Establishing the Method for Investigating the Impact of Healing Agent to Concrete Ratio on Water Permeability of Concrete

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This study was done to establish appropriate methods for creating microcracks in concrete. Establishing these methods allow for further investigation on the factors that effect self-healing ability in concrete. While studies have determined the effect of various additives on self-healing ability, the effect of the amount of a sodium silicate additive on self-healing ability has not been tested. As sodium silicate has been shown to enhance self-healing ability, increased quantities may further the longevity and safety of concrete structures. To conduct this study, concrete samples were mixed and molded in a uniform fashion, then were divided into groups that received different load masses. The samples were exposed to water, and the depth of water permeation was measured. A significant difference occurred between the groups of samples and between each load group and the control group. The null hypothesis that no difference would occur between the depth of water permeation of each load group and the control group was rejected. The alternate hypothesis that depth of water permeation for load groups would be greater than for the control group was supported by the data. It was concluded that a load of 85% of the failure mass was effective in creating microcracks in concrete, thus allowing the methods tested in this study to be adopted for extended research. Key words: microcracks, self-healing, concrete, water permeation

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