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TECHNICAL DATA SHEET

Product Name: Sorbitol

INCI Name: Sorbitol

CAS: 50-70-4

Synonyms: D-Glucitol

Chemical Classification: Polyol

Functional Category: Skin Conditioning Agent ~ Humectant

IUPAC Name: (2R,3R,4R,5S)-hexane-1,2,3,4,5,6-hexol

Physico-chemical Properties: Sorbitol, also known as D-sorbitol or glucitol, is a sugar alcohol with the chemical formula $C_6H_{14}O_6$. It is naturally present in strawberries, cherries, plums, pears, and seaweed. It consists of D-glucitol alcohol (100%). Its chemical structure can be described as a reduced form of glucose, where the aldehyde group on glucose is reduced to a hydroxyl (OH) group. The hydroxyl groups make sorbitol highly polar and capable of hydrogen bonding, which allows its high degree of solubility in water. The presence of multiple hydroxyl groups allows sorbitol to act as a humectant (moisture-retaining agent) as it can bind water and retain moisture. The presence of primary and secondary hydroxyl groups contributes to sorbitol's ability to be used as a reducing agent in chemical reactions. Thanks to its chemical structure, sorbitol is stable in aqueous solutions and resistant to oxidation. It is stable at temperatures up to 180°C (356°F). It appears as a white, crystalline powder with a mild odor. It is highly soluble in water; slightly soluble in ethanol; insoluble in ether and most organic solvents. A 10% sorbitol aqueous solution has a pH between 5 and 7. It is stable under normal storage conditions and is incompatible with strong oxidizing agents.

Effects on the Skin: Sorbitol acts as a humectant, meaning it attracts and retains moisture from the environment. This is beneficial for skin hydration, as it helps maintain an optimal level of moisture in the skin, making it soft and smooth. It can also act as an emollient, helping to soften the skin. This is particularly useful for dry and rough skin, as it helps to restore the skin's protective layer. The protective film on the skin's surface helps protect the skin from irritation and harmful external factors. This film can also

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help reduce transepidermal water loss (TEWL). It stabilizes gels and gives them good clarity. It enhances the effects of thickeners. It increases viscosity.

Benefits:

- ***Skin Hydration:*** Sorbitol acts as a humectant. It helps maintain the skin barrier and prevents skin dryness, making it soft and smooth.
- ***Skin Softening:*** As an emollient, it helps soften the skin. It helps restore its protective layer and retain moisture.
- ***Improving Product Texture:*** Sorbitol improves the texture of cosmetic products, making them smooth and pleasant to apply. It also helps stabilize emulsions, which is important for maintaining product consistency.
- ***Non-comedogenic Property:*** Sorbitol is non-comedogenic, meaning it does not clog pores. This is crucial for people with oily skin, as it helps keep pores clean and reduces the risk of acne.
- ***Antioxidant Properties:*** Sorbitol can protect the skin from free radicals, helping to reduce oxidative stress and prevent skin damage. Although not a primary antioxidant, its presence can enhance the antioxidant effect of formulations.
- ***Creating a Protective Film:*** Sorbitol can form a protective film on the skin's surface. This film can reduce transepidermal water loss (TEWL), which is important for maintaining skin hydration.
- ***Enhancing the Efficacy of Other Ingredients:*** Sorbitol can help improve the absorption and efficacy of other active ingredients in cosmetic formulations, making products more effective.
- ***Safety and Tolerance:*** Sorbitol is generally recognized as safe for use in cosmetics. Most people tolerate sorbitol well, making it suitable for use in products for various skin types, including sensitive skin.

Usage: It is part of the aqueous phase of polyphasic systems. Used in concentrations of 5-50%. For external use only.

Applications: Used in the manufacture of creams, lotions, gels, pastes (e.g., toothpaste), sun protection products, and decorative cosmetics.

Source of Raw Material: Wheat sugar (dextrose)

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Method of Production: Sorbitol is produced by hydrogenating a sugar solution using nickel or ruthenium catalysts. Through ion exchange, the raw sorbitol solution is then purified and evaporated to the final concentration.

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

GMO: Not GMO.

Vegan: Does not contain animal-derived components.