



SAFETY DATA SHEET (SDS)

Prepared in accordance with the Globally Harmonized System (GHS) and Regulation (EC) No. 1907/2006 (REACH, as amended)

SECTION 1: Identification

Item	Details
Product Name	Green Mandarin Essential Oil
Alternative Names	Green Mandarin Oil; Mandarin Peel Oil Green; Unripe Mandarin Essential Oil
Botanical Name	<i>Citrus reticulata</i> Blanco
Botanical Synonyms	<i>Citrus nobilis</i> Andrews; <i>Citrus deliciosa</i> Ten. may appear in commercial documentation
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
Recommended Use	Professional perfumery, fragrance compounds, cosmetics, soaps, household products and related industrial applications
Uses Advised Against	Internal consumption as supplied, direct undiluted skin application, smoking, vaping and uncontrolled household use

SUPPLIER DETAILS

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SECTION 2: HAZARD IDENTIFICATION

GHS / CLP CLASSIFICATION



The following classification is representative for undiluted cold-expressed Green Mandarin Essential Oil. The original producer's current batch-specific SDS must take precedence.

Hazard Class	Category	Hazard Statement
Flammable liquids	Category 3	H226: Flammable liquid and vapour
Aspiration hazard	Category 1	H304: May be fatal if swallowed and enters airways
Skin irritation	Category 2	H315: Causes skin irritation
Skin sensitisation	Category 1	H317: May cause an allergic skin reaction
Hazardous to the aquatic environment – acute	Category 1	H400: Very toxic to aquatic life
Hazardous to the aquatic environment – chronic	Category 1	H410: Very toxic to aquatic life with long-lasting effects

SIGNAL WORD

DANGER

HAZARD PICTOGRAMS

- GHS02 – Flame
- GHS07 – Exclamation Mark
- GHS08 – Health Hazard
- GHS09 – Environment

HAZARD 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.
- H400: Very toxic to aquatic life.
- H410: Very toxic to aquatic life with long-lasting effects.

PRECAUTIONARY STATEMENTS

Prevention

- P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P233: Keep container tightly closed.
- P240: Ground and bond container and receiving equipment during bulk transfer.



- P241: Use explosion-proof electrical, ventilation and lighting equipment where necessary.
- P242: Use non-sparking tools.
- P243: Take action to prevent static discharges.
- P261: Avoid breathing vapour, mist or spray.
- P264: Wash hands and exposed skin 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 and eye or face protection.

Response

- P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or physician.
- P331: Do not induce vomiting.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P333+P313: If skin irritation or rash occurs, obtain medical advice.
- P362+P364: Remove contaminated clothing and wash it before reuse.
- P303+P361+P353: IF ON SKIN OR HAIR: Remove immediately all contaminated clothing. Rinse skin with water or shower.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses when present and easy to do. Continue rinsing.
- P370+P378: In case of fire, use carbon dioxide, dry chemical powder or alcohol-resistant foam.
- P391: Collect spillage.

Storage and Disposal

- **P403+P235:** Store in a well-ventilated place. Keep cool.
- **P405:** Store locked up.
- **P501:** Dispose of contents and container in accordance with applicable regulations.

OTHER HAZARDS

- Oxidation of limonene, linalool and other terpene constituents may increase skin-sensitisation potential.
- Concentrated vapour may cause headache, dizziness, nausea or respiratory discomfort.
- Empty containers may retain flammable vapour.
- The product is not intended for direct application to skin without dilution and finished-product safety assessment.



