# A New Chemical Recycling Process from PET wastes to PBT

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PET is used in thermoplastic resin, the manufacture of high strength fiber and various types of packaging. The increase of PET consumption causes serious environmental and economic problems. The PET wastes can be recycled by various methods to carpet fibers, geo textiles, and fiber fill or can be converted into PBT resin, which is widely used in injection or blow molding applications. A better way to reuse PET might be to convert it into more-valuable "virgin" PBT base stock. PBT offers some very special properties of flexural strength, hardness, toughness, heat and chemical resistance and is widely used in electronic industry, appliance parts, gears, auto panels and other engineering plastics. PET can be converted to bis(4-hydroxybutyl)terephthalate (BHBT) by reaction with 1,4-butandiol and repolymerized to produce PBT. In this study, we proposed a semi-batch reactor for depolymerizationof PET wastes using 1,4-butandiol with simultaneous removal of ethylene glycol. We carried out experiments for the depolymerization and simulated the process with Aspen plus and compared the performance of the proposed process with conventional one based on experiments and simulation.