

Comparative Study of Natural Zeolite and Fly ash to Prevent Alkali-Silica Reaction

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Synopsis: Alkali-silica reaction known as ASR is series of complex reactions between alkali hydroxides in pore solution and active forms of silica. The product is alkali-silica gel that absorbs water and swells and causes cracks within the fabric of concrete.

Using pozzolans as preventative method is very useful to protect against ASR. Zeolite, a new mineral admixture seems to be very efficient in controlling this reaction. In this paper, the effect of replacing portland cement with zeolite coming from Semnan, Iran, and fly ash has been investigated. Results show that zeolite and fly ash can reduce the potential of ASR. By taking economic considerations into account, using zeolite seems is an efficient alternative to be used in concrete for controlling ASR in Iran.

Keywords: Alkali-Silica Reaction, ASR, Fly ash, Pozzolan, Zeolite

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