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TECHNICAL DATA SHEET

Product Name: Polyquaternium-10

INCI Name: Polyquaternium-10

CAS: 81859-24-7

Chemical Classification: Synthetic polymer, quaternary ammonium compound

Functional Category: Hair care conditioner, forms a flexible, cohesive, and continuous film

Description: Polyquaternium-10 is a cationic copolymer and a quaternary ammonium salt of hydroxyethyl cellulose. It is used in cosmetic formulations to improve texture and viscosity when combined with various surfactants, especially in anionic systems. It enables even dispersion of ingredients in water, glycerin, and propylene glycol. Due to its strong antistatic properties, Polyquaternium-10 is used in hair care products to reduce static electricity and ease detangling, making hair smooth and pleasant to the touch. Its cationic action allows the formation of a thin protective film on hair strands, retaining moisture and preventing protein loss, which is particularly beneficial for damaged and dry hair. This feature contributes to hair hydration and elasticity, making it more resistant to breakage and damage during brushing and styling. Polyquaternium-10 appears as a yellowish powder with a characteristic odor. Its pH value in a 2% solution ranges between 5.5 and 6.5, making it suitable for formulations requiring a mild pH balance. It is used in a wide range of products, including shampoos, conditioners, styling products, and lotions, where it offers excellent conditioning and protective effects. It is soluble in water, glycerin, and propylene glycol, with a viscosity of 1000-2500 mPas.

Benefits:

- Hydrates hair and skin, preventing dryness.
- Reduces static electricity and prevents hair from becoming charged.
- Forms a protective film on the hair surface, shielding it from external damage.
- Adds softness and a silky feel to the hair.
- Improves hair elasticity and resilience.
- Reduces split ends and protects damaged hair.
- Enhances product distribution and stability within the formulation.

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- Increases shine and provides a healthier hair appearance.
- Reduces irritation and keeps the scalp hydrated.

Usage Instructions: Polyquaternium-10 is used in the production of a wide range of cosmetic products, including shampoos, conditioners, hair masks, and skin care products. In shampoos, its concentration typically ranges from 0.2% to 0.5%, which is sufficient to improve detangling, reduce static electricity, and provide softness. In conditioners and hair masks, the concentration can be increased up to 0.5%-1% to enhance hydration and protect damaged hair. For skincare products such as creams and lotions, Polyquaternium-10 is used in lower concentrations, typically around 0.1% to 0.3%, to increase hydration and form a protective layer that retains moisture. It is added directly to the aqueous phase of the formulation, with mild heating to enable even dissolution and dispersion in the product.

Comparative Advantages: Polyquaternium-10 is a cellulose derivative modified with quaternary ammonium compounds, making it a cationic cellulose polymer. Unlike Polyquaternium-7, it has a milder cationic charge but exhibits strong film-forming and smoothing properties. Its main advantage lies in its ability to repair and protect damaged hair by filling in damaged areas of the cuticle, providing a regenerative effect. Due to its ability to enhance hydration and soften hair without weighing it down, it is often used in products for dry and damaged hair. Additionally, it is effective in reducing frizz and improving hair texture. The main difference between these two ingredients lies in their chemical structure and the strength of their conditioning effect. Polyquaternium-7 has a stronger cationic charge and better antistatic properties, while Polyquaternium-10 offers more intense protection and regeneration due to its cellulose base. The choice between them depends on the specific formulation needs—Polyquaternium-7 is ideal for lightweight, everyday products, while Polyquaternium-10 is more suitable for deep care and damaged hair restoration.

Production Method: Polyquaternium-10 is a quaternized cellulose polymer obtained by the reaction of a cationic etherification agent and hydroxyethyl cellulose.

Animal Testing: Not tested on animals

GMO: Not GMO

Vegan: Does not contain animal-derived components