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The effect of self-healing additive on the durability of cracked concrete

Mahan Mohammadzadeh¹⁾, Mehdi Nezhadnaderi^{2*)}, Mehdi Ebadi³⁾ and Arash Totonchi⁴⁾

¹⁾ Department of Civil Engineering, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran.

^{2)} Department of Civil Engineering, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran.*

³⁾ Department of Civil Engineering, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran.

⁴⁾ Department of Civil Engineering, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran.

ABSTRACT

Self-healing techniques are presented in three different ways: The first application is the use of bacteria to calcite in concrete cracks. In this way, relatively large cracks can be filled in reinforced concrete. This method does not improve the strength of the structure, but by filling the crack, the reinforcement path is blocked. This stops the entry of liquids and ions that start to corrode the reinforcement and thus increase the compressive strength but decrease electrical resistivity of the structure. With this method, cracks can be filled and leakage can be prevented. In designs that use a self-healing additive such as Mix designation 7, the time interval obtained from the accelerated corrosion test between the cracked and intact specimens is reduced.

Compressive strength in cracked and intact specimens in these designs is higher than other designs. The use of more superplasticizers and more Silica fume are effective in these amounts. Its low electrical resistance can lead to increased corrosion intensity thus more superplasticizers in Plan 7 is not preferable to Plan 4. Low electrical resistance can lead to increased corrosion intensity thus Plan 4 is preferable to Plan 7.

Keywords: *Nanotechnology, Compressive strength, Self healing, Silica fume.*

¹⁾ PhD Student

^{2,3 and 4)} Assistant Professor