

Synthesis of Water-Soluble Polyethylene Glycol Grafted with Maleic Anhydride and Its Application in Cement Admixtures

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Modification of methoxypolyoxyethylene (MPOE) with maleic anhydride (MA) has been prepared as grafted copolymer by the reaction of MPOE and MA. The unique structural feature of the prepared water-soluble copolymer has been confirmed by FTIR and ¹H NMR. The effects of water-soluble copolymer on the physico-mechanical properties of Ordinary Portland Cement (O.P.C) pastes were investigated. The results showed that the addition of aqueous solutions from the prepared copolymers to the cement improve most of the specific characteristics of (O.P.C). As the concentration of the water-soluble copolymer increases, the water-to-cement (W/C) as well as setting time decreases. The combined water content increases with addition of the copolymer to the mixing water. The compressive strength was sharply increased at nearly all hydration ages.