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Discussion

A reply to the discussion by E. Irassar of the paper "Characteristics of pastes from a Portland cement containing different amounts of natural pozzolan"☆

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Irassar uses the Bogue formulas as a means of calculating the C_3A content. The data obtained from this analysis are rather crude and should not be used in making a decision as to whether the degradation in natural pozzolan blended Portland cement pastes results from the salt crystallization or ettringite formation. This estimate is generally based on the chemical tests. There is insufficient data in the discussion by Irassar to permit sound conclusions. In addition, the test presented by Irassar as an evidence represents the field conditions and is different from that used by Çolak in terms of soaking and drying conditions. Therefore, an attempt was made to highlight the major parameters which is deemed responsible for the strength reduction. In the sulfate test consisting of wetting and drying cycles, there is no doubt as to the likelihood of several sulfate minerals, such as mirabalite and gypsum, to crystallize in the pores of hardened paste. However, the magnitude of the detrimental effect of this test on strength is noteworthy and brings to mind the ettringite formation. Salt crystallization thus appears to be an aggravating adjunct rather than the primary cause of strength reduction in the natural pozzolan blended Portland cement pastes. In fact, the most important thing to consider is that the presence of a mineral admixture, such as natural pozzolan, in paste composition adversely affects the strength and durability characteristics. Normally, the reduction in strength of these pastes will result from the combination of several factors rather than from any one alone.

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