

Correlations between the Rheological Behavior and Initial Hydration with Different Cement Types and Admixtures

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In this paper, the influences of cement types and the chemical admixtures on the initial rheological behavior and structure development during cement hydration were studied by means of the rheological characterisation and the resistivity variation under alternating electric-field. The correlation between the rheological behavior and the initial hydration was analyzed by microstructure and micro-mechanical properties studies. The results show that the storage modulus, acted as S , can be used to describe subtle differences accompanying with hydration of fresh paste model at very early stage. At the induction period, an abrupt change of resistivity was observed indicating the change of microstructure. The rheological behavior was correlated to the microstructure development and the micro-mechanical properties.

Key words: rheological behaviour, structure development; initial hydration of cement