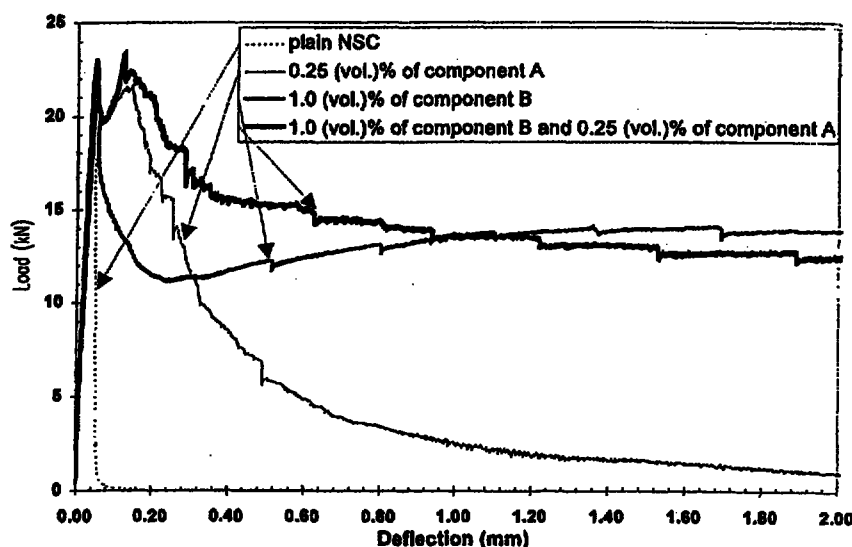




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(54) Title: FIBER REINFORCED CEMENTITIOUS MATERIALS WITH IMPROVED TOUGHNESS AND DUCTILITY



Load deflection curves for concrete with different fibers.

(57) Abstract

A hybrid fiber reinforcing system that enhances ductility of concrete at small and large crack openings, while avoiding the necessity of using steel fibers at high (e.g., 1 %) volumes, by taking into account Young's modulus, deploying large surface area to volume ratios for improved anchorage, and using different relative lengths.