

Effect Of Waterproofing Coatings On Steel Reinforcement Corrosion And Physical Properties Of Concrete

**Al-Zahrani, MM; Al-Dulaijan, SU; Ibrahim, M; Saricimen, H; Sharif, FM
ELSEVIER SCI LTD, CEMENT CONCRETE COMPOSITES; pp: 127-137; Vol: 24**

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

This paper reports the results of a study conducted to evaluate steel reinforcement corrosion and some physical properties of concrete specimens coated with two polymer-based, a cement-based polymer-modified, and a cement-based waterproofing coatings. The coated and uncoated concrete specimens were subjected to accelerated corrosion to determine the time-to-corrosion initiation. The physical properties were also evaluated by subjecting the concrete specimens to wetting/drying cycles and heating/cooling cycles for five months. The physical properties evaluated were water absorption, water permeability, chloride permeability, and adhesion. The accelerated corrosion test results clearly showed that the specimens coated with the polyurethane elastomer-based waterproofing material performed better than concrete specimens coated with other waterproofing materials. This was followed by the specimens coated with cement-based polymer modified, epoxy-based, and cement-based coatings in descending order. The two polymer-based coatings showed better performance than the cement-based polymer-modified and cement-based coatings in terms of the evaluated physical properties. (C) 2002 Elsevier Science Ltd. All rights reserved.

References:

1. *AM SOC TEST MAT, 1991, C120291 ASTM
2. *AM SOC TEST MAT, 1992, C64292 ASTM
3. *AM SOC TEST MAT, 1992, D4541692 ASTM
4. *DIN, 1990, 1048 DIN

5. ALDULAIJAN SU, 2000, P 4 ACI INT C SEOUL, P321
6. ALDULAIJAN SU, 2000, P 6 ACI INT C BAHR N, P345
7. CABRERE JG, 1994, CORROSION CORROSION, P1028
8. IBRAHIM M, 1996, THESIS KING FAHD U P, P149
9. IOB A, 1993, CEMENT CONCRETE RES, V23, P1085
10. MCCURRICH LH, 1985, P 1 INT C BAHR OCT, P151
11. PFEIFFER DW, 1981, 244 NCHRP
12. SARICIMEN H, 1996, CONSTR BUILD MATER, V10, P507
13. SARICIMEN H, 1997, 385 CORR NEW ORL LOU
14. SARICIMEN H, 1998, CONCRETE STRUCTURES
15. SARICIMEN H, 1999, P INT C DUND SCOTL S, P103
16. SHAW JDN, 1985, P 1 INT C BAHR OCT, P127
17. SWAMY RN, 1998, ACI MATER J, V95, P101
18. UMOTO T, 1994, ACI SP, V145, P445
19. VASSIE PR, 1991, PROTECTION CONCRETE, P281

For pre-prints please write to: abstracts@kfupm.edu.sa