

POLYSORBATE 21 (TWEEN 21)

Low-EO Wetting Agent & Emulsifier

OVERVIEW

Chemical Nature: Specialized non-ionic surfactant with lower ethylene oxide content (4 moles) compared to Tween 20.

Appearance: Yellow liquid. (HLB Value: 13.3)

Primary Application (Industrial): Superior Wetting Agent. Offers unique spreading capabilities where standard solubilizers fail. Ideal for coatings, agrochemicals, and specialized emulsions.

Distinct Properties: Lower EO content provides distinct wetting properties different from high-mole polysorbates.

SPECIFICATIONS

Owing to its balanced structure, Polysorbate 21 shows moderate hydrophilicity and good compatibility with other surfactants. It serves as a versatile emulsifier and solubilizer in food and industrial applications where stable dispersion is required.

Test Item	Unit	Min	Max
HLB Value	-	13.3	
Saponification Value	mg KOH/g	100	115
Hydroxyl Value	mg KOH/g	225	255
Acid Value	mg KOH/g	-	2
Moisture	%	-	3

MOLECULAR STRUCTURE & MECHANISM

- Hydrophilic Segment:** Sorbitan (sorbitol-derived) backbone attached to **4 ethylene oxide units**.
- Hydrophobic Moiety:** A lauric acid ester group serving as the lipophilic segment.
- Mechanism:** Interface Orientation. This specific amphiphilic structure allows it to orient precisely between oil and water phases. It is particularly effective at stabilizing emulsions and improving the dispersion of lipophilic substances in aqueous systems.

KEY FEATURES

Superior Wetting Agent

With a shorter EO chain (4 moles), Polysorbate 21 reduces surface tension more effectively than Tween 20, allowing liquids to spread rapidly across difficult surfaces (like leaves or coated metals).

Controlled Solubility (HLB 13.3)

Provides a balanced HLB of 13.3, bridging the gap between oil-soluble Spans and high-HLB Tweens. Perfect for stabilizing complex micro-emulsions.

Industrial & Agrochemical Use

Widely used in crop protection formulations to help pesticides adhere to plant leaves, and in industrial coatings for pigment dispersion.

Low Foaming

Generates significantly less foam than higher-EO counterparts, making it easier to process in high-speed mixing equipment.

APPLICATIONS

- **Agrochemicals:** Used as a high-performance wetting agent and spreading adjuvant in pesticides and herbicides.
- **Industrial Coatings:** Aids in the dispersion of pigments and prevents defects like "fisheyes" by lowering surface tension.
- **Specialized Drilling Fluids:** Provides superior spreading capabilities in drilling mud formulations where rapid surface tension reduction is required.
- **Food Emulsions:** Acts as a solubilizer for specific flavor oils that require a slightly lower HLB than Tween 20.

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 Options:

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