



SIGMA-ALDRICH

3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

Product Information

Polyethylene glycol

Product Number **P3515**
Store at Room Temperature

Product Description

General formula: $H(OCH_2CH_2)_nOH$, average value of $n = 22.3$
Average Molecular Weight: 1,000 (950 - 1,050)
CAS Number: 25322-68-3
Melting Point: 37 - 40 °C
Density: 1.0926 g/ml (60 °C); 1.0765 g/ml (80 °C)
Viscosity: 17.2 centistokes (210 °F)
Synonyms: PEG, Carbowax, Macrogol

Polyethylene glycol (PEG) is a condensation polymer of ethylene oxide and water. PEG's are susceptible to oxidative degradation in the presence of air. Minimizing the exposure of PEG to elevated temperatures and/or exposure to oxygen, or addition of an antioxidant can limit the amount of degradation.

PEG has been used in many different applications. A single-step method is described for the activation of PEG for binding to polypeptides and proteins.¹ PEG has been used in the precipitation of proteins,² as a fusing agent in enhancing the effect of macrophages on hybridoma,³ in the separation and purification of biomolecules,⁴ and in induction of cell hybridization.⁵

PEG is incompatible with phenol and may reduce the antimicrobial action of other preservatives. Both penicillin and bacitracin are rapidly inactivated by PEG. PEG is also incompatible with sorbitol, tannic acid and salicylic acid and may affect the integrity of plastics.⁶

Precautions and Disclaimer

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

Preparation Instructions

PEG is soluble in water (approximately 800 mg/ml, 20 °C). PEGs are also soluble in many polar solvents such as acetone, alcohols, and chlorinated solvents. They are insoluble in nonpolar solvents such as hydrocarbons.

Storage/Stability

Aqueous PEG solutions are stable at room temperature. The PEG bonds are not hydrolyzed under these conditions. PEG can be dissolved in warm water at 80-90 °C with no adverse effects. Sterile filtration of the solution is recommended using a 0.45 µm filter, initially. Although autoclaving of PEG in saline solutions has been reported, it is not recommended.³

References

1. Veronese, F. M., et al., Surface Modification of Proteins. Activation of Monomethoxy-polyethylene Glycols by Phenylchloroformates and Modification of Ribonuclease and Superoxide Dismutase. *Appl. Biochem. Biotechnol.*, **11(2)**, 141-152 (1985).
2. Ingham, K. C., Precipitation of Proteins with Polyethylene Glycol. *Meth. Enzymol.*, **182**, 301-306 (1990).
3. de St. Groth, S. F., and Scheidegger, D., Production of Monoclonal Antibodies: Strategy and Tactics. *J. Immunol. Methods*, **35(1-2)**, 1-21 (1980).
4. Walter, H., and Johansson, G., Partitioning in Aqueous Two-phase Systems: an Overview. *Anal. Biochem.*, **155(2)**, 215-242 (1986).
5. Ege, T., et al., Preparation of Microcells. *Methods. Cell Biol.*, **15**, 339-357 (1977).
6. Martindale, *The Extra Pharmacopoeia*, 30th ed., Reynolds, J. E. F., ed., The Pharmaceutical Press (London, England: 1993), p. 1384.

ARO/RXR 5/06

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.