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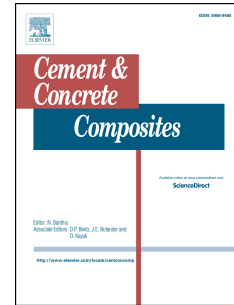
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# Prediction Model of Carbonation Depth for Recycled Aggregate Concrete

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## Abstract

The prediction of carbonation depth for recycled aggregate concrete (RAC) is investigated in this paper. The existing prediction models were evaluated, and it showed that the coefficient of variation (COV) of model error for the existing models is high. By introducing the weighed water absorption of aggregates, the COV of model error can be effectively decreased. Compared with the existing models, the proposed model can predict more accurate carbonation depths. For RAC specimens, compared with the *fib* model and Xiao and Lei's model-a, the COV of model error of the proposed model is 0.36 which is decreased by 33.3%, and when compared with Xiao and Lei's model-b and Silver et al.'s model, the corresponding decreases are 55.2% and 16.2%. Finally, the proposed model is validated by a 10-year-old carbonation experiment, which indicates that the proposed model is reasonable and can be applied to predict the carbonation depth of RAC.

**Keywords:** recycled aggregate concrete (RAC); carbonation depth; prediction model; water absorption; coefficient of variation (COV)

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