



P-4-428

## THE CHARACTERISTICS OF IMMISCIBLE POLYMER BLEND WITH REACTIVE EXTRUSION ASSISTED SUPERCRITICAL CO<sub>2</sub>

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A reactive extrusion process for immiscible PP/PS blend with peroxide and multifunctional agent in the presence of supercritical carbon dioxide is studied. Supercritical carbon dioxide is used in reactive extrusion to assist the diffusion of agent into polymer matrix. The PP/PS blends are investigated by rheological measurement, scanning electron microscopy, thermal properties and mechanical properties.

The results indicate that complex viscosity and storage modulus of blend are increased by adding peroxide and multifunctional agent, which may represent the formation of copolymer during melt processing. Moreover, analysis of the products reveals that the use of supercritical carbon dioxide leads to improved compatibility. This result is also confirmed by checking the size reduction of dispersed PS phase. The interfacial tension of the PP/PS blends are determined from the rheological studies and from relaxation time using the Choi and Schowalter models and Palierne model, and showed the decrease as improvement of compatibility of PP/PS blend. From the results of the morphological, rheological studies and the values of the interfacial tensions, it is suggested that the compatibility of the PP/PS blend increased by reactive extrusion assisted by supercritical carbon dioxide.