Advanced Materials Based of Polymer Used for Repairing in Civil Engineering

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Abstract. This research deals with polymer mortar, different polymer mortar formulations, with polyester matrix binders, were developed and optimized regarding three points flexural strength property. A polyester resin reinforced with a graded mixture of coarse and fine sands is used as a binder to design the polymer mortar. An empirical methodology (for the planning of the experiments and the analysis of results) were applied for that purpose. That the optimum polymer content that guarantees obtaining a polymer mortar with the highest mechanical performances and the lowest cost is about 35%. The physical and short-term mechanical properties of developed formulations were studied and thoroughly characterized by means of various physical and mechanical tests. Obtained results showed that the above techniques can be applied with success for polymer mortar materials for repair. Different types of fibers were used for repair (Glass fiber, carbon fiber, and Polyester resin). Repair by the polymer mortar proves to be better and more efficient than that by the all alone resin.

Keywords: Polymer, mortar, polyester, formulations, used for repair.