TWEEN® 80 solution

Product Number P6224
Store at Room Temperature

Product Description
CAS Number: 9005-65-6
Specific gravity: 1.07 (25 °C)
HLB (hydrophilic-lipophilic balance) value: 15.0\(^1,2\)
Critical Micellar Concentration (CMC): 13-15 mg/liter\(^1,3\)
Brookfield Viscosity: 400-620 cps (25 °C, neat)
Micelle molecular weight: 76 kDa\(^3\)
Synonyms: Polysorbate 80, PEG (80) sorbitan monooleate, polyoxyethylenesorbitan monooleate

TWEEN 80 is a polyethylene sorbitol ester, with a calculated molecular weight of 1,310 daltons, assuming 20 ethylene oxide units, 1 sorbitol, and 1 oleic acid as the primary fatty acid.\(^4\) Fatty acid constituents of this product are determined by transesterification to yield fatty acid methyl esters, which are identified by gas chromatography.

TWEEN 80 has been widely used in biochemical applications including: solubilizing proteins, isolating nuclei from cells in culture,\(^5\) growing of tubercule bacilli,\(^6\) and emulsifying and dispersing substances in medicinal and food products. It has little or no activity as an anti-bacterial agent\(^1\) except it has been shown to have an adverse effect on the antibacterial effect of methyl paraben and related compounds.\(^7\) Polysorbates have been reported to be incompatible with alcalis, heavy metal salts, phenols, and tannic acid. They may reduce the activity of many preservatives.\(^8\)

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
TWEEN 80 is miscible in water (0.1 ml/ml). It is reported to be miscible with alcohol, cottonseed oil, corn oil, ethyl acetate, methanol, and toluene, but insoluble in mineral oil.\(^4\) The pH of a 1% aqueous solution is 5.5-7.2.

Storage/Stability
Aqueous solutions of polysorbates as well as the neat liquid will undergo autoxidation over time, with changes being catalyzed by light, increased temperature, and copper sulfate.\(^9\) Solutions are reasonably stable at 2 - 8 °C for short periods. For special applications, storage under argon or nitrogen may be preferred.

The product is not sterile. Autoclaving of solutions is generally not advised. Sterile filtration is more easily done if the liquid is warmed to about 40 °C and alternate portions of hot distilled water and TWEEN 80 are poured through the 0.22 µm filter. The TWEEN 80 will blend and remain in solution.

References


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