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Characteristics of Surface-treatment of Nano-SiO<sub>2</sub> on the Transport Properties of Hardened Cement Pastes with Different Water-to-Cement Ratios

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**Characteristics of Surface-treatment of Nano-SiO<sub>2</sub> on the Transport Properties  
of Hardened Cement Pastes with Different Water-to-Cement Ratios**

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Abstract: A reduced transport property of the superficial part of concrete structures is beneficial for enhancing their durability, due to the blocking of the migration of aggressive agents. In this study, influences of colloidal nano-SiO<sub>2</sub> (CNS) with a mean particle size of 20 nm and its precursor, tetraethoxysilane (TEOS), on the transport properties of hardened cement pastes with water-to-cement ratios of 0.26, 0.38, 0.60 and 1.0 by mass were investigated by measuring the water absorption ratio and water vapor transmission coefficient, after the samples were first soaked in treatment agents

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