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SR145 Durability of reinforced concrete structures under marine exposure in New Zealand (2005)

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Abbreviation

SR145

Valid from

01/01/2005

Information provider

BRANZ Limited

Author

N. P. Lee and D. H. Chisholm

Information type

Study report

Format

PDF

Description

A series of concrete blocks, made from cement blended with slag, silica fume or natural silica pozzolan SCMs, were placed on exposure sites corresponding to the C, B2 and B1 exposure classification categories in NZS 3101 Concrete structures.

At periodic intervals over 5 years, the chloride ingress profile for each combination of cement type and exposure severity was measured. This data was used to calculate notional surface chloride concentrations and effective diffusion coefficients sufficient to capture the performance of each concrete as input parameters for Fick's law-derived service-life prediction models.

Statistically significant time-dependent reductions in chloride resistance were recorded for some of the blended cements. Current implementations of service-life prediction models were also critically evaluated, and the use of early-age laboratory tests for characterising durability performance was investigated.

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