Import and distribution for Serbia: Farmadria DOO
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TECHNICAL DATA SHEET

Product Name: Zinc Oxide, Non-Nano (1000 nanometers)

INCI Name: Zinc Oxide, Non-Nano

CAS: 1314-13-2

Chemical Classification: Inorganic substance

Functional Category: Sunscreen agent, skin protectant, cosmetic colorant

IUPAC Name: Oxozinc

Description: Zinc Oxide Non-Nano is a mineral ingredient used in cosmetics primarily as a physical UV filter and protective agent in skin care formulations. This form of zinc oxide consists of particles approximately 1 micrometer (1000 nanometers) in size. These particles do not penetrate deeper skin layers but remain on the skin surface, providing effective protection against UVA and UVB radiation. Due to its ability to reflect and scatter sunlight, it is commonly used in mineral sunscreens, where it acts as a broad-spectrum protective filter without chemical UV-absorbing components. Its inert nature makes it suitable for formulations intended for sensitive and problematic skin, including baby care products and dermatological treatments. In addition to sun protection, zinc oxide possesses mild anti-inflammatory properties, making it useful in soothing creams, pastes for irritated skin, and acne treatment products. Its water-resistant nature contributes to the formation of a protective layer on the skin, helping prevent moisture loss and protect against external irritants. Unlike the nano version, non-nano zinc oxide leaves a visible white cast on the skin due to light reflection from its larger particles. This characteristic is desirable in natural formulations because it indicates the presence of a physical barrier against UV radiation. Due to its stability and resistance to photodegradation, it is ideal for long-lasting formulations that do not lose effectiveness under sunlight exposure. Regulatory standards classify non-nano zinc oxide among the safest UV filters because there is no risk of systemic absorption through the skin. This characteristic makes it a key ingredient in natural and eco-friendly sun care formulations, where it is preferred for its safety, effectiveness, and biocompatibility with various skin types. It appears as a white powder. The crystal structure may be hexagonal (wurtzite) or cubic (zincite). It is insoluble in water and alcohol but dispersible in water and oils. It has a high degree of purity and does not contain other metals. It is highly

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stable to light and does not undergo color changes. The pH value ranges from 7.1 to 7.5. Difference Between Nano and Non-Nano Particles: Nanoparticles are small zinc oxide clusters, where the overall particle size is approximately 100 nanometers. Non-nano particles are ten times larger, meaning their size is around 1 micrometer (1000 nanometers). The micronization process involves mechanically breaking down large zinc oxide agglomerates, known as aggregates, in order to obtain smaller and more uniform particles. This is followed by filtration, which removes excessively small (nano) and excessively large (aggregate) particles. The particle size of zinc oxide in sunscreens plays a key role. Nanoparticles smaller than 100 nanometers are often used because they provide a more transparent appearance on the skin. However, non-nano zinc oxide offers certain advantages. Its larger particles form a physical barrier on the skin, effectively blocking UVA and UVB rays. This barrier prevents UV radiation from penetrating the skin, reducing the risk of sunburn, premature aging, and other damage caused by sun exposure.

Benefits:

- Non-nano zinc oxide provides a physical barrier that reflects UVA and UVB rays, protecting the skin from sun exposure.
- Due to its larger particle size, it remains on the skin surface and does not penetrate deeper layers, reducing the risk of absorption.
- Effectively helps prevent sunburn and UV-induced skin damage.
- Does not cause irritation, making it suitable for sensitive skin, including children's skin.
- Possesses antiseptic properties that may help prevent bacterial growth on the skin.
- Anti-inflammatory effects help soothe redness, irritation, and support healing of minor skin damage.

Use in Cosmetic Products: Zinc oxide, together with titanium dioxide, is the most well-known inorganic UV filter and one of the most commonly used ingredients in sun care products. This mineral UV filter provides broad-spectrum UVA and UVB protection by reflecting and scattering UV rays. In the EU, zinc oxide is approved as a UV filter and is listed in Annex VI of the EU Cosmetics Regulation, where it is permitted in formulations at concentrations from 5% to 25%. In the USA, the maximum permitted concentration is also 25%, while in Japan there are no concentration restrictions.

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Zinc oxide may be combined with other UV filters and sun protection components, including various pigments, in order to achieve optimal protection and an aesthetically acceptable appearance of the product. In addition to UV protection, zinc oxide has soothing effects on the skin, making it suitable for irritated and sensitive skin. Its whitening effect is used in makeup products such as foundations and concealers. Zinc oxide is frequently present in baby powders, face powders, and other cosmetic products because of its ability to absorb excess oil and soothe the skin. Furthermore, it possesses mild antibacterial properties that may help in the treatment of acne and other skin concerns, and it is also used in creams and ointments for wound healing. Due to its numerous beneficial properties, zinc oxide is a key ingredient in a wide range of cosmetic products intended for skin protection and care.

Source Raw Material: Metallic zinc ore

Production Method: Zinc oxide is produced from metallic zinc ore, which is melted in a graphite crucible and vaporized at high temperatures (approximately 1000°C). Zinc vapor then reacts with oxygen in the air to produce zinc oxide.

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

GMO: Non-GMO

Vegan: Does not contain ingredients of animal origin.