World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:9, No:08, 2015

Rheological Modeling for Shape-Memory Thermoplastic Polymers

Authors : H. Hosseini, B. V. Berdyshev, I. Iskopintsev

Abstract : This paper presents a rheological model for producing shape-memory thermoplastic polymers. Shape-memory occurs as a result of internal rearrangement of the structural elements of a polymer. A non-linear viscoelastic model was developed that allows qualitative and quantitative prediction of the stress-strain behavior of shape-memory polymers during heating. This research was done to develop a technique to determine the maximum possible change in size of heat-shrinkable products during heating. The rheological model used in this work was particularly suitable for defining process parameters and constructive parameters of the processing equipment.

Keywords : elastic deformation, heating, shape-memory polymers, stress-strain behavior, viscoelastic model
Conference Title : ICCST 2015 : International Conference on Chemical Science and Technology
Conference Location : Venice, Italy
Conference Dates : August 13-14, 2015