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ProductInformation

TWEEN® 20
Cell Culture Tested

Product Number **P 2287**
Store at Room Temperature

Product Description

CAS No: 9005-64-5
Appearance: Clear, yellow to yellow-green viscous liquid
Boiling point: >100 °C
Brookfield Viscosity: 370-430 cps (25 °C, neat)
pH of 1% aqueous solution: 5-7
Refractive index: 1.4685[1]
Specific gravity: 1.1
HLB (hydrophile-lipophile balance) value: 16.7[2]
CMC value[3]: 60 mg/L
Structure: TWEEN 20 is a polyoxyethylene sorbitol ester, with a calculated molecular weight of 1,225 daltons, assuming 20 ethylene oxide units, 1 sorbitol, and 1 lauric acid as the primary fatty acid. Fatty acid constituents of this product are determined by transesterification to yield fatty acid methyl esters, which are identified by gas chromatography.
Synonyms: Polysorbate 20; PEG(20)sorbitan monolaurate, polyoxyethylenesorbitan monolaurate.

Product No. P2287 is cell culture tested at 0.15 mg/ml and is appropriate for use in cell culture applications.

TWEEN 20 is a nonionic detergent widely used in biochemical applications. Sigma offers a number of products for research, some tested for suitability in a given application. The general use reagent is Product No. P 1379. Other products are:
P 7949 is tested for trace element content.
P 9416 is tested for molecular biology use.
P 2287 is tested for cell culture use.
P 5927 is tested for electrophoresis use.
P 2690 (70% solution).

TWEEN 20 is a frequently used member of the polysorbate family. These have been used as emulsifying agents for the preparation of stable oil-in-water emulsions.[4] TWEEN 20 has been used in pre-extraction of membranes to remove peripheral proteins (used at 2% for extraction of membrane-bound proteins). Several resources may be helpful in determining usage concentrations.[5]

TWEEN 20 has been used as a blocking agent for membrane based immunoassays at a typical concentration of 0.05%. TWEEN 20 can be used for lysing mammalian cells at a concentration of 0.05 to 0.5%.

Precautions and Disclaimer

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

Preparation Instructions

TWEEN 20 is miscible in water (100 mg/ml), yielding a clear, yellow solution. It is also miscible with alcohol, dioxane, and ethyl acetate; and is practically insoluble in liquid paraffin and fixed oils.[4]

Storage/Stability

Aqueous solutions of polysorbates undergo autoxidation during storage, with changes being catalyzed by light, increased temperature, and copper sulfate.[6] Autoclaving is not recommended without testing for changes in properties. TWEEN 20 may not be stable to autoclaving, particularly with metal cations in buffer solutions. TWEEN 20 is heat sensitive and will darken when exposed to elevated temperatures. Polysorbates have been reported to be incompatible with alkalis, heavy metal salts, phenols, and tannic acid. Polysorbates may reduce the activity of many preservatives.[4] No plastic incompatabilities have been observed.

References

1. Sys. Analysis of Surface Active Agents, 2nd ed., p. 533.
2. Data for Biochemical Research, 3rd ed., Dawson, R. M., et al., Oxford Press (New York, NY: 1986), p. 289.
3. Helenius, A., et al., Properties of Detergents. Methods in Enzymology, **56**, 734-749 (1979).
4. Martindale The Extra Pharmacopoeia, 30th ed., Reynolds, J. E. F., ed., Pharmaceutical Press (London, England: 1993), p. 1030.

5. Neugebauer, J.M., Detergents: An Overview. Methods in Enzymology, **182**, 239-253 (1990).

6. Donbrow, M., et al., Autoxidation of polysorbates. J. Pharm. Sci., **67**, 1676-1681 (1978).

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