

TECHNICAL DATA SHEET

Product Name: Peppermint Infused Oil

INCI Name: Mentha Piperita Extract, Helianthus Annuus Seed Oil, Prunus Amygdalus Dulcis Oil, Tocopherol

CAS: 8006-90-4, 8001-21-6, 8007-69-0, 59-02-9

Latin Name: Mentha × piperita L. (A hybrid between Mentha spicata (spearmint) and Mentha aquatica. Belongs to the family: Lamiaceae)

Synonyms: Mentha balsamea Willd., peppermint, mint, nana, peppermint infused oil

Chemical Classification: Mixture

Functional Category: Skin conditioning agent ~ occlusive, Skin conditioning agent ~ emollient, Antioxidant

Type of Maceration: Ultrasonic maceration, cold process.

Production Method: Peppermint infused oil is obtained by ultrasonic extraction using ultrasound at frequencies of 20–25 kHz. At these frequencies, ultrasonic waves generate microscopic bubbles in the oil containing the extract, leading to a phenomenon known as cavitation. Cavitation creates extreme high-pressure and high-temperature conditions in the microenvironment around the imploding bubbles. These conditions mechanically disrupt plant cell walls, releasing active components such as essential oils, flavonoids, carotenoids, and sterols. Extraction is performed at 25 °C to preserve thermolabile components. The carrier oils used are cold-pressed linoleic-type sunflower oil, rich in essential linoleic acid and containing smaller amounts of oleic acid, and sweet almond oil. The addition of vitamin E as a natural preservative helps maintain freshness and quality while keeping the oil fully natural. During extraction, the vessel with the suspension is cooled in an ice-water bath to prevent temperature rise. Ultrasound is applied in short pulses with intervals. After the process, the infused oil is filtered to obtain a clear and usable oil. This method is more efficient than traditional maceration because it enables better yield and shorter extraction time.

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Description: Peppermint infused oil is a natural cosmetic ingredient obtained by extracting active compounds from *Mentha × piperita* into a blend of vegetable oils. This raw material combines the refreshing and soothing properties of peppermint with the nourishing effects of cold-pressed oils. It is produced using an advanced ultrasonic extraction method, which allows efficient release of bioactive compounds such as menthol, menthone, flavonoids, polyphenols, and triterpenes without compromising thermal stability. The extraction uses unrefined linoleic-type sunflower oil and sweet almond oil. Sunflower oil, with its high linoleic acid content, supports the skin's lipid barrier and elasticity, while almond oil provides smoothness and deep nourishment. Natural vitamin E further stabilizes the oil phase, protects against oxidation, and extends shelf life, while also offering antioxidant skin benefits. With its mild peppermint scent and gentle cooling sensation from menthol, this oil is used in formulations for refreshing, soothing, and revitalizing the skin. It is especially suitable for tired and swollen legs, lip balms, massage oils, and products for sensitive or irritated skin. It softens the skin and reduces transepidermal water loss, leaving it hydrated, supple, and resilient. The oil is stable, naturally preserved, pleasant to use, easy to apply, and non-greasy. It is therefore suitable for daily use in various formulations including serums, lotions, creams, and balms. Its mildness, multifunctionality, and natural character make it a valuable ingredient in modern skincare focused on refreshing, calming, and regenerating the skin.

Bioactive Compounds: Peppermint infused oil contains a complex spectrum of bioactive substances from *Mentha × piperita* leaves, known for their richness in secondary metabolites. Dominant compounds include monoterpenes, with menthol as the key component, providing refreshing and mildly analgesic effects. Menthone enhances the aromatic profile and has mild antiseptic action, while isomenthone, 1,8-cineole (eucalyptol), and limonene contribute antimicrobial and anti-inflammatory effects. The infusion also contains significant amounts of flavonoids such as eriocitrin, luteolin, and apigenin, which show strong antioxidant and soothing activity by neutralizing free radicals and protecting the skin from oxidative stress induced by UV radiation and pollution. Phenolic derivatives such as rosmarinic, caffeic, and ferulic acids play an important role, offering synergistic antioxidant, anti-inflammatory, and photoprotective effects. Rosmarinic acid is particularly notable for inhibiting key inflammatory enzymes such as cyclooxygenase (COX) and lipoxygenase (LOX). Trace amounts of triterpenic acids, especially ursolic and oleanolic acids, stimulate epidermal regeneration and collagen synthesis, contributing to skin elasticity and firmness with anti-aging benefits. Phytosterols,

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mainly beta-sitosterol, reduce irritation and redness, improve barrier function, and act as natural emollients. Smaller amounts of tannins provide astringent and toning effects, while chlorophyll pigments enhance oil stability and antioxidant capacity. Thanks to this phytochemical complexity, peppermint infused oil functions synergistically to soothe, protect, hydrate, and refresh the skin. Its natural aromatherapeutic properties further improve the sensory quality of formulations, making it an excellent choice for modern skincare.

Benefits:

- Cools the skin and relieves itching (menthol)
- Provides antiseptic and refreshing effect (menthone)
- Offers mild soothing action (isomenthone)
- Reduces inflammation and irritation (1,8-cineole)
- Acts antibacterial and antioxidant (limonene)
- Protects cells from oxidative stress (ericiotrin)
- Calms redness and sensitive skin (luteolin)
- Strengthens natural skin resilience (apigenin)
- Anti-inflammatory and photoprotective (rosmarinic acid)
- Stimulates skin regeneration (caffeic acid)
- Protects cells and enhances antioxidant activity (ferulic acid)
- Restores epidermis and stimulates collagen synthesis (ursolic acid)
- Improves skin structure and elasticity (oleanolic acid)
- Reduces irritation and improves barrier function (beta-sitosterol)
- Tightens skin and reduces enlarged pores

Usage: Peppermint infused oil is used as a functional oil component in a wide range of cosmetic formulations, with concentration depending on product type and desired effect. In creams and lotions for daily skincare, recommended use is 2–10% for mild refreshing and soothing without risk of irritation. In targeted formulations such as gels for tired legs, lip balms, or massage oils, concentrations may be increased to 15% for stronger cooling and localized anti-inflammatory effects. In light-textured emulsions such as serums and emulgels, use 1–5% to ensure a pleasant skin sensation without a pronounced occlusive effect. In balms and anhydrous formulations, where the oil acts mainly as an emollient, it may be used in much higher proportions 20–50% depending on carriers and sensory targets. Due to its mild and well-tolerated profile, it is also

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suitable for formulations intended for sensitive regions, such as the area around the eyes, provided the concentration does not exceed 1.5%. It is recommended to add the oil to the oil phase or cold-process phase to preserve thermolabile compounds. Before final application, compatibility testing with other ingredients and stability testing of the finished formulation are advised.

Animal Testing: The substance has not been tested on animals.

GMO: Non-GMO

Vegan: Contains no animal-derived components

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