

## POLYSORBATE 60 (TWEEN 60)

*E435 Food Grade Dough Conditioner & Emulsifier*

### OVERVIEW

**Chemical Nature:** Non-ionic surfactant derived from polyethoxylated sorbitan and stearic acid.

**Appearance:** Semi-solid waxy surfactant / Yellowish paste. (HLB Value: 14.9)

**Primary Application (Bakery):** The "Gold Standard" Conditioner. Actively complexes with starch to prevent staling. Keeps yeast-raised goods soft for significantly longer shelf life.

**Cosmetics Use:** Waxy nature provides excellent thickening and emulsifying properties for lotions.

### SPECIFICATIONS

With a balanced hydrophilic-lipophilic structure, Polysorbate 60 provides stable emulsification and moderate solubilizing capability. It is well-suited for applications requiring consistent performance under typical food processing conditions.

Test Item	Unit	Min	Max
HLB Value	-	14.9	
Saponification Value	mg KOH/g	45	55
Hydroxyl Value	mg KOH/g	81	96
Acid Value	mg KOH/g	-	2
Moisture	%	-	3
Residue on Ignition	w%	-	0.25
Oxyethylene Group	w%	65	69.5
Arsenic (As)	mg/kg	-	3
Lead (Pb)	mg/kg	-	2

### MOLECULAR STRUCTURE & MECHANISM

- Hydrophilic Segment:** Polyoxyethylene chain introduced by approx. 20 ethylene oxide units.
- Hydrophobic Moiety:** A stearate (C18 fatty acid) ester group forming the lipophilic segment.
- Mechanism:** Dual Phase Interaction. This amphiphilic structure allows the molecule to effectively interact with both aqueous and oil phases. It is specifically designed to facilitate emulsification, dispersion, and solubilization in food systems.

## KEY FEATURES

### Superior Anti-Staling (Shelf Life)

Polysorbate 60 complexes with starch molecules (amylose) to delay retrogradation. This keeps bread and buns soft and fresh for days longer than untreated dough.

### Dough Tolerance & Volume

Strengthens the gluten network, allowing dough to withstand mechanical processing better. This results in higher loaf volume and a more uniform shape.

### High Melting Point Stability

Derived from stearic acid, it has a higher melting point than Tween 20 or 40, making it exceptionally stable in high-heat baking and frying processes.

### Rich Texture for Cosmetics

Unlike liquid emulsifiers, its semi-solid waxy consistency adds desirable 'body' and viscosity to cosmetic lotions, reducing the need for additional thickeners.

## APPLICATIONS

- **Commercial Bakery (Bread & Buns):** Used to extend shelf life, increase volume, and create a fine, uniform crumb structure in yeast-raised doughs.
- **Fried Confectionery (Donuts):** Improves oil retention and volume in donuts, preventing them from becoming greasy or collapsing.
- **Cosmetics & Personal Care:** Acts as a thickener and emulsifier in creams, shaving foams, and lotions, providing a "silky" skin feel due to its stearate chain.
- **Dairy Substitutes:** Stabilizes coffee whiteners and whipped toppings, preventing oil separation.

## STORAGE & PACKAGING

**Storage:** Store in a cool, dry, and well-ventilated area, away from direct sunlight and sources of heat. Avoid contact with harmful or incompatible substances.

**Transportation:** Transport as a general chemical product, following standard safety and handling procedures.

**Package:** Polysorbate 60 is packed in high-quality PE drums with double-seal lids.

- 25 Kg / drum
- 200 Kg / drum
- 1000 Kg IBC tote