

A Parametric Study on Effects of Internal Factors on Carbonation of Reinforced Concrete

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Abstract : The carbonation of concrete is a phenomenon which is a function of various interdependent parameters. Therefore, in spite of numerous literature and database, the useful generalization is not an easy task. These interdependent parameters can be grouped under the category of internal and external factors. This paper focuses on the internal parameters which govern and increase the probability of the ingress of deleterious substances into concrete. The mechanism of effects of internal parameters such as microstructure for with and without supplementary cementing materials (SCM), water/binder ratio, the age of concrete etc. has been discussed. This is followed by the comparison of various proposed mathematical models for the deterioration of concrete. Based on existing laboratory experiments as well as field results, this paper concludes the present understanding of mechanism, modeling and future research needs in this field.

Keywords : carbonation, diffusion coefficient, microstructure of concrete, reinforced concrete

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