

A person wearing a white lab coat is pouring a clear, colorless liquid from a white plastic bottle into a glass beaker. The liquid is captured mid-pour, creating a splash in the beaker. The background is dark, making the white bottle and the clear liquid stand out.

**Propylene Glycol** is commonly used as a humectant, solvent, and preservative in food and cosmetic products. It helps products maintain moisture and prevents them from drying out. It is also used in pharmaceuticals, e-liquids for vaping, and antifreeze solutions.

### **Chemical Properties**

- **Alcoholic Nature:** As a diol, propylene glycol has two hydroxyl groups, which make it a versatile alcohol that can participate in various chemical reactions.
- **Oxidation:** Propylene glycol can be oxidized to lactic acid or pyruvic acid, depending on the conditions.

- **Esterification:** It can react with carboxylic acids to form esters, which are often used in fragrances and flavorings.
- **Dehydration:** Under acidic conditions, propylene glycol can undergo dehydration to form propylene oxide, a more reactive compound used in industrial applications.
- **Polymerization:** Propylene glycol can be polymerized to produce polyesters and polyurethanes, materials used in various industrial applications.

