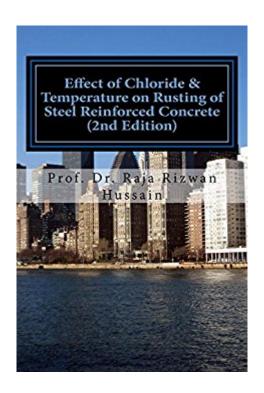
The book was found

Effect Of Chloride & Temperature On Rusting Of Steel Reinforced Concrete 2nd Ed





Synopsis

Corrosion of steel reinforcement in concrete structures is a major durability problem around the world. Reinforced Concrete (RC) structures exposed to chloride and high temperature environments like sea, deicing salts, deserts and industrial zones suffer from accelerated corrosion of rebars. There is no doubt that the presence of chloride ions promote the disruption of the passive layer causing corrosion of reinforcement and the chloride attack becomes much more severe when coupled with high temperature. Therefore, to be able to forecast the service life of RC structures it is necessary to quantify the amount of corrosion. The chloride attack and increase in the electrochemical reaction rate of corrosion due to high temperature is an electrochemical thermodynamic phenomenon influenced by several factors and some of them are being overlooked in the past research works and have difference in opinion. Also it was found that the experimental data for the coupled effect of chloride and temperature on corrosion of reinforcement especially in the high temperature range and high chloride concentration is limited. The objective of this book is therefore, to investigate the effects of coupling chloride and temperature on corrosion of reinforcement throughout the life of concrete structures by incorporating realistic electrochemical-thermodynamic models and actual field condition experimentation. The modeling task has been accomplished by the use of a concrete durability model developed by our research group (Concrete Laboratory, University of Tokyo) as a computational platform on which the corrosion based reinforced concrete performance and quality throughout the life of concrete structure is examined in both space and time domains under environmental actions of chloride and high temperature. In this thermodynamic approach, reinforced concrete is treated as a composite material consisting of growing micro-scale pores in geometry, which governs basic mechanical and physical features of concrete with respect to long-term durability. On this line, the electrochemical-thermodynamic modeling of concrete forms the fundamental core of the theoretical approach to achieve both the scientific knowledge and engineering simulations of altering materials. The experimental results for the effect of chloride and temperature on corrosion have been compared with the thermodynamic corrosion model and are found to be in close agreement. In the light of experimental results, the behavior of RC corrosion is found to increase non-linearly with the increase in chloride content and temperature. The half-cell potential values are found to randomly increase and decrease in a non-uniform manner due to the destruction and reformation of passive layer by localized attack of chloride on the passive layer and increased rate of reaction at high temperature as a function of time. The rate of corrosion from 20Â C to 40Â C temperature is found to be more than from 40Å C to 60Å C temperature range because of the decrease of solubility of

oxygen in the pore water at high temperature range. Finally, the specimens were broken and gravimetric corrosion weight loss was determined experimentally and modeled analytically.

Book Information

File Size: 1417 KB

Print Length: 105 pages

Publication Date: April 21, 2016

Sold by: A Digital Services LLC

Language: English

ASIN: B01ENGIVQQ

Text-to-Speech: Enabled

X-Ray: Not Enabled

Word Wise: Not Enabled

Lending: Not Enabled

Enhanced Typesetting: Not Enabled

Best Sellers Rank: #437,864 Paid in Kindle Store (See Top 100 Paid in Kindle Store) #69 in Books > Engineering & Transportation > Engineering > Materials & Material Science > Concrete #133 in Kindle Store > Kindle eBooks > Crafts, Hobbies & Home > Home Design > Buildings & Construction #208 in Kindle Store > Kindle eBooks > Engineering & Transportation > Engineering > Civil > Construction

Download to continue reading...

Effect of Chloride & Temperature on Rusting of Steel Reinforced Concrete 2nd Ed Seismic Design Aids for Nonlinear Pushover Analysis of Reinforced Concrete and Steel Bridges (Advances in Earthquake Engineering) The Men of Steel Anthology: The Men of Steel (special edition 2015 includes new release Raising Steel: Momma Joe's story) Design of Reinforced Concrete, 10th Edition Reinforced Concrete Design Seismic Design of Reinforced Concrete and Masonry Buildings Seismic Design of Reinforced and Precast Concrete Buildings Reinforced Concrete: Mechanics and Design (6th Edition) Seismic Design of Reinforced Concrete Buildings Reinforced Concrete: Mechanics and Design (4th Edition) (Civil Engineering and Engineering Mechanics) Reinforced Concrete: Mechanics and Design Reinforced Concrete Design (8th Edition) Reinforced Concrete Design (7th Edition) Reinforced Concrete Structures: Analysis and Design, Second Edition Trivia: The Rosie Effect: A Novel By Graeme Simsion (Trivia-On-Books) (The Rosie Project & The Rosie Effect Bundle Book 2) Hardening, Tempering, Annealing and Forging of Steel: A Treatise on the

Practical, Treatment and Working of High and Low Grade Steel (Classic Reprint) Tall Building Design: Steel, Concrete, and Composite Systems Design of Steel-Concrete Composite Bridges to Eurocodes Principles of Structural Design: Wood, Steel, and Concrete, Second Edition Nonlinear Analysis of Concrete-Filled Steel Tubular Columns

<u>Dmca</u>