

Electrochemical Behaviour of Galvanized Steel Embedded in Concrete Exposed to Sand Contaminated with NaCl

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This research evaluates the corrosion of reinforced concrete, exposed to marine sand, simulating what happens with the elements of laying of foundations of all concrete structures constructed on coasts of Mexico and the world. In such concrete specimens a steel bar AISI 1018 and Galvanized Steel was embedded as reinforcement, the mixed concrete was of ratio $w/c=0.45$ ($f'c = 350 \text{ kg / cm}^2$), according to ACI 211.1, using two type cements CPC 30R and CPC 30R RS. The corrosion rate was evaluated by electrochemical techniques, corrosion potential E_{corr} (ASTM C-876-09) and Linear Polarization Resistance (ASTM-G59). These specimens were exposed in a marine sand contaminated with 0, 1, 2 and 3% NaCl, the exposure time was 260 days where, according to the electrochemical results of E_{corr} and I_{corr} , we could determine that the better performance of the specimens was galvanized steel and concrete made with cement CPC 30R RS, this research demonstrated the importance of developing special to elaborated concrete durability in aggressive environment such as is the ground where uproots all reinforced concrete structures.

Keywords: Foundations, Soil, Reinforced Concrete, Corrosion, Chlorides.

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