



ECOLOGICAL POLYMER USED FOR MACRO-DEFECT-FREE CEMENTS (MDF) PRODUCTION

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Abstract

Macro-Defect-Free (MDF) cements are polymer-cement composites characterized by high value of flexural strength. Due to their thermal and electrical insulating properties, MDF cements could replace other insulators obtained by environmental non-friendlier technologies or being themselves toxic and non-biodegradable. MDF cements obtained by the use of an ecologic polymer (poly(vinyl alcohol)) shows high mechanical resistance in the initial state but also it's dramatic decrease after their contact with water. In order to improve the water resistance of these materials, in this paper, the effect of some epoxy resins, having low level of toxicity, on the properties of the MDF cements produced by using PVA have been reported. Surface morphology and roughness have been monitored by AFM technique and surface hydrophily and MDF porosity have been determined by contact angle measurements. These properties were correlated with the flexural biaxial strength in initial dry state and after 7 and 28 days, respectively, of their immersion in water.

Key words: atomic force microscopy, contact angle, epoxy resins, MDF cements, poly(vinyl alcohol)

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