

## THE ELECTROCHEMICAL BEHAVIOR OF STEEL FIBERS AND ITS EFFECT ON THE PERMEABILITY OF CONCRETE

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### ABSTRACT

The effect of steel fibers obtained from tyres on the permeability of concrete which governs the flow rate of the fluid into a porous solid was studied. It is found that it decreases with the addition of steel fibers. The fire steel fibers, withdraw steel fibers, phosphatized, galvanized and the effect of diameter of the fire steel fibers after treatment with HCl were tested in NaCl solution by using potentiodynamic polarization and potentiodynamic cyclic anodic polarization techniques. SEM and EDAX analysis are used to detect the morphology and identification of the elements on samples surface. The results indicated that the treated fibers possess more corrosion resistance than untreated steel fibers. The corrosion resistance increases with increasing the diameter of the steel fibers. The corrosion resistance using withdraw steel fibers is better than using fire steel fibers.

**KEYWORDS:** Permeability, Corrosion; Steel Fibers; Chemical Treatment, Zinc Phosphate Corrosion and Galvanized Process.