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POLY(PHENYLENE OXIDE) – IMPORTANT ENGINEERING POLYMER

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The engineering polymers and among them poly(phenylene oxide) (PPO/PPE) are the basis for the development of many fields of the modern industry.

For many years in the Industrial Chemistry Research Institute (IChP) we have done the technological research works on the engineering polymers such as polyacetals, polycarbonates, syndiotactic polystyrene and poly(phenylene oxide).

Technology of polyacetals was implemented into the industry at Azoty Tarnów and several plants run in China on the basis of the Polish license.

PPO is widely used due to its high water resistance, dimensional stability, thermal stability, reduced flammability and selective gas-permeability,.

In our research in the Institute we focus on the development of 3 stages of complex PPO technology: 2,6-dimethylphenol (monomer) synthesis, polymer synthesis and its physical and chemical modification.

What concerns 2,6-dimethylphenol synthesis, the catalytic processes in liquid phase, stationary and fluid bed were investigated. Also, the method of monomer purification has been tested.

In the poly(phenylene oxide) synthesis various catalytic systems were tested and different oxidative polymerization methods were investigated.

Polymer modification covered the polymer blends, composites, nanocomposites and polymeric forms obtained by the reactive extrusion.

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