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Role of Dispersion of Multiwalled Carbon Nanotubes on Compressive Strength of Cement Paste

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Abstract : The outstanding mechanical properties of Carbon Nanotubes (CNTs) have generated great interest for their potential as reinforcements in high performance cementitious composites. The main challenge in research is the proper dispersion of carbon nanotubes in the cement matrix. The present work discusses the role of dispersion of Multiwall Carbon Nanotubes (MWCNTs) on the compressive strength characteristics of hydrated Portland IS 1489 cement paste. Cement-MWCNT composites with different mixing techniques were prepared by adding 0.2% (by weight) of MWCNTs to Portland IS 1489 cement. Rectangle specimens of size approximately 40mm × 40mm ×160mm were prepared and curing of samples was done for 7, 14, 28, and 35 days. An appreciable increase in compressive strength with both techniques; mixture of MWCNTs with cement in powder form and mixture of MWCNTs with cement in hydrated form 7 to 28 days of curing time for all the samples was observed.

Keywords : carbon nanotubes, Portland cement, composite, compressive strength
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