Effect of Fibers on the Flexural Strength of Masonry Mortars

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Abstract:

In an extensive experimental program carried out for the National Center for Preservation Technology and Training, the mechanical properties of 80 mortar mixtures were evaluated through a variety of experimental tests after 7 days of curing. This paper discusses the flexural strength of 22 of these mortar mixtures: two control mixtures and 20 fiber reinforced mortar mixtures. Experiments were conducted using two types of binders (Portland cement-lime, type N; and natural hydrated lime 5) and 5 types of fibers (4 synthetic versions and horse hair). Results indicate that the majority of the synthetic fiber mixtures enhanced the performance of the mortar when tested in flexure. The Nano-Nylon and horse hair fibers were the least effective in improving the ductility and the modulus of rupture. Along with the detailed discussions and derived conclusions, suggestions are provided on how to determine the most feasible mortar for different applications.

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