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STUDY OF SYNTHESIS AND PROPERTIES OF TETRAFLUOROETHYLENE- PROPYLENE COPOLYMERS

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Bulk and emulsion copolymerization of tetrafluoroethylene (TFE) with propylene (P) initiated by various peroxides in the temperature interval 270-370 K, monomer pressure from 2 to 8 MPa and TFE/P molar ratio from 20/80 to 90/10 was carried out.

The effect of these reaction conditions as well as of the type and amount of emulsifier and redox system on the yield, molecular weight, polymer composition, latex concentration and other properties of the copolymer synthesized was studied.

Rubber-like alternating copolymers in a wide range of monomer composition of TFE and P (from 30 to 80 mol%) were obtained. The reaction proceeds in a stationary state without an induction period. Kinetic study shows that copolymerization by free propagating mechanism and monomolecular chain transfer reaction to propylene take place. The relative reactivity ratio of TFE and P, $Q-e$ values and apparent activation energy of the reaction were determined.

The properties of copolymers obtained and peroxide cured fluoroelastomer compositions were studied. The glass transition and decomposition temperatures (270-272 K and 653-673 K, resp.), chemical resistance and dielectric and mechanical properties of non-vulcanized and vulcanized fluoroelastomers were determined.

The synthesized fluoroelastomers are similar to the available commercial products and are suitable for use.