Fine sepiolite addition to air lime-metakaolin mortars

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Abstract:

Lime based mortars with admixtures of metakaolin (10, 20 and 30 wt.%) and fine sepiolite (5 wt.%) were prepared with the aim of being used as repair mortars in low humidity conditions. The mechanical properties and the dynamic modulus of elasticity were studied at 28, 90 and 180 days of curing. With increasing amount of metakaolin in lime mortars, improved mechanical strength was observed mainly at 90 days. Addition of fine sepiolite due to its adsorption properties for storing water for latter provision to the mortar system and its microfibrous morphology caused improvement of compressive and flexural strength of blended air lime/air lime-metakaolin mortars especially at later ages of curing. Incorporation of fine sepiolite to air lime-metakaolin mortars resulted in comprehensive densification of the core of mortars. Air lime mortar containing 5% of fine sepiolite and 20% of metakaolin appears to be an optimal admixture.

Keywords: lime, mortar, metakaolin, sepiolite, mechanical properties, elasticity modulus