Structural performance of fibrous ferrocement slabs

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Abstract The main objective of this investigation was to study the effect of incorporating discontinuous steel and aluminum fibers in a thin mortar matrix of ferrocement one-way slabs. The following parameters were investigated; first, percentages of fiber content as volumetric ratios 0.25, 0.5, and 0.75. Second, the type of fibers (steel fibers and aluminum fibers made from waste metallic cans). Using aluminum fibers in ferrocement composite led to a decrease in compressive strength linearly. While the addition of steel fibers led to an increase in compressive strength compared to reference one. Ferrocement with 0.75% steel fiber showed the highest increase in ductility and toughness compared to the reference slab. While 0.25% aluminum fiber showed the highest increase in ductility and toughness compared to the reference slab. Stiffness was found to be decreased for slabs incorporating fibers regardless of their type due to the increased number of cracks before failure and the increase in ductility of slabs.