Use of Block Copolymer Stabilisers for the Dispersion Polymerisation of Styrene in Alcoholic Media

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Near-monodisperse micron-sized polystyrene particles have been produced by dispersion polymerisation in alcoholic media using poly(2-(dimethylamino)ethyl methacrylate-*b*-alkyl methacrylate) copolymer stabilisers. The effect of varying block copolymer concentration and composition, solvency, and reaction temperature on latex particle size has been investigated. A maximum in particle size was observed for a series of solvents varying from methanol to *n*-octanol. Particle sizes of 1.4 μm were obtained in methanol, 2.8 μm in *n*-butanol and 0.7 μm in *n*-octanol. As expected, particle size decreased slightly with increasing stabiliser concentration; however, varying the copolymer composition had little or no affect on particle size. As the polymerisation temperature was increased, the size and polydispersity of the latexes increased.