Effect of Air Humidity on the Diffusion Rate of Migrating Corrosion Inhibitor in Mortars

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The diffusion rate of a migrating corrosion inhibitor in mortars under dry air and humid air conditions was studied by electrochemical impedance spectroscopy. The results suggest that the impedance values of mortars increased with the concentration of the inhibitor. On the other hand, the impedances of the mortars maintained in the dry air are significant higher than the ones in the humid air condition. The fitting results show that the resistances of the concrete cover layer were obviously enhanced by the brushed corrosion inhibitor on the mortar surface. Meanwhile, the diffusion rates of the inhibitor in mortars also were accelerated by the high humidity of air.

Keywords: migrating corrosion inhibitor, electrochemical impedance spectroscopy, Warburg impedance, diffusion.

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