

Mechanical Properties and Durability Analysis of Coir Fibre Reinforced Composites – State of Art Report

Raj Govind Chandrasekaran¹, G Ramakrishna²

¹Research Scholar, Department of Civil Engineering, Pondicherry Technological University,
Puducherry, Puducherry-13.

²Professor, Department of Civil Engineering, Pondicherry Technological University, Puducherry,
Puducherry-13.
rajgovind146@gmail.com

ABSTRACT

In the present era of concrete innovations, natural fibers hold an important role owing to their abundance in tropical countries like India, along with their eco-friendly nature. They out-shadow the synthetic or steels fiber with its cost-effectiveness, environmental friendliness, un-hazardous production, nil heat generation to medium, and many property-oriented benefits. Amongst natural fibers, coir fibers dominate the local availability and have better mechanical and durability properties. In this paper, the comparative analysis of mechanical properties and durability of coir fiber reinforced cement composite (CFRCC), along with the general failure of natural fiber and countermeasures are reported. CFRCC with high compressive, tensile, and bond strengths and also least water absorption of cement medium at saturation made to take over the rest of local coastal natural fiber reinforced concrete. CFRCC was found to possess a predominant strength under impact loadings due to the hard nature and appreciable setup of constituent materials in the coir fiber. Here, an overview of the mechanism behind attaining corresponding strength studied on the elementary level. Further, the predominant terminologies and models of mechanical behavior for understanding material performance without mathematical details are discussed. In addition, the general failure mechanism of natural fiber with specific improvement based on coir fiber was dealt with in the work. References from the authors of various time scales included as a means of comparing durability enhancement methods are discussed in this work. CFRCC held the appreciable improvement of the properties amongst the other modified natural fiber reinforced cement composite, including the durability aspects.

Keywords: *Coir fiber reinforced cement composite (CFRCC), Mechanical properties, Durability and its enhancement, Failure mechanism.*