

Sulfate resistance of plain and blended cements exposed to magnesium sulfate solutions

Al-Dulaijan, S.U.

Construction and Building Materials

Vol. 21, Issue.8, 2007

Abstract: This study was conducted to evaluate the performance of plain and blended cements exposed to magnesium sulfate solutions with varying sulfate concentrations for up to 24 months. Four types of cements, namely Type I, Type V, Type I plus silica fume, and Type I plus fly ash, were exposed to five magnesium sulfate solutions with sulfate concentration of 1%, 1.5%, 2.0%, 2.5%, and 4.0%. The sulfate-resistance was evaluated by visual examination, and measuring reduction in compressive strength. Maximum deterioration, due to sulfate attack, was noted in Type I cement. The performance of Type V, Type I plus silica fume and Type I plus fly ash cements was not significantly different from each other. The enhanced sulfate-resistance noted in the Type I cement blended with either silica fume or fly ash indicates the usefulness of these cements both in sulfate and sulfate plus chloride environments.