

TECHNICAL DATA SHEET

Product Name: Standardized Pomegranate Peel Extract Powder – Ellagic Acid 40%

INCI Name: Punica Granatum Pericarp Extract

CAS: 84961-57-9

Product Quality: Standardized pomegranate peel extract containing 40% ellagic acid

IUPAC Name: Not applicable to the extract as a whole, as it represents a complex mixture of naturally occurring polyphenols. The IUPAC name of the main standardized component, ellagic acid, is 2,3,7,8-tetrahydroxychromeno[5,4,3-cde]chromene-5,10-dione.

Description: Standardized Pomegranate Peel Extract Powder – Ellagic Acid 40% is a highly concentrated botanical raw material obtained from the peel of Punica granatum L. fruit, with a laboratory-confirmed ellagic acid content of at least 40%. Pomegranate peel is a particularly rich source of hydrolysable tannins and other polyphenols, including punicalagins, punicalin, ellagic acid and gallic acid. Ellagic acid is also formed through the hydrolysis of ellagitannins, while the combination of these compounds gives the extract a pronounced antioxidant potential. The extract is particularly suitable for formulations intended for antioxidant protection, care of skin with an uneven-looking complexion, and formulations designed to reduce the visible signs of ageing. Physico-chemical properties: Fine, homogeneous powder, typically light brown, yellowish-brown to darker brown in colour, with a characteristic botanical odour and a pronounced polyphenolic character. Standardized to contain at least 40% ellagic acid. Ellagic acid has limited solubility in water, which means that extracts with a high content of this component may not dissolve completely in a purely aqueous phase. The solubility of the complete extract also depends on the content of residual ellagitannins, excipients and the manufacturing process. As a polyphenol-rich raw material, it should be stored in tightly closed packaging, in a cool and dry place, protected from direct light, moisture and elevated temperatures.

Bioactive Compounds: The main standardized bioactive component is ellagic acid, a polyphenolic compound belonging to the group of dilactones of hexahydroxydiphenic acid. In pomegranate peel, it occurs naturally in free form, but is also formed through the hydrolysis of ellagitannins. Due to its phenolic hydroxyl groups, it exhibits pro-

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nounced antioxidant potential and represents one of the characteristic bioactive components of pomegranate. In addition to ellagic acid, pomegranate peel is naturally rich in punicalagin, primarily α - and β -punicalagin, which are the dominant ellagitannins of this botanical raw material. Punicalagin is a high-molecular-weight hydrolysable tannin and one of the main contributors to the antioxidant activity of pomegranate peel. Its hydrolysis produces smaller molecular structures associated with ellagic acid. Punicalin is a related ellagitannin and further contributes to the overall polyphenolic profile of the extract. Gallic acid is a characteristic phenolic acid present in pomegranate peel and contributes to the antioxidant activity of the extract. The accompanying flavonoid fraction may include catechin, epicatechin, quercetin and its derivatives, while smaller amounts of other phenolic acids, such as caffeic, p-coumaric, protocatechuic and ferulic acid, have also been identified. Their relative content depends on the pomegranate variety, fruit maturity, extraction solvent and technological process. The high concentration of ellagic acid and accompanying ellagitannins is responsible for the pronounced antioxidant and protective character of the extract. Experimental data on human keratinocytes indicate that ellagic acid and other pomegranate phenols may reduce oxidative stress caused by reactive oxygen species.

Benefits:

- Strong antioxidant activity, helping to neutralize free radicals and protect the skin from oxidative stress.
- Helps even the appearance of the complexion; ellagic acid is of particular interest in formulations intended to reduce the visible appearance of pigmentation irregularities.
- Protection against premature ageing, helping to maintain skin firmness, elasticity and a healthy appearance.
- Soothing effect; pomegranate peel polyphenols may help reduce signs of irritation and the skin's inflammatory response.
- Protection from external factors, helping to preserve skin exposed to environmental oxidative stressors.

Directions for Use: Standardized pomegranate peel extract containing 40% ellagic acid requires a somewhat more careful formulation approach due to the poor water solubility of ellagic acid. Direct addition of the powder to the aqueous phase may result in incomplete dissolution and the formation of a fine sediment. Preparation of a concen-

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trated pre-solution or pre-dispersion is recommended, depending on the specification of the specific product. A hydroalcoholic water–ethanol system may improve the solubility of the polyphenolic fraction, while in ethanol-free formulations the powder may first be evenly dispersed in glycerin or propanediol and then gradually incorporated into the aqueous phase. If the extract does not dissolve completely, it may be used as a fine dispersion provided that the final formulation is physically stable and does not develop pronounced sedimentation during storage. Due to its high polyphenol content, addition during the final stage of processing is recommended, while unnecessary prolonged heating should be avoided. For facial serums and concentrates, a practical starting range is approximately 0.1–0.5%; for creams and emulsions, 0.1–1.0%; while in more intensive antioxidant formulations, approximately 0.5–1.0% may be considered. In toners, essences and aqueous gels, lower levels of approximately 0.05–0.3% are more suitable, particularly when a clear formulation is required. For products intended to even the appearance of the complexion and for anti-age formulations, a practical starting concentration is 0.2–0.5%. These ranges represent formulation guidelines for a highly standardized extract and are not universal manufacturer-recommended concentrations. At higher concentrations, solubility, pH, stability, compatibility with other active ingredients and changes in the colour of the final product should be evaluated, as the concentrated polyphenolic fraction may impart a yellowish to brownish shade to the formulation.

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 is a term used for testing and assessment methods carried out using computer models and simulations, rather than in laboratories on living organisms (in vivo) or on cell cultures (in vitro). This statement confirms compliance with the animal testing ban and is provided solely for informational purposes regarding the further use of the raw material in cosmetic formulations.

GMO: Non-GMO

Vegan: Does not contain ingredients of animal origin

Country of Origin: China

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