

AN ABSTRACT OF A THESIS

DRYING AND CRYSTALLIZATION BEHAVIOR OF PBT/NYLON-6 BLENDS IN

POYLMER PROCESSING

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Master of Science in Chemical Engineering

The major difficulty with Nylons and Polyesters is hygroscopic nature and its effect on moisture content. It is a well known fact that the rheological/processing behaviour of Nylon resins is strongly dependent on the moisture content. Initial moisture content of the pellet is also important because it leads to difficulty in data reproduction. The present research was undertaken to understand the crystallization behavior involved in the PBT/Nylon-6 blends. The compatibility of the blends were also studied. The Differential Scanning Calorimeter (DSC) curves showed peak shifts for the primary crystallization temperature. This indicated that the blends might be compatible. It also ascertained the fact that ester-amide reaction might take place while mixing. The nonisothermal crystallization study showed an increase in the rate of crystallization with the increase in Nylon-6 content in the blends. This indicated that Nylon-6 may act as a nucleating agent in improving the crystallinity of the blends. The thermal properties of the blends appeared to be independent of the mixing speeds. The melting point of the blends remained almost the same at all compositions. The rheological properties and processing characteristics of the Nylon-6/PBT were investigated. The extrusion processability of the blends decreased with the increase in Nylon-6 content. Thus the flow nature of the blends was non-Newtonian as the Nylon-6 content increased.

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POLYMER PROCESSING

A Thesis

Presented to

the Faculty of the Graduate School

Tennessee Technological University

by

Amudhan Subramoniam

In Partial Fulfillment

of the Requirements for the Degree

MASTER OF SCIENCE

Chemical Engineering

December 1995

Tennessee Tech Library

CERTIFICATE OF APPROVAL OF THESIS

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