

Hybridization of Steel and Polypropylene Fibers in Concrete: A Comprehensive Study with Various Mix Ratios

Authors : Qaiser uz Zaman Khan

Abstract : This research article provides a comprehensive study of combining steel fiber and polypropylene fibers in concrete at different mix ratios. This blending of various fibers has led to the development of hybrid fiber-reinforced concrete (HFRC), which offers notable improvements in mechanical properties and increased resistance to cracking. Steel fibers are known for their high tensile strength and excellent crack control abilities, while polypropylene fibers offer increased toughness and impact resistance. The synergistic use of these two fiber types in concrete has yielded promising outcomes, effectively enhancing its overall performance. This article explores the key aspects of hybridization, including fiber types, proportions, mixing methods, and the resulting properties of the concrete. Additionally, challenges, potential applications, and future research directions in the field are discussed.

Keywords : FRC, fiber-reinforced concrete, split tensile testing, HFRC, mechanical properties, steel fibers, reinforced concrete, polypropylene fibers

Conference Title : ICBMCCS 2024 : International Conference on Building Materials, Construction and Composite Structures

Conference Location : Houston, United States

Conference Dates : October 24-25, 2024