP, in vitro

Reliability (Klimisch score): 1 (reliable without restriction)

Species: bacteria (*S. typhimurium*, *E.coli*)

Route of exposure: not applicable

Results: not mutagenic

Carcinogenicity

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

No data available

Reproductive toxicity

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

Method: OECD Guideline 416 (Two-Generation Reproduction Toxicity Study)

Reliability (Klimisch score): no data available

Species: no data available

Route of exposure: no data available

Results: not toxic to reproduction

Method: literature

Reliability (Klimisch score): no data available

Species: rat

Route of exposure: oral

Results: not toxic to reproduction:

- Effect on maternal toxicity: NOAEL: 591 mg/kg bw/day

Specific target organ toxicity (STOT) — single exposure

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

No data available

Specific target organ toxicity (STOT) — repeated exposure

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) does not meet the classification criteria for this hazard class:

No data available

Aspiration hazard

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) meets the classification criteria for this hazard class:

No data available

11.2 Information on other hazards

The product does not contain substances with properties of interference with the endocrine system in accordance with the criteria established in Reg. (EU) 2017/2100 or in Reg. (EU) 2018/605 in a percentage equal to or greater than 0,1% by weight

SECTION 12. Ecological information

12.1 Toxicity

Based on the information available, the *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) meets the classification criteria for this hazard class:

EL50 – Fish: > 100 mg/l/96h
EL50 – Crustaceans: 8,9 mg/l/48h (*Daphnia magna*)
EL50 – Algae: 9,7 mg/l/72h

12.2 Persistence and degradability

Based on the information available, the substance *Citrus nobilis peel oil and/or Citrus reticulata peel oil* (CAS: 8008-31-9 / 84929-38-4) is readily biodegradable

Solubility in water: 2,6-93,066 mg/l
Readily biodegradable

12.3 Bioaccumulative potential

Partition coefficient n-octanol/water: 4,27-4,88

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

vPvB Substances: None - PBT Substances: None

12.6 Endocrine disrupting properties

Based on the information available, the product does not contain substances having properties of interference with the endocrine system in a percentage equal to or greater than 0,1% by weight

12.7 Other adverse effects

No data available

SECTION 13. Disposal considerations

13.1 Waste treatment methods

Reuse if possible. Product residues are to be considered special hazardous waste. The dangerousness of the waste that partially contains this product must be evaluated according to the laws in force

Disposal must be entrusted to an authorized waste management company, in compliance with national and possibly local regulations

The transport of waste may be subject to ADR

CONTAMINATED PACKAGING

Contaminated packaging must be sent for recovery or disposal in compliance with national waste management regulations

SECTION 14. Transport information

14.1 UN number or ID number

ADR/RID/IMDG/IATA-ICAO: 1197



14.2 UN proper shipping name

ADR/RID/IMDG/IATA-ICAO: LIQUID EXTRACTS

14.3 Transport hazard class(es)

ADR/RID/IMDG/IATA-ICAO – Class: 3

ADR/RID/IMDG/IATA-ICAO – Label: 3

14.4 Packing group

ADR/RID/IMDG/IATA-ICAO: III

14.5 Environmental hazards

ADR/RID – Environmental pollutant: Yes

IMDG – Marine pollutant: Yes

IATA-ICAO – Environmental pollutant: Yes

14.6 Special precautions for user

ADR/RID

Tunnel restriction code: D/E

Limited quantities: 5 l

IMDG

EmS codes: F-E, S-D

Limited quantities: 5 l

IATA-ICAO: /

14.7 Maritime transport in bulk according to IMO instruments

It is not intended to carry bulk

SECTION 15. Regulatory information

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

This data sheet complies with the requirements of Reg. (EC) 2006/1907, Reg. (EC) 2008/1272, Reg. (EU) 2010/453. The user has to check and verify the compliance with certain European, national, regional and local measures concerning hazardous activities and environmental protection

Seveso Category - Directive 2012/18/EC: P5a – P5b – P5c (related to ethanol)

Substances in Candidate List (Art. 59 REACH): none

Substances subject to authorization (Annex XIV REACH): none

Where applicable, refer to the following regulations:

- Ministerial Circulars 46 and 61 (Aromatic amines)
- Restrictions relating to the product or contained substances according to Annex XVII Regulation (EC) 1907/2006
- Regulation 648/2004/EC (Detergents)
- D.Lgs. 152/2006 Environmental regulations
- Dir. 2004/42/EC (VOC Directive)

15.2 Chemical safety assessment

Chemical safety assessment was not carried out on this product

SECTION 16. Other information

The data are reported on the basis of our current knowledge; however, they do not represent any guarantee of the product characteristics and do not justify any legal contractual relationship

Text of the sentences used in paragraph 3:

- 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

Paragraphs modified with respect to the previous revision: 14

Abbreviations and acronyms:

- GHS: Globally Harmonized System of Classification and Labeling of Chemicals
- PBTs: Persistent Bioaccumulative Toxic substances
- vPvB: very Persistent, very Bioaccumulative
- CAS: Chemical Abstracts Service
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- DNEL: Derived No-Effect Level
- PNEC: Predicted No Effect Concentration
- LC50: Lethal Concentration 50
- LD50: Lethal Dose 50
- NOAEL: No Observed Adverse Effect Level
- EC50: Half maximal effective concentration
- ADR: Accord européen relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transport Association

Classification and procedure used to derive it according to Regulation (EC) 1272/2008 (CLP) in relation to mixtures:

References:

- Regulation (EC) 1907/2006 of the European Parliament (REACH)
- Regulation (EC) 1272/2008 of the European Parliament (CLP)

- Regulation (EU) 2015/830 of the European Parliament
- Regulation (EU) 2020/878 of the European Parliament
- The Merck Index - 10th Edition
- IFA GESTIS website
- ECHA Agency website
- Banca dati di modelli di SDS di sostanze chimiche - Ministero della Salute e Istituto Superiore di Sanità (Database of chemical Safety Data Sheets templates - Ministry of Health and National Institute of Health)

The above information refers to the current state of our knowledge. However, users must ensure the suitability and completeness of such information in relation to the specific use they intend to do