

Spatial variability of concrete resistivity as a function of vibration and time

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RESUME Spatial variability of concrete resistivity is a key element for optimal design of embedded resistivity sensors, which allow to catch chloride ions propagation in concrete structures. Its temporal evolution and its dependence on the vibration protocol remains however unknown. In this paper, we address these questions by assessing time-evolution of spatial variability of apparent resistivity of 10 concrete beams realized with two different vibration protocols (needle and table) and placed in a climatic chamber. We find that each beam exhibits (i) a time-independent resistivity spatial signature, and (ii) a periodicity of correlation in space, roughly corresponding to the lag of vibration protocol for both. This suggests time-invariance of resistivity's spatial variability of sound concrete and its strong dependence to vibration protocol..

Mots-clefs variabilité spatiale, résistivité apparente, béton, protocole de vibration, données

Key-words spatial variability, apparent resistivity, concrete, vibration protocol, data