

Poly(ether sulfonamide)s with glycidyl pendant units

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SUMMARY

High molecular weight poly (ether sulfonamide) has been prepared by condensation of 4,4'-dichlorosulfonyldiphenylether with ethylenediamine. The reaction of potassium salt of poly (ether sulfonamide) with epichlorohydrin gives the corresponding N-glycidyl derivative in yield as high as 98%. The resulting polymer offers many functionalization possibilities through ring opening of the oxirane units. Also the glycidyl bearing polymer may act as multifunctional post-crosslinking agent for polymers carrying hydroxy, amino or carboxyl groups.

INTRODUCTION

Polysulfonamides have been synthesized from aromatic and aliphatic disulfonyl chlorides and diamines, but most of works have focused on the preparation of polysulfonamides deriving from aryl disulfonyl chloride in order to obtain thermally stable polymers analogous to polyamides (1-5).

Polysulfonamides have been paid somewhat little attention due to the factors such as the purity of disulfonyl chloride, the organic solvents used, the temperature, and the pH of the system (1).

Polysulfonamides as well as sulfonamides (6) show excellent stability towards acid and base hydrolysis. Polysulfonamides are readily soluble in common organic solvents as well as in strongly basic aqueous solutions. Important aspect of polysulfonamides is that the reactive hydrogen of sulfonamide group permits chemical modification. Although nucleophilic substitution of low molecular weight sulfonamides (7) have been reported in literature, there are a few reports on modification of polysulfonamides such as N -chlorination (8) and N -alkylation (1).

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