- Green Mandarin Essential Oil is generally not regarded as a phototoxic citrus oil under current IFRA treatment; this does not remove the need for batch and finished-product assessment.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE

Component	CAS Number	EC Number	Concentration
Green Mandarin Essential Oil	8008-31-9 / 84929-38-4	284-521-0	Approximately 100%

REPRESENTATIVE NATURALLY OCCURRING CONSTITUENTS

Constituent	CAS Number	Representative Concentration
d-Limonene	5989-27-5	Approximately 60–85%
Gamma-Terpinene	99-85-4	Approximately 5–20%
Alpha-Pinene	80-56-8	Approximately 1–4%
Beta-Pinene	127-91-3	Approximately 1–4%
Myrcene	123-35-3	Approximately 1–4%
Sabinene	3387-41-5	Trace–3%
p-Cymene	99-87-6	Trace–3%
Alpha-Thujene	2867-05-2	Trace–2%
Terpinolene	586-62-9	Trace–2%
Linalool	78-70-6	Trace–1%
Citral	5392-40-5	Trace or batch dependent
Other Naturally Occurring Terpenes	Various	Balance

COMPOSITIONAL QUALIFICATION

Green Mandarin Essential Oil is a Natural Complex Substance rather than a single chemical compound.

Its composition varies according to:

- Mandarin variety.
- Degree of fruit maturity.
- Geographical origin.
- Harvest season.
- Peel quality.
- Expression method.
- Centrifugation and filtration.
- Storage and oxidation.
- Production batch.



SECTION 4: FIRST-AID MEASURES

INHALATION

Move the affected person to fresh air.

Keep the person at rest in a position comfortable for breathing.

Obtain medical advice if coughing, headache, dizziness, nausea or respiratory discomfort persists.

SKIN CONTACT

Remove contaminated clothing and footwear.

Wash the affected area thoroughly with soap and plenty of water.

If irritation, itching, redness or rash develops, obtain medical advice.

Wash contaminated clothing before reuse.

EYE CONTACT

Rinse cautiously with clean water for at least 15 minutes.

Remove contact lenses when present and easy to do. Continue rinsing.

Do not rub the affected eye.

Obtain medical attention if irritation, redness, pain or visual discomfort persists.

INGESTION

Rinse the mouth.

Do not induce vomiting.

Immediately call a poison centre or physician.

Keep the affected person at rest.

Aspiration into the lungs during swallowing or vomiting may cause severe chemical pneumonitis.



Never give anything by mouth to an unconscious person.

MOST IMPORTANT SYMPTOMS AND EFFECTS

Possible symptoms include:

- Skin irritation.
- Allergic skin reaction.
- Eye irritation.
- Headache.
- Dizziness.
- Nausea.
- Gastrointestinal discomfort.
- Coughing or breathing difficulty following aspiration.
- Chemical pneumonitis.

ADVICE TO MEDICAL PERSONNEL

Treat symptomatically.

Because of the aspiration hazard, vomiting or gastric lavage should not be induced unless performed by qualified medical personnel with appropriate airway protection.

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA

- Carbon dioxide.
- Dry chemical powder.
- Alcohol-resistant foam.
- Fine water spray for cooling containers.

UNSUITABLE EXTINGUISHING MEDIA

Do not use a direct high-pressure water jet because it may spread burning liquid.

SPECIFIC FIRE HAZARDS

The product is flammable.

Vapours may:

- Form flammable mixtures with air.



- Travel to an ignition source.
- Flash back.
- Accumulate in enclosed or low areas.

Combustion or thermal decomposition may produce:

- Carbon monoxide.
- Carbon dioxide.
- Smoke and soot.
- Irritating organic vapours.
- Aldehydes.
- Unidentified decomposition products.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear:

- Self-contained breathing apparatus.
- Full protective firefighting clothing.
- Chemical-resistant gloves and boots.

Cool fire-exposed containers using water spray.

Prevent contaminated firefighting water from entering drains, soil or waterways.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

- Eliminate flames, sparks and ignition sources.
- Ensure adequate ventilation.
- Keep unnecessary personnel away.
- Avoid breathing vapour, mist or spray.
- Avoid contact with skin and eyes.
- Wear suitable gloves, protective clothing and eye protection.
- Use non-sparking tools.
- Prevent static discharge.

ENVIRONMENTAL PRECAUTIONS

Prevent entry into:

- Drains.



- Sewers.
- Surface water.
- Groundwater.
- Soil.

Notify the appropriate authority if a significant quantity enters the environment.

CONTAINMENT AND CLEANING

Contain and absorb the spill using inert, non-combustible material such as:

- Sand.
- Vermiculite.
- Diatomaceous earth.
- Universal oil absorbent.

Transfer the absorbed material into a suitable labelled chemical-waste container.

Ventilate the area.

Clean contaminated surfaces with detergent and water while preventing wash water from entering drains.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

- Handle only in a well-ventilated area.
- Keep away from heat, sparks, flames and hot surfaces.
- Do not smoke while handling.
- Avoid breathing concentrated vapour, mist or aerosol.
- Avoid skin and eye contact.
- Wear protective gloves and eye protection.
- Ground and bond containers during bulk transfer.
- Use non-sparking tools where appropriate.
- Prevent static electricity.
- Do not eat, drink or smoke in handling areas.
- Wash hands thoroughly after use.
- Keep the container tightly closed when not in use.
- Do not swallow or apply undiluted to skin.

STORAGE CONDITIONS



Store:

- In the original tightly sealed container.
- In a cool, dry and well-ventilated place.
- Away from direct sunlight.
- Away from heat, sparks and ignition sources.
- Away from strong oxidising agents.
- Separately from food, beverages and animal feed.
- Out of reach of children.

RECOMMENDED STORAGE TEMPERATURE

Approximately 10–25 °C, unless otherwise specified by the producer.

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

CONTAINER RECOMMENDATION

Suitable containers include:

- Amber glass for laboratory quantities.
- Lacquered aluminium.
- Compatible stainless steel.
- Approved fluorinated polymer containers.

Minimise container headspace to reduce oxidation.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

No occupational exposure limit has been established for the complete natural essential oil.

Applicable workplace exposure limits for individual constituents must be observed where required.

ENGINEERING CONTROLS

- Provide adequate general ventilation.
- Use local exhaust ventilation during bulk transfer or where vapour, mist or aerosol may form.



- Use equipment suitable for flammable vapours.
- Ensure eyewash stations and emergency-washing facilities are available.

PERSONAL PROTECTIVE EQUIPMENT

Protection Type	Recommendation
Eye and face protection	Chemical splash goggles; face shield for bulk transfer
Hand protection	Chemical-resistant nitrile or equivalent gloves
Skin protection	Laboratory coat, long sleeves or chemical-resistant apron
Foot protection	Antistatic protective footwear for bulk handling
Respiratory protection	Approved organic-vapour respirator where ventilation is inadequate
General hygiene	Wash hands and exposed skin thoroughly after handling

ENVIRONMENTAL EXPOSURE CONTROLS

Prevent uncontrolled environmental release.

Use bunding or secondary containment for bulk storage.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Property	Representative Information
Physical state	Mobile liquid
Appearance	Clear to slightly hazy
Colour	Pale yellow to greenish-yellow or olive-green
Odour	Fresh, bright, green, citrusy, zesty, slightly bitter and leafy
Odour threshold	Not determined
Melting/freezing point	Not determined
Initial boiling point/range	Not determined for the complete natural mixture
Flammability	Flammable liquid and vapour
Flash point	Approximately 43–52 °C; batch dependent
Representative flash point	Approximately 47 °C
Auto-ignition temperature	Not determined
Decomposition temperature	Not determined
pH	Not applicable
Relative density at 20 °C	Approximately 0.845–0.875
Refractive index at 20 °C	Approximately 1.4700–1.4800



Optical rotation at 20 °C	Approximately +60 ° to +85 °; batch dependent
Water solubility	Insoluble
Alcohol solubility	Soluble or dispersible
Vapour pressure	Not determined
Viscosity	Low-viscosity mobile liquid
Explosive properties	Not classified as explosive; vapours may form explosive mixtures with air
Oxidising properties	Not classified as oxidising

Batch-specific analytical results must take precedence over the representative values above.

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY

No hazardous reaction is expected under normal conditions of handling and storage.

CHEMICAL STABILITY

Stable when stored correctly.

The oil may oxidise or deteriorate following prolonged exposure to oxygen, heat or light.

POSSIBILITY OF HAZARDOUS REACTIONS

Vapours may form flammable mixtures with air.

Hazardous polymerisation is not expected under recommended conditions.

CONDITIONS TO AVOID

- Excessive heat.
- Direct sunlight.
- Open flames.
- Sparks.
- Static discharge.
- Prolonged exposure to air.
- Temperatures above the verified batch flash point.

INCOMPATIBLE MATERIALS



- Strong oxidising agents.
- Strong acids.
- Strong alkalis.
- Reactive halogen compounds.

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, smoke, soot, aldehydes and irritating organic vapours.

SECTION 11: TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE

- Skin contact.
- Eye contact.
- Inhalation.
- Accidental ingestion.

ACUTE TOXICITY

Complete acute-toxicity data are not available for every Green Mandarin Essential Oil batch.

The material should be handled as a concentrated professional fragrance ingredient.

ASPIRATION HAZARD

May be fatal if swallowed and enters the airways.

Low-viscosity hydrocarbon constituents, particularly limonene and other terpenes, may enter the lungs during swallowing or vomiting and cause chemical pneumonitis.

SKIN CORROSION / IRRITATION

Causes skin irritation.

Prolonged or repeated contact may cause redness, dryness, burning or inflammation.

SERIOUS EYE DAMAGE / IRRITATION

Direct contact may cause temporary irritation, redness, tearing and discomfort.

SKIN SENSITISATION



May cause an allergic skin reaction.

Potential sensitising constituents and oxidation products include:

- Limonene.
- Linalool.
- Alpha-pinene.
- Beta-pinene.
- Terpene hydroperoxides.

RESPIRATORY SENSITISATION

Not classified based on available information.

Concentrated vapour or aerosol may irritate the respiratory tract.

GERM-CELL MUTAGENICITY

Not classified based on available information for the complete natural substance.

CARCINOGENICITY

Not classified based on available information for the complete natural substance.

REPRODUCTIVE TOXICITY

Not classified based on available information.

SPECIFIC TARGET-ORGAN TOXICITY — SINGLE EXPOSURE

High vapour concentrations may cause:

- Headache.
- Dizziness.
- Nausea.
- Respiratory discomfort.

SPECIFIC TARGET-ORGAN TOXICITY — REPEATED EXPOSURE

Insufficient data are available for classification.

PHOTOTOXICITY



Mandarin oil is not currently treated by IFRA as containing relevant concentrations of phototoxic furocoumarins. This distinction should not be extended automatically to adulterated, blended or incorrectly identified citrus oils.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY

Very toxic to aquatic life with long-lasting effects.

Avoid release into the environment.

PERSISTENCE AND DEGRADABILITY

Complete biodegradation data are not available for the natural mixture.

Some terpene constituents may biodegrade, but concentrated releases may cause significant environmental harm.

BIOACCUMULATIVE POTENTIAL

Hydrophobic terpene constituents may have bioaccumulative potential.

MOBILITY IN SOIL

The oil is insoluble in water and may adsorb to soil and organic matter.

PBT AND vPvB ASSESSMENT

A complete PBT or vPvB assessment is not available for the Natural Complex Substance.

ENDOCRINE-DISRUPTING PROPERTIES

No complete assessment is available.

OTHER ADVERSE EFFECTS

Do not release concentrated material into drains, waterways or soil.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of the material through an authorised chemical-waste contractor.



- Do not discharge into drains, sewers or waterways.
- Do not dispose of with household waste.
- Avoid contamination of soil and groundwater.
- Dispose of contaminated absorbents as chemical waste.
- Empty containers may retain flammable vapours and hazardous residue.
- Do not cut, weld, puncture or burn uncleaned containers.
- Recycle clean containers only through an authorised facility.
- Observe all applicable local, regional and national waste regulations.

SECTION 14: TRANSPORT INFORMATION

The following classification is representative and must be confirmed using the actual batch flash point, hazard classification, package size and current carrier requirements.

Transport Information Representative Classification

UN Number	UN 1169
Proper Shipping Name	Extracts, Aromatic, Liquid
Transport Hazard Class	3
Packing Group	III
Environmental Hazard	Yes
Marine Pollutant	Yes, where the batch is classified Aquatic Chronic 1
ADR/RID	UN1169, Extracts, Aromatic, Liquid, 3, III, environmentally hazardous
IMDG	UN1169, Extracts, Aromatic, Liquid, 3, III, Marine Pollutant
IATA/ICAO	UN1169, Extracts, Aromatic, Liquid, 3, III

ALTERNATIVE TRANSPORT DESCRIPTION

Depending on the product presentation, carrier and national requirements, an appropriate flammable-liquid N.O.S. entry may be required.

TRANSPORT QUALIFICATION

Final transport classification must be verified using:

- Actual batch flash point.
- Batch-specific environmental classification.
- Package size.
- Shipping mode.
- Carrier requirements.



- Current ADR, RID, IMDG and IATA rules.
- Limited-quantity and excepted-quantity provisions.

SECTION 15: REGULATORY INFORMATION

This Safety Data Sheet has been structured with reference to:

- Regulation (EC) No. 1907/2006 – REACH.
- Regulation (EC) No. 1272/2008 – CLP.
- Regulation (EU) 2020/878.
- United Nations Globally Harmonized System.
- Regulation (EC) No. 1223/2009 on cosmetic products.
- Applicable ADR, RID, IMDG and IATA transport provisions.

IFRA STATUS

The IFRA Standards provide the fragrance industry framework for safe ingredient use. The 51st Amendment was officially notified in 2023.

Mandarin oil is not currently subject to the former phototoxicity restriction because IFRA concluded that it does not contain relevant quantities of phototoxic furocoumarins. Batch composition, allergens, oxidation products and other restricted constituents must still be reviewed.

COSMETIC AND FRAGRANCE REQUIREMENTS

The finished-product manufacturer is responsible for:

- Reviewing the current IFRA Standards.
- Obtaining batch-specific GC–MS information.
- Assessing naturally occurring fragrance allergens.
- Calculating restricted constituent contributions.
- Evaluating oxidised terpene sensitisation.
- Completing the cosmetic product safety assessment.
- Confirming final transport classification.
- Preparing legally compliant finished-product labelling.

EU FRAGRANCE ALLERGENS

The material may naturally contain regulated fragrance substances, including:

- Limonene.
- Linalool.



- Alpha-pinene.
- Beta-pinene.
- Terpinolene.
- Citral.
- Other batch-dependent constituents.

Actual concentrations must be established through a current producer declaration or batch-specific analytical report.

SECTION 16: OTHER INFORMATION

FULL HAZARD 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.
- H400: Very toxic to aquatic life.
- H410: Very toxic to aquatic life with long-lasting effects.

DOCUMENT INFORMATION

Item	Details
Document Type	Material Safety Data Sheet / Safety Data Sheet
Product	Green Mandarin Essential Oil
Botanical Source	<i>Citrus reticulata</i> Blanco
Primary CAS Number	8008-31-9
Alternative CAS Number	84929-38-4
EC Number	284-521-0
FEMA Number	2657
Issue Date	17 July 2026
Revision Number	01
Supersedes	New document
Intended Users	Professional, commercial and industrial users

NATURAL PRODUCT VARIABILITY

Green Mandarin Essential Oil is a Natural Complex Substance.

Its composition, colour, odour, allergen profile, physical properties, flash point and hazard classification may vary according to:



- Botanical variety.
- Fruit maturity.
- Geographic origin.
- Harvest season.
- Extraction conditions.
- Filtration.
- Storage.
- Oxidation.
- Production batch.

DISCLAIMER

The information in this Safety Data Sheet is based on available technical documentation and current knowledge of Green Mandarin Essential Oil.

Batch-specific information, including:

- Producer SDS.
- GC–MS composition.
- Flash point.
- Relative density.
- Refractive index.
- Optical rotation.
- Allergen profile.
- Hazard classification.
- Transport declaration.

must take precedence over representative information.

This document provides guidance for safe handling, storage, transport and professional use. It does not constitute a warranty of suitability for a particular application.

The user is responsible for determining product suitability, completing the required finished-product safety assessment and complying with all applicable laws and regulations.

This product is not intended for internal consumption and must be stored securely away from children.

Authorised by:

Fozia Khot
Director