

Investigation on the mechanical properties of rubberized steel fiber concrete

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Researchers investigated the utilization of crumb rubber aggregate recycled from waste tire in concrete to solve the problem of discarded tire and to produce a green sustainable concrete. However, a reduction in the mechanical properties due to crumb rubber inclusion occurs. Steel fiber rubberized concrete used in this study to provide a balance between the strength loss and sustainable issue. An investigation on the mechanical properties of rubberized concrete combined with hooked – end steel fiber is presented. Rubberized concrete with different replacement ratios of crumb rubber was incorporated in plain and steel fiber concrete mixes via partial replacement of fine aggregate. Four replacement ratios (17.5%, 20%, 22.5%, and 25%) were used to investigate the effect of the partial replacement of fine aggregate by crumb rubber on the mechanical properties of plain and steel fiber concrete. In both mixes, reduction in mechanical properties was observed to be proportionate with the increment of crumb rubber. Finally, a successful combination of steel fiber and crumb rubber was obtained due to improvement of strain capacity under flexural loading.