

SYNTHESIS OF COPOLYMERS BASED ON POLYPROPYLENE FUMARATE PHTHALATES WITH METACRYLIC ACID

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Unsaturated polyester resins are solutions of unsaturated polyesters in monomers or oligomers capable of copolymerizing with these polyesters. They are among thermoreaktivnyh materials with a very valuable set of properties: low viscosity, good mechanical and electrical insulating properties in the cured state. In addition, polyester resins are relatively cheap products, which in some cases makes materials based on them competitive with other types of plastics. [1].

Polymers derived from monomers of unsaturated polyester resins have a number of valuable chemical and physical properties. They are synthesized by the copolymerization reaction, which is the most promising in terms of ease of preparation and control.

To create polymers with improved quality characteristics, the study of the kinetics and determination of the constants and parameters of copolymerization of polypropyleneglycol fumarate phthalates (p-PGFPh) with methacrylic acid (MAA) is topical, and the development of new methods for controlling the radical polymerization of vinyl monomers and improving polymer characteristics are among the priority areas development of the chemistry of macromolecular compounds.

Polypropylene fumarate phthalates («unsaturated polyether») were obtained by polycondensation of propylene glycol with fumaric acid and phthalic anhydride (1.05:0.7:0.3 ratio) in a stream of nitrogen at 100 ° C for 7-8 hours, at 170-180 ° C - to a given acid number [2].

As a result of copolymerization, we obtained insoluble polymers of a network structure in five different ratios of 10:90; 25:75; 50:50; 75:25; 90:10. The kinetics of the copolymerization rate, with high degrees of conversion, without an induction period, was investigated. The output amounted to 61-87%, depending on the composition of the copolymer. The composition of the copolymers is proven by IR, mass spectroscopy. The degree of swelling varied in the range of 61-197% depending on the composition of the copolymer.

Thus, the presence of unsaturated double bonds in p-PGFPh molecules allows the use of the latter as a polymer matrix to obtain spatially cross-linked polymers in copolymerization with acrylic acid, with different ratios of the monomer mixture in order to study the physicochemical properties of the copolymers obtained.

References

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