Investigating the Mechanical Behaviour of Steel Fibres Reinforced Concrete

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Abstract:

This study investigates the effect of steel fibre incorporation on the mechanical properties of concrete, focusing on its impact on compressive and flexural strength. The research aims to develop an optimal mix design for steel fibre reinforced concrete (SFRC) and evaluate its performance compared to traditional concrete. Concrete samples were prepared with steel fibre contents of 0%, 2.5%, 5%, and 10%, and subjected to slump tests, compressive strength tests, and flexural strength tests at curing ages of 7 and 28 days. Preliminary results indicate that the inclusion of steel fibres affects workability and enhances the mechanical properties of concrete, with notable variations in strength observed across the different percentages of fibre content. However, the full behaviour of the SFRC, including results at a 56-day curing age, is yet to be assessed. Based on current trends, the study identifies promising applications for SFRC in construction and offers initial recommendations for its use in improving structural integrity and durability. The findings highlight the potential of SFRC as a viable material for enhancing the mechanical performance of concrete in construction projects.

Keywords:

Steel Fibre Reinforced Concrete (SFRC), Flexural Strength, Compressive Strength.