



MISCIBILITY, THERMAL BEHAVIOR AND MORPHOLOGY OF DEPROTEINIZED NATURAL RUBBER HAVING EPOXY GROUP AND POLYETHYLENE OXIDE

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The miscibility, thermal behavior and phase morphology of deproteinized natural rubber having epoxy group (EDPNR) and polyethylene oxide (PEO) blend prepared by casting films have been studied by bimodal curve, DSC, FTIR and SEM. Liquid DPNR having epoxy group (LEDPNR) was prepared from depolymerization of epoxidized natural rubber (ENR) latex, which was prepared by deproteinization of natural rubber latex with urea and surfactant followed by epoxidation with fresh peracetic acid. The LEDPNR with various amount of epoxy group, i.e. 10, 16, 23 and 30 mol% was mixed with PEO in chloroform at various compositions, i.e. 100/0, 90/10, 70/30, 50/50, 30/70, 10/90 and 0/100, respectively. Since LEDPNR/PEO blends contain polar groups, i.e. epoxy group in LEDPNR and ethylene oxide units in PEO therefore a relationship between miscibility or phase separation and intermolecular interactions between LEDPNR and PEG was investigated through binodal curve. It was found that χ_{12} parameter for LEDPNR/PEG is nearly constant as epoxy group increased. This suggests that the epoxy group distribution along the chain of LEDPNR is random distribution. Therefore the LEDPNR were regarded as a homopolymer. Changing in molecular weight of PEO blend with LEDPNR having 30 mol% was also investigated through thermal properties and morphology.