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A Study on Preparation and Properties of a Series of Polyester based Elastomers

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Abstract Polyester based thermoplastic elastomers [using dimethyl terephthalate(DMT), 1,4-butanediol(1,4-BD), poly(tetramethylene ether glycol) (PTMG), and poly(3-methyl penta-methylene adipate) glycol (PMPA)] with various hard segment contents were synthesized by melt transesterification. The effects of structural variations, drawing and heat treatments on morphology and properties of TPE were investigated. The elasticity, viscosity and thermal properties depended on the extent of hard segment. By thermal analysis using DSC, melting temperature increased with increasing content of hard segment. For PT series using PTMG as soft segment, polymers which have above 23% of content of hard segment show melting temperature. On the other hand, in PP series using PMPA as soft segment, polymers which have above 31% of content of hard segment show melting temperature. The melting temperatures of PT series were higher than that of PP samples at the same content of hard segment. However, for the tan δ peak temperature, T_g of PP series is higher than that of PT samples.