

TECHNICAL DATA SHEET

Product Name: Lecithin, Liquid

INCI Name: Lecithin

CAS: 8002-43-5

Chemical Class: Mixture of phospholipids (predominantly phosphatidylcholine), glycolipids and triglycerides; natural amphiphilic lipids

Functional Category: Emulsifier; Co-emulsifier; Dispersing agent; Solubilizer; Conditioning agent; Functional raw material for enhancing texture and system stability

IUPAC Name: Lecithin is not a single chemical compound but a complex mixture of phospholipids; its dominant component, phosphatidylcholine, has the IUPAC name: 1,2-diacyl-sn-glycero-3-phosphocholine.

Description: Lecithin (Lecithin, Liquid) is a natural mixture of phospholipids most commonly derived from soybean or sunflower, and it plays a highly significant technological and functional role in cosmetic formulations. In liquid form, lecithin appears as a viscous, dark yellow to brownish substance with a characteristic mild odor. It is soluble in oils and lipid components, while in water it does not exhibit complete solubility but instead forms dispersions or lamellar structures. In formulations, it acts as a co-emulsifier and system stabilizer, improving texture, spreadability, and the overall sensory profile of the product. Emulsions containing lecithin often provide a softer, creamier skin feel and improved distribution during application. Due to its structural similarity to cell membrane lipids, lecithin demonstrates pronounced skin compatibility. In formulations intended for dry and sensitive skin, it contributes to improved elasticity and reduces the sensation of tightness. It is particularly valued in products designed for sensitive areas, such as the area around the eyes, due to its good tolerance and low irritation potential. In modern formulation practice, lecithin is also used as a carrier for active ingredients. Its ability to form liposomes and lamellar structures enables the incorporation and stabilization of lipophilic and partially hydrophilic active components, thereby improving their distribution within the formulation. In this context, it enhances the bioavailability of certain ingredients, particularly fat-soluble vitamins. The stability of lecithin depends on the quality of the raw material and the presence of antioxidants, as it is susceptible to oxidation due to its content of unsaturated fatty acids. For this reason, it is often

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.

TECHNICAL DATA SHEET

combined with tocopherol or other antioxidant components in formulations. Typical concentrations in cosmetic products range from 0.5% to 5%, depending on its function within the system and the product type. In formulations, it provides a combination of technological stability and biological compatibility, making it a highly valuable raw material in the development of emulsions, serums, balms, and regenerative skin care products.

Mechanism of Action: The mechanism of action of lecithin in cosmetic formulations is primarily based on its amphiphilic molecular structure. The phospholipid molecule contains a hydrophilic "head" (phosphatidyl group) and lipophilic "tails" (fatty acids), enabling spontaneous orientation at the interface between the aqueous and oil phases. In this way, it reduces interfacial tension and stabilizes the emulsion system, preventing droplet coalescence and phase separation. Upon contact with the skin, lecithin exhibits high biocompatibility, as phospholipids are structurally similar to the lipids of cell membranes and the intercellular cement in the stratum corneum. After application, it can integrate into the lipid matrix of the stratum corneum, contributing to the reorganization of lamellar structures and strengthening of the epidermal barrier. As a result, transepidermal water loss is reduced and skin elasticity is improved. A specific aspect of its mechanism relates to its ability to form liposomes and other lamellar aggregates. In the presence of water, phospholipids can spontaneously organize into bilayer membranes that encapsulate active substances. These structures enable controlled distribution of active components and improved interaction with the superficial layers of the skin. In practice, this means more efficient stabilization of fat-soluble vitamins and other lipophilic molecules. Lecithin also acts as an emollient. The lipophilic portion of the molecule forms a thin, flexible film on the skin surface, improving spreadability and imparting a soft feel without a pronounced occlusive effect. The film is permeable and does not clog pores, making it suitable for formulations intended for combination and sensitive skin. In hair care systems, phospholipids adsorb onto damaged areas of the cuticle, contributing to improved smoothness and reduced static electricity. The mechanism is based on electrostatic interaction between polar groups and the protein structure of the hair fiber. Overall, lecithin's mechanism of action includes physicochemical stabilization of the formulation, structural integration into the skin's lipid barrier, and a carrier function for active substances. Its biological affinity with cellular lipids is a key factor in its efficacy and good tolerability.

TECHNICAL DATA SHEET

Benefits:

- Stabilizes emulsions
- Reduces moisture loss and improves skin hydration
- Restores the skin's lipid barrier
- Softens the skin and enhances elasticity
- Facilitates the delivery of active ingredients through the skin
- Improves overall formulation tolerability
- Provides softness and a protective film on the hair

Directions for Use: Liquid lecithin is used as a natural emulsifier, co-emulsifier, and functional lipid in formulations containing an oil phase. It is incorporated into the oil phase and heated together with other lipid components to 60–75 °C, followed by emulsification with the aqueous phase. It may also be used in cold-process formulations after prior dispersion in oil or glycerin to facilitate homogenization. In O/W creams and emulsions, it is typically used at concentrations of 0.5–3%, while in W/O systems it is applied at 1–5%, depending on the desired stability and viscosity. In serums and light-weight emulgel systems, it is added at 0.2–1% as a co-emulsifier and barrier-supporting component. In balms and ointments, it is used at 1–4%, contributing to lipid restoration and skin softening. In hair care products, it is applied at 0.5–2% to improve smoothness and reduce dryness. In liposomal or phospholipid systems, concentrations may reach 2–10%, depending on the encapsulation objective and formulation type.

Comparative Advantages: Compared to synthetic emulsifiers, lecithin demonstrates superior biocompatibility with the skin, as it is a natural phospholipid similar to epidermal lipids and can integrate into the lipid layer without disrupting its structure. In comparison with conventional surfactants, it has a lower irritation potential and better tolerability in formulations for sensitive areas, such as the area around the eyes, as it does not disrupt the proteins and lipids of the stratum corneum to the same extent. Unlike PEG emulsifiers, lecithin contributes to the restoration of the lipid barrier in addition to stabilizing the emulsion, thereby actively improving the functional condition of the skin. Compared to waxes and fatty alcohols, it provides a lighter texture and a less occlusive skin feel, as it forms a thinner and more flexible lipid film. In contrast to pure emollients, it simultaneously provides emulsifying functionality and biological activity, allowing rationalization of the formulation composition.

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.

TECHNICAL DATA SHEET

Animal Testing: In accordance with current European legislation (Regulation (EC) No 1223/2009 on cosmetic products), the substance has not been tested on animals. The safety assessment of the raw material is based on available toxicological data, scientific literature, and validated alternative testing methods (in vitro and in silico). "In silico" refers to testing and assessment methods conducted using computer models and simulations, rather than in living organisms (in vivo) or cell cultures (in vitro). This statement confirms compliance with the ban on animal testing and is provided solely for informational purposes for the further use of the raw material in cosmetic formulations.

GMO: Non-GMO

Vegan: Does not contain components of animal origin

Storage and Shelf Life: The product is stable when stored in a cool, dry place.
Shelf life: 2 years.

Disclaimer: The details provided here are specific to the identified material and may not remain accurate if that material is combined with other substances or used in different processes. The information presented is, to the best of the company's knowledge, considered precise and trustworthy as of the date mentioned. However, the company does not make any explicit or implied assurance, guarantee, or claim regarding the information's precision, trustworthiness, or comprehensiveness, and will not be held accountable for any losses, damages, or costs, whether direct or indirect, that arise from its use. Users are encouraged to independently verify the appropriateness and thoroughness of this information for their specific purposes.