



CERTIFICATE OF ANALYSIS (COA)

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PRODUCT INFORMATION

Item	Details
Product Name	Green Mandarin Essential Oil
Alternative Names	Green Mandarin Oil; Unripe Mandarin Peel Oil; Mandarin Oil Green
Botanical Name	<i>Citrus reticulata</i> Blanco
Botanical Synonyms	<i>Citrus nobilis</i> Andrews; <i>Citrus deliciosa</i> Ten.
INCI Name	Citrus Reticulata Peel Oil
Primary CAS Number	8008-31-9
EC Number	284-521-0
FEMA Number	2657
Plant Part	Peel of immature green mandarin fruit
Extraction Method	Cold expression / mechanical pressing
Product Type	Natural essential oil / Natural Complex Substance
Issue Date	17 July 2026
Recommended Retest Period	24 months from production date

ORGANOLEPTIC AND PHYSICAL SPECIFICATIONS

Parameter	Representative Specification	Representative Result	Status
Appearance	Clear to slightly hazy mobile liquid	Clear mobile liquid	Pass
Colour	Pale yellow to greenish-yellow or olive-green	Greenish-yellow	Pass
Odour	Fresh, green, citrusy, zesty, bitter and slightly leafy	Characteristic	Pass
Relative Density at 20°C	0.845–0.875	0.856	Pass



Refractive Index at 20°C	1.4700–1.4800	1.4746	Pass
Optical Rotation at 20°C	+60° to +85°	+72.4°	Pass
Flash Point	Approximately 43–52°C	47°C	Pass
Acid Value	Maximum 2.5 mg KOH/g	0.8 mg KOH/g	Pass
Peroxide Value	Maximum 20 meq O ₂ /kg	4.2 meq O ₂ /kg	Pass
Residual Water	Maximum 1.0%	0.2%	Pass
Solubility in Water	Insoluble	Complies	Pass
Solubility in Alcohol	Soluble or dispersible	Complies	Pass
Added Carrier Oil	Not permitted unless declared	Not detected	Pass
Added Synthetic Fragrance	Not permitted	Not detected	Pass
Foreign Matter	Free from visible contamination	None observed	Pass

REPRESENTATIVE GC–MS PROFILE

Naturally Occurring Constituent	CAS Number	Representative Range	Representative Result
d-Limonene	5989-27-5	60.0–85.0%	72.80%
Gamma-Terpinene	99-85-4	7.0–20.0%	13.20%
Alpha-Pinene	80-56-8	1.0–4.0%	2.30%
Beta-Pinene	127-91-3	1.0–4.0%	1.80%
Myrcene	123-35-3	1.0–4.0%	1.70%
Sabinene	3387-41-5	Trace–3.0%	0.90%
p-Cymene	99-87-6	Trace–3.0%	0.80%
Alpha-Thujene	2867-05-2	Trace–2.0%	0.50%
Terpinolene	586-62-9	Trace–2.0%	0.40%
Linalool	78-70-6	Trace–1.0%	0.30%
Citral	5392-40-5	Trace–0.5%	0.10%
Other Natural Constituents	Various	Balance	Balance

COMPOSITIONAL QUALIFICATION

Green Mandarin Essential Oil is a Natural Complex Substance. Its composition may vary according to:

- Mandarin cultivar.



- Degree of fruit maturity.
- Geographical origin.
- Harvest season.
- Peel condition.
- Expression and separation method.
- Filtration.
- Storage and oxidation.
- Production batch.

The representative ranges shown above must not replace batch-specific GC–MS analysis.

PHOTOTOXICITY QUALIFICATION

Mandarin oil is not generally considered phototoxic under current IFRA treatment because relevant quantities of phototoxic furocoumarins are not expected.

This qualification applies to authentic mandarin peel oil and does not automatically apply to:

- Adulterated material.
- Citrus blends.
- Contaminated batches.
- Products containing other expressed phototoxic citrus oils.

PURITY DECLARATION

The material is declared to be:

- Obtained from the peel of immature green mandarins.
- Produced by cold expression or mechanical pressing.
- Free from intentionally added synthetic fragrance materials.
- Free from intentionally added carrier oils or diluents unless declared.
- Free from visible foreign matter.
- Intended for professional perfumery and cosmetic formulation.
- Not intended for internal consumption as supplied.

STORAGE

Store:



- In the original tightly sealed container.
- In a cool, dry and well-ventilated location.
- Protected from heat and direct sunlight.
- Away from ignition sources and strong oxidising agents.
- With minimal container headspace.
- Out of reach of children.

Refrigerated storage may be used where appropriate, provided condensation and moisture ingress are prevented.

CONCLUSION

THE REPRESENTATIVE MATERIAL COMPLIES WITH THE ABOVE SPECIFICATIONS

The figures shown are representative technical values and must not be represented as actual batch results unless supported by a batch-specific laboratory report or producer-issued Certificate of Analysis.

Authorised by:
Fozia Khot
Director