

Long Term Strength Behavior of Hemp-Concrete

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Abstract : The paper reports test results on the long-term behavior of sustainable hemp-concrete material prepared in research work conducted at the American University of Beirut. The tests results are in terms of compressive and splitting tensile tests conducted on standard 150x300 mm cylinders. A control mix without fibers, one polypropylene-concrete mix, and ten hemp-concrete mixes were prepared with different percentages of industrial hemp fibers and reduced coarse aggregate contents. The objective was to investigate the strength properties of hemp-reinforced concrete at 1.5 years age as compared with control mixes. The results indicated that both the compressive strength and the splitting tensile strength results of all tested cylinders increased as compared with the 28-days values. Also, the difference between the hemp-concrete samples and the control samples at 28 days was maintained at 1.5 years age indicating that hemp fibers did not exhibit any negative effect on the long-term strength properties of concrete.

Keywords : hemp-reinforced concrete, natural fibers, compressive strength, splitting tensile strength

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