



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

ProductInformation

Poly- γ -benzyl-L-glutamate

Product Number **P 5136**

Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS[#] 25014-27-1

Product Description

Molecular weight: 150–300 kDa (by viscosity)

Specific rotation: $+15^{\circ}$ (10 mg/ml, chloroform, $25\text{ }^{\circ}\text{C}$)¹

Poly- γ -benzyl-L-glutamate is a polymer of glutamic acid in which the γ -carboxyl groups have been benzoylated. The molecular weight range is not determined for a given lot, only the average molecular weight is given.

Poly- γ -benzyl-L-glutamate exists in a highly ordered, well-defined, α -helical conformation held intact by intramolecular hydrogen bonds.² The α -helical structure renders this polymer as a relatively stiff rigid rod and this structure is retained when the polymer is dissolved in many solvents, including dimethylformamide, benzene, toluene, methylene chloride, and chloroform.^{3,4,5} In contrast, poly- γ -benzyl-L-glutamate has a random coil conformation in trifluoroacetic acid (TFA) and dichloroacetic acid (DCA), and in mixed solvents containing TFA and DCA.

Poly- γ -benzyl-L-glutamate is routinely used for the modeling of conformational changes of biopolymers and modeling of α -helical polypeptides. It is also used in chromatography as a stationary phase for the resolution of racemic materials. This product can also be used for the microencapsulation of pharmaceutically active hydrophobic liquids. It improves the shatter resistance of plastics when blended with poly(vinyl chloride), poly(vinyl acetate), or their copolymers.^{4,5,6}

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Poly- γ -benzyl-L-glutamate is soluble in chloroform at 50 mg/ml.

Storage/Stability

Store at $-20\text{ }^{\circ}\text{C}$.

References

1. Blout, E.R. and Karlson, R.H. Polypeptides. III. The synthesis of high molecular weight poly- γ -benzyl-L-glutamates. *J. Am. Chem. Soc.*, **78**, 941-946 (1956).
2. Block, H., *Poly(γ -benzyl-L-glutamate) and Other Glutamic Acid Containing Polymers*, Gordon and Breach Science Publishers (New York, NY: 1983), p. 58.
3. Daly, W.H., and Poché, D., The preparation of N-carboxyanhydrides of α -amino acids using bis(trichloromethyl)carbonate. *Tetrahedron Lett.*, **29**, 5859 (1988).
4. Brandrup, J., and Immergut, E.H., eds., *Polymer Handbook*, 3rd ed., John Wiley and Sons (New York, NY: 1989).
5. McKinnon, A.J., and Tobolsky, A. V., Structure and properties of poly- γ -benzyl-L-glutamate cast from dimethylformamide. *J. Phys. Chem.*, **72(4)**, 1157-1161 (1968).
6. DeLong, L.M., and Russo, P. S., Thermodynamic and dynamic behavior of semiflexible polymers in the isotropic phase. *Macromolecules*, **24**, 6139-6155 (1991).

CMH,RXR,VNC,KTA 11/05-1