SULFATE AND SEA WATER RESISTANCE
OF JORDANIAN CEMENTS AND POZZOLAN

BY

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ABSTRACT

Sulfate and Sea Water Resistance of Jordanian Cements and Pozzolan
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The relative sulfate resistance of cements available in Jordan are evaluated by using different test methods. The cements included two ordinary portland cements produced by different factories, a sulfate-resisting portland, a white cement and a pozzolanic portland with 15% natural pozzolan addition.

The effects of the natural pozzolan, when added as a separate admixture, on the sulfate resistance of some of these cements are also investigated.

The test methods involved storing cubic, briquette and prismatic mortar specimens in Dead Sea and Red Sea waters, in sodium and magnesium sulfate solutions and studying their deterioration through visual observations, ultrasonic pulse velocity measurements and relative strength determination.

The visual deterioration and combined durability indices concepts used to evaluate sulfate and sea water resistances of cements were found to be very useful. ASTM C452 and C1012 test methods were also applied.
According to the results, the sulfate-resisting cement has good sulfate resistance. However, this cement is not satisfactory in Dead Sea and only comparable to pozzolanic portland in Red Sea water.

The second best performing cement is the pozzolanic cement. It behaves better than sulfate-resisting cement in the Dead Sea water. Natural pozzolan used by Jordan Cement Factories Company can improve the sulfate-resistances of cements when added and mixed separately up to 15-35%.

More research with Dead Sea water and further investigations on the magnesium sulfate resistance of pozzolanic cements are recommended.