Cracking and load-deformation behavior of fiber reinforced concrete: Influence of testing method

The characterization of the tensile behavior of cementitious materials has been a long-standing research topic and a general consensus on how to accomplish this task has not yet been reached. Many standardized tests are available but each with different test set-up and prescriptions on the definition of measured and derived parameters, including toughness, elastic properties and strength. This paper discusses a number of test procedures for selected material properties including tension and flexure. A comparative experimental study was carried out using two distinct fiber reinforced cementitious composites with strain hardening and strain softening behavior. Digital Image Correlation was utilized in the experimental program to detect and quantify the formation of cracks. Results show that the different test methodologies valuate specific aspects of material performance. The outcome of these evaluation procedures is compared and critically analyzed.

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