AN ANALYSIS OF THE EFFECT OF ELONGATIONAL VISCOSITY ON THE FLOW IN A FLAT DIE

Y. Sun and M. Gupta
Mechanical Engineering-Engineering Mechanics Department
Michigan Technological University
Houghton, MI 49931

Abstract

The flow of a low-density polyethylene in a flat die is simulated using the axisymmetric and planar elongational viscosities estimated in an earlier publication by Beaupre and Gupta. Elongational viscosity is found to have only a limited effect on the velocity distribution at the die exit. However, the predicted pressure drop in the die and temperature distribution at the die exit changed significantly when the effect of elongational viscosity is included in the simulation.