^{1}H NMR Cryoporometry Study of the Melting Behavior of Water in White Cement

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The pore size of white cement samples is studied by the melting behaviour of water confined in it, using ^{1}H NMR cryopormetry. The influence of the preparing method and antifreeze admixture on the pore size and distribution in cement samples is investigated at 283 K. The addition of an antifreeze admixture [containing 1% Sika Rapid 2 by weight of the dry cement] influences the porosity. In wet prepared samples we observed a significant increase in the quantity of mesopores between 0.8 and 5 nm and a smaller increase of mesopores between 5 and 10 nm, when compared to cement without admixture. The compressive strength is related to the porosity of the cement. Therefore the cement with Sika Rapid 2, wet prepared at 278 K shows a higher strength than all other measured samples.

Key words: Cement; Sika Rapid 2; NMR; Melting; Porosity.