



Panthenol (Provitamin B5)

is a derivative of pantothenic acid, a B vitamin, and is widely used in cosmetic and personal care products due to its moisturizing, soothing, and healing properties. When applied to the skin, it is converted into pantothenic acid, which is crucial for maintaining healthy skin, hair, and nails.

Chemical Properties of Panthenol:

- Chemical Structure:**
 - **Molecular Formula:** C₉H₁₉NO₄
 - **Molecular Weight:** 205.25 g/mol
 - **Structure:** Panthenol has a simple linear structure with a hydroxyl group (-OH) and an amide group (-CONH₂), which contribute to its hydrophilic nature.
- Physical Appearance:**
 - **Form:** Panthenol typically appears as a white, crystalline powder or a viscous, clear liquid, depending on its concentration and purity.
 - **Solubility:** It is highly soluble in water, alcohol, and glycerin, making it easy to incorporate into aqueous and hydro-alcoholic formulations.
- Stability:**
 - **pH Range:** Panthenol is stable over a wide pH range, typically between 4 and 8, making it suitable for various cosmetic formulations.

- **Temperature:** It is stable under normal storage conditions but can degrade at very high temperatures, so it should be stored in a cool, dry place.
- 4. **Compatibility:**
- **Formulation:** Panthenol is compatible with a wide range of ingredients, including other vitamins, emulsifiers, and surfactants, making it versatile for use in different types of products.