ELECTROCHEMICAL ASSESSMENT OF STEEL-CONCRETE REINFORCED SYSTEM MODIFIED WITH NATURAL FIBERS FOR ITS ANTICORROSION PROTECTION

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The deterioration in the steel-concrete structures is mainly due to chloride contamination, which causes corrosion problems that occasionally leads its partial or total destruction. In this work we propose adding fibers bagasse of sugar cane to the steel-concrete reinforced system, with the objective of provide the corrosion protection. Meanwhile, the sugar cane bagasse is the residue fibrous lingo-cellulosic remaining after grinding stalks the sugar cane at the mill to extract the juice. In the modification of the steel-concrete reinforced system we proceeded to add the pith fraction (parenchymatous cell of bagasse of sugar cane) to take advantage their hygroscopic properties through its high absorption and adsorption mechanism to decrease the concrete resistivity the fiber is added in quantities of 5%, 10% and 15% by volume with respect to the concrete mix, and a particle size of 2.0mm in diameter at the mixing stage. By electrochemical techniques (Open Circuit Potential, Polarization Resistance, Tafel Extrapolation and Electrochemical Impedance Spectroscopy) determined the corrosion rate of embedded steel in concrete and behavior of system. Preliminary results show that in the characterization of the mixture for high strength the concrete, there is a water/cement ratio of 0.45, its compressive strength is 30.2 Mpa and slump is 14 cm, what indicating that the manufactured concrete has suitable mechanical properties for a hydraulic concrete. The behavior of whites exposed in sea water have higher corrosion rate in compared with those exposed to saturated sand with sea water, and atmosphere, this agrees with the results of electrochemical techniques of direct current and alternating current.