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SURFACE CONDITIONS EFFECT ON THE CORROSION BEHAVIOUR OF STEEL REBAR IN SIMULATED CONCRETE PORE SOLUTION

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Abstract : In order to study a surface conditions effect on the corrosion behaviour of steel rebar, electrochemical tests were carried out in simulated concrete pore solution using samples with two different surfaces: polished and corroded (as received). The obtained results show that the oxide layer has a negative effect on the corrosion behaviour of reinforcement steel. This effect can be explained by the fact that the oxides provoke a decrease of the electrolyte resistance at the metal/concrete interface and reduce the re-passivating ability. In addition, the oxide layer acts as a physical barrier against the diffusion of hydroxyl ions, which prevents the realkalinization phenomenon.

Keywords : corrosion, concrete, steel, chloride, rust.