

**Sulfate Attack and Reinforcement Corrosion in Plain and Blended Cements
Exposed to Sulfate Environments**

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Abstract: The extensive use and addition of mineral admixtures and the recent modifications in the physicochemical characteristics of portland cements have introduced a large number of variables that need to be addressed. Furthermore, the effect of cations associated with sulfate ions on these variables is inconclusive and extensively debated in the literature. On the other hand, the exposure of many reinforced concrete structures to sulfate-bearing environments has brought attention to the role of sulfate ions in the corrosion of reinforcing steel. Unfortunately, there is very little data on this aspect. The following subjects are addressed: (i) the effect of sulfate cation type on strength and expansion; (ii) the role of sulfate ions in reinforcement corrosion; (iii) the role of plain and blended cements in both sulfate attack and reinforcement corrosion; and (iv) a comparison of the performance of concrete made with the above-cited cements with that of small (25 mm cube) cube mortar specimens. 1997 ©¹ Published by Elsevier Science Ltd.