

# **Application of Carbon Nanotube Reinforced Concrete Admixtures as a Futuristic Construction Material: A Review**

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Carbon Nanotubes (CNT) are one of the futuristic materials which was discovered by Iijima. Graphene sheets are rolled in a shape of continuous cylinders to develop CNT structure. It is classified according to the structure as single-walled and multi-walled CNT. Concrete is an admixture of cement, water, air and solid aggregates. In constructions, steel rods are used to reinforce the concrete composite since Ordinary Portland Cement (OPC) concrete has relatively weak tensile strength. This is a comprehensive review of previous researches which carried out in respective field. The major objective of utilizing CNT as a substitute for steel is to increase mechanical and other related properties of the concrete. The methodologies of all selected studies were included dispersion of a powder which consists of CNT by physical and chemical procedure and mixed it with the concrete admixture according to predetermined ratios. Literature suggest that cement, water and air ratios could occupy 25% to 40% of the mixture while sand and gravel consist the rest of 75% to 60% by weight. In laboratory scale, composite was cured under given temperatures and controlled moisture conditions. Since concrete takes 28 days to gain long term strength, tests were carried out after 4 weeks. Standard tests for mechanical strength, thermal resistance, chloride penetration resistance and water absorption were carried out. When CNT concrete composites were compared with the OPC concrete composites, the compressive strength, flexure and tensile strengths of the CNT concrete composites were observed to be increased up to 25%. Fire resistivity also shows an increment when compared with the references. Adding more CNT enhances the mechanical properties of concrete composites. Since using CNT for construction purposes are in preliminary stages, further researches should be done to find better dispersion techniques and material modifications.

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