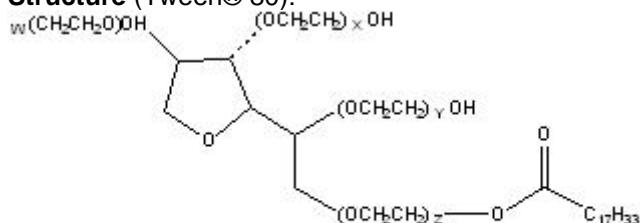


TECHNICAL INFORMATION

Catalog Number: 103168, 103169, 103170, 103171, 152487, 194724, 194725, 194841, 194842, 806576
Tween®

Structure (Tween® 80):¹⁹



where sum of w, x, y and z = 20

Description: Tweens® are a series of nonionic surfactants derived from sorbitan esters. They are soluble or dispersible in water but differ widely in organic and oil solubilities. Used as oil-in-water emulsifiers in pharmaceuticals, cosmetics, cleaning compounds, etc. (Not sold by MP for human use).

	Polysorbate 20	Tween® 40	Tween® 60	Tween® 80	Tween® 85
CAS #	9005-64-5	9005-66-7	9005-67-8	9005-65-6	9005-70-3
Synonym	Polyoxyethylene-sorbitan monolaurate; Polysorbate 20	Polyoxyethylene-sorbitan monopalmitate; Polysorbate 40	Polyoxyethylene-sorbitan monostearate; Polysorbate 60	Polyoxyethylene-sorbitan monooleate; Polysorbate 80	Polyoxyethylene-sorbitan trioleate; Polysorbate 85
Content	~55% lauric acid (remainder primarily myristic, palmitic and stearic acid)	~90% palmitic acid	~55% stearic acid (remainder primarily palmitic acid)	~75% oleic acid	~70% oleic acid (remainder primarily elaidic, linolenic and palmitic acids)
Specific Gravity	~1.1 g/ml	~1.08 g/ml	~1.1 g/ml	~1.08 g/ml	~1.0 g/ml
Viscosity @ 25°C	400 cps	600 cps	--	400 cps	300 cps
Acid No.	0-2.0	0-2.0	0-2.0	0-2.0	0-2.0
Saponification No.	40-50	43-49	45-55	45-55	83-93
Hydroxyl No.	96-108	89-105	81-96	65-80	39-52
Water	2.5-3.0%	2.5-3.0%	2.5-3.0%	2.5-3.0%	4.8-5.2%
Critical Micelle Concn. (CMC)	0.06 mM (60 mg/L or 6 × 10 ⁻³ mole/L)	--	--	0.012 mM (13-15 mg/L)	--
Molecular Weight	1228	--	1311.7	1310	--

Physical Description: Yellow, oily liquid

Typical Usage:

Polysorbate 20 is typically used as an emulsifying agent for the preparation of stable oil-in-water emulsions, particularly in

pharmaceutical applications.¹⁷ Polysorbate 20 has been used in pre-extraction of membranes to remove peripheral proteins (used at 2% for extraction of membrane-bound proteins).^{1,10,12} Several resources may be helpful in determining usage concentrations.^{8,9,14} Polysorbate 20 has been used as a blocking agent on nitrocellulose at a typical concentration of 0.05%. Tween® 40 can be used as a non-ionic detergent in cell lysis, nuclei isolation and cell fractionation.^{2,13,15}

Tween® 80 has been widely used in biochemical applications including: solubilizing proteins, isolating nuclei from cells in culture^{4,7,15}, selective protein extraction^{4,15}, growing of tubercule bacilli⁶, and emulsifying and dispersing substances in medicinal and food products. It has little or no activity as an anti-bacterial agent.³ It has been shown to have an adverse effect on the antibacterial effect of methyl paraben and related compounds.¹⁶

Critical Micelle Concentration (CMC): Detergents with high CMC values are generally easy to remove by dilution; detergents with low CMC values are advantageous for separations on the basis of molecular weight. As a general rule, detergents should be used at their CMC and at a detergent-to-protein weight ratio of approximately ten.¹⁹⁻²⁰

Solubility: Soluble/miscible in water to give a clear yellow solution; miscible with alcohol, dioxane, and ethyl acetate; practically insoluble in liquid paraffin and fixed oils (such as mineral oil).¹⁷ Autoclaving of solutions is not recommended. Sterile filtering is suggested with a 0.22 micron filter. Tween® may need to be warmed to about 40°C and alternated with portions of hot distilled water while being poured through the filter.

Availability:

Catalog Number	Description	Size
103168	Polysorbate 20	100 ml 500 ml 1 liter
194724	Polysorbate 20, cell culture reagent	100 ml 500 ml 4 liter
806576	Polysorbate 20	100 g
194841	Polysorbate 20, molecular biology reagent	50 ml 100 ml
103169	Tween® 40	100 ml 500 ml
103171	Tween® 60	100 ml 500 ml 1 liter
103170	Tween® 80	100 ml 500 ml 1 liter 4 liters 5 liters
194725	Tween® 80, cell culture reagent	100 ml 500 ml 4 liters
194842	Tween® 80, molecular biology reagent	50 ml 100 ml
152487	Tween® 85	100 ml 500 ml 4 liters

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