

Simulation on Effect of Preform Diameter in Injection Stretch Blow Molding via ANSYS Polyflow

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Abstract. Polyethylene terephthalate (PET) is the most common material of resin for manufacturing plastic bottle by injection stretch blow molding due to its excellent properties. As various issues of health and environmental hazards due to the PET use have risen, PET bottle manufacture may be improved by minimizing the wall thickness to reduce the PET use. One of the critical qualifications of the manufacturing process which lead to the wall thickness distribution is the initial preform diameter. In this project, we used the ANSYS Polyflow with aim to evaluate the wall thickness distribution of PET bottle for different diameter of initial preform. As a result, only 4 mm preform diameter presented wall thickness below than 1 mm. On the other hand, at least 6 mm preform diameter can permit the wall thickness 1.3 mm i.e. at the shoulder area.