B-1-4 The investigation of factors affecting the water impermeability of inorganic sodium silicate-based concrete sealers

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ABSTRACT

The composition and preparation process for an inorganic sodium silicate-based concrete sealer are introduced in the current paper. The factors affecting water impermeability of the concrete sealer are systematically explored. In addition to the concentration of sodium silicates and the viscosity of the concrete sealer, the surface tension and gelation time of the concrete sealer also affect the waterproofing efficacy of the concrete sealer. Some super-active fluorocarbon surfactants are very effective in reducing the surface tension of the concrete sealer to an ideally low value. The gelation time of the sodium silicate-based concrete sealer surprisingly increases as the concentration of the active ingredient increases but decreases as the concentration of the catalyst increases. Additionally, the gelation time decreases as the testing temperature increases. The good waterproofing properties of the developed sodium silicate-based concrete sealer result from its low surface tension and appropriate density, viscosity and gelation time.

KEY-WORDS: Concrete sealer, sodium silicate, waterproofing properties, gelation time, surface tension