

Research into the incorporation of SEBS in the ABS waste recovery process in order to improve the material's mechanical and rheological properties.

Abstract

The injection molding process is a conformation process of thermoplastic polymeric material, which currently has great economic and technological significance. There has been a great deal of recent research aimed at determining optimal processing conditions.

Recycled thermoplastic materials are characterized by having undergone different processing temperatures as well as frequently containing a range of impurities from different sources, either from the initial raw material or material introduced during the recovery process.

Bringing together these two factors, this present work is directed at recovering the properties of waste ABS and Hips both as independent materials and as a 50 % mixture of the two, through the incorporation of small quantities of SEBS.

With this objective in mind, and in order to achieve the main objectives of this work, partial objectives were identified, such as:

- The characterization of the materials under study, ABS and HIPS, in order to better understand the changes that take place in the materials as a result of reprocessing.
- A priori study to know which materials from the ACTECO S.L. provided products being recovered and then to characterize the mixture of ABS with the impurity found.
- The ABS – HIPS mixture characterization to determine their compatibility and how this compatibility affects their properties.
- To determine the Cross-WLF parameters of the materials in order to know the viscosity, and from these, determine the optimum processing and injection conditions using injection simulation (CAE).
- The use of a material which is recently exploited industrially, SEBS, as an additive to modify and retrieve the properties of the materials previously studied.