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STUDY OF MONOMER FEED RATIO AND PRESSURE EFFECTS ON SYNTHESIS OF POLY(ETHYLENE TEREPHTHALATE) BY ANTIMONY-BASED AND TITANIUM-BASED CATALYSTS

A. Keshavarzian[a,*], M. Rafizadeh[a], F. Afshar-Taromi[a]

[a] *Department of Polymer Eng. & Color Tech., Amirkabir University of Technology, P. O. Box 15875-4413, Tehran, Iran*

**Corresponding author: ali_keshavarz@aut.ac.ir*

Poly(ethylene terephthalate) (PET) is a thermoplastic polyester which is produced by polycondensation of ethylene glycol (EG) and terephthalic acid (TPA).Various parameters are effective on PET synthesis. In this research, PET synthesis is studied in the presence of different catalysts such as antimony trioxide (Sb_2O_3) and titanium dioxide (TiO_2) under the same experimental conditions. The effect of various monomer feed ratio (EG/TPA) and pressure of esterification step on the intrinsic viscosity of final produced PET has been investigated. The results have shown that the monomer feed ratio in the range of 1.7 to 1.9 for TiO_2 catalyst and 1.5 to 1.7 for Sb2O3 catalyst and the pressure in the range of 4 to 4.5 (bar) for both of them, increase the intrinsic viscosity of the PET.