



# Polysorbate 20 is a nonionic surfactant and emulsifier commonly

used in the formulation of cosmetics, personal care products, pharmaceuticals, and food products. It is part of a broader group of polysorbates, which are derived from the reaction of sorbitan (a derivative of sorbitol) with ethylene oxide and fatty acids. Polysorbate 20 is specifically created by the esterification of sorbitan with lauric acid, followed by ethoxylation

## Chemical Properties

- **Appearance:**
- Polysorbate 20 is a yellow to amber-colored, viscous liquid with a mild odor.
- **Solubility:**
- It is highly soluble in water, making it an effective emulsifier for oil-in-water emulsions. It is also soluble in alcohol and other organic solvents but insoluble in oils.
- **pH:**
- Polysorbate 20 is generally neutral to slightly acidic, with a pH range of 5-7 when in aqueous solutions.
- **Stability:**
- It is stable under normal conditions of use and storage. However, it can degrade over time, particularly when exposed to high temperatures or acidic conditions, leading to the formation of free fatty acids and other byproducts.
- **Hydrophilic-Lipophilic Balance (HLB):**

- Polysorbate 20 has an HLB value of around 16.7, which classifies it as a hydrophilic (water-loving) surfactant, suitable for creating oil-in-water emulsions.
- **Emulsifying Properties:**
- Due to its amphiphilic nature (containing both hydrophilic and lipophilic parts), Polysorbate 20 effectively reduces surface tension between oil and water, helping to form stable emulsions.

