

Thesis Title Morphology and Mechanical Properties of
 Kevlar Pulp/Styrene (Ethylene Butylene)
 Styrene Thermoplastic Elastomer Composite

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ABSTRACT

Reinforcement of Styrene (Ethylene Butylene) Styrene Thermoplastic Elastomer (SEBS) with Kevlar pulp was investigated. Surface treatment of the fibre was carried out by alkali hydrolysis to increase the number of the reactive end groups. The effect of hydrolysis on surface morphology of Kevlar filaments and pulp were investigated by Fourier Transform Infrared Spectroscopic Technique and Scanning Electron Microscopy. Tensile properties of the filaments after surface treatment were measured and found to be only slightly decreased. Mixing condition for the preparation of Kevlar pulp-SEBS composites in an internal mixer which give the highest value of tensile properties and good fibre dispersion was found to be 165°C with rotor speed of 90 rpm. Increasing the amount of fibre loading caused a drastic rise in modulus,

but a decrease in tensile strength and elongation at break--results commonly found in the case of short fibre reinforcement.

Addition of 1 wt% SEBS-g-MA as a compatibiliser to the composite of 3 wt% Kevlar pulp-SEBS was found to give small increase in modulus at 100% extension, but a slight decrease in tensile strength. However, adhesion of fibre to elastomer matrix was found to improve with addition of SEBS-g-MA.