

Effectiveness of Crystallization Coating Materials on Chloride Ions Ingress in Concrete

Authors : Mona Elsalamawy, Ashraf Ragab Mohamed, Abdellatif Elsayed Abosen

Abstract : This paper aims to evaluate the effectiveness of different crystalline coating materials concerning of chloride ions penetration. The concrete ages at the coating installation and its moisture conditions were addressed; where, these two factors may play a dominant role for the effectiveness of the used materials. Rapid chloride ions penetration test (RCPT) was conducted at different ages and moisture conditions according to the relevant standard. In addition, the contaminated area and the penetration depth of the chloride ions were investigated immediately after the RCPT test using chemical identifier, 0.1 M silver nitrate AgNO_3 solution. Results have shown that, the very low chloride ions penetrability, for the studied crystallization materials, were investigated only with the old age concrete (G1). The significant reduction in chloride ions' penetrability was illustrated after 7 days of installing the crystalline coating layers. Using imageJ is more reliable to describe the contaminated area of chloride ions, where the distribution of aggregate and heterogeneous of cement mortar was considered in the images analysis.

Keywords : chloride permeability, contaminated area, crystalline waterproofing materials, RCPT, XRD

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