

Experimental and Theoretical Study of Melt Viscosity in Injection Process

Authors : Chung-Chih Lin, Wen-Teng Wang, Chin-Chiuan Kuo, Chieh-Liang Wu

Abstract : The state of melt viscosity in injection process is significantly influenced by the setting parameters due to that the shear rate of injection process is higher than other processes. How to determine plastic melt viscosity during injection process is important to understand the influence of setting parameters on the melt viscosity. An apparatus named as pressure sensor bushing (PSB) module that is used to evaluate the melt viscosity during injection process is developed in this work. The formulations to coupling melt viscosity with fill time and injection pressure are derived and then the melt viscosity is determined. A test mold is prepared to evaluate the accuracy on viscosity calculations between the PSB module and the conventional approaches. The influence of melt viscosity on the tensile strength of molded part is proposed to study the consistency of injection quality.

Keywords : injection molding, melt viscosity, tensile test, pressure sensor bushing (PSB)

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