INFLUENCE OF THE ADDITION OF VARIOUS TYPES OF MINERAL ADMIXTURES ON THