

Mechanical Properties of Fiber Concrete Containing Acrylic Polymer

Abdulkader Ismail Al-Hadithi, Ghassan S. Jameel Al-Kubaysi

This research includes the study of improving mechanical properties of concrete using steel fibers with different volume ratios (0.5%, 1% and 1.5%). According to the best results obtained from mechanical properties tests, the steel fiber concrete mix with ($V_f=1\%$) were selected to study the effects of adding Acrylic polymer on the mechanical properties, with different weight ratios of polymer to cement (3%, 7% and 10%).

The results showed an improvement in all properties of steel fiber concrete with and without polymer as compared with reference concrete. In compressive strength, the increase was (14.2% -29.2%) for steel fiber concrete, while the increase was (44.8% - 86.64%) for steel fiber concrete containing polymer. In splitting tensile strength, the increase was (50% - 91%) for steel fiber concrete, while the increase was (102.4% - 124.7%) for steel fiber concrete containing polymer. For flexural strength, the increase was (24.2% - 48.3%) for steel fiber concrete, while the increase was (62% - 78%) for steel fiber concrete containing polymer.