


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**Abstract:** The miscibility of methyl methacrylate-co-methacrylic acid polymer (MMA-MAA) with metal neutralized sulfonated polystyrene ionomers was investigated by viscometry, differential scanning calorimetry (DSC), and Fourier transform infrared radiation spectroscopy (FTIR) techniques. Polystyrene (PS) was sulfonated by acetic anhydride and sulfuric acid and the sulfonation degree was found to be 2.6 mole percent, and 2.6 mole percent sulfonated polystyrene was neutralized by Mg, Zn, and Mn salts. The miscibility behavior of the blends of MMA-MAA with Mg neutralized 2.6 mole% sulfonated polystyrene (2.6MgSPS), Mn neutralized 2.6mole% sulfonated polystyrene (2.6MnSPS), and Zn neutralized 2.6 mole% sulfonated polystyrene (2.6ZnSPS) was investigated by dilute solution viscometry. The results showed that 2.6MgSPS blends were miscible with MMA-MAA in all compositions, 2.6ZnSPS blends were all immiscible, and 2.6MnSPS blends were immiscible at certain compositions. Even though the DSC thermograms of samples were taken in the solid state, they showed consistency with the results of dilute solution viscometry with a few exceptions. DSC results indicated that 2.6ZnSPS was immiscible with MMA-MAA as 2.6MnSPS and 2.6ZnSPS blends were immiscible at certain compositions. FTIR studies of miscible and immiscible blends revealed the existence of specific interactions between carbonyl oxygen of MMA-MAA copolymer and neutralizing cation of the sulfonated polystyrene.

**Key Words:** Methylmethacrylate-methacrylic acid polymer, sulfonated polystyrene ionomers, viscometry, compatibility

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