

Modification of Polypropylene by Graft Reaction

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In spite of its outstanding physical properties, such as toughness, resilience, permeability, chemical resistance, and abrasion resistance, polypropylene has an important shortcoming. It is a poor dyeability and this makes polypropylene have not been widely used in textile industry. To overcome this defect of polypropylene, this report deals with the modification of polypropylene with maleic anhydride using graft reaction.

Polypropylene was dissolved in p-xylene with maleic anhydride and dicumyl peroxide used as a graft initiator. The amounts of maleic anhydride, dicumyl peroxide, reaction time, and reaction temperature vs. graft percent were investigated respectively.

To be sure of graft reaction, scanning electron microscopy (SEM) was used.

This grafted polypropylene, blends of polypropylene with grafted polypropylene, and blends mixed with energy quencher (Chimassorb 944, a kind of hindered amine light stabilizer) were dyed with basic dye and disperse dye. K/S value was calculated from spectrophotometer. Light fastness of blends and blends mixed with energy quencher were also tested. The light fastness of blends mixed with energy quencher is

higher than blends mixed without energy quencher.

Inherent viscosity was measured to examine the deterioration of mechanical property of grafted polypropylene.

The variation in crystallinity by graft reaction was observed by differential scanning calorimeter (DSC).

Reference

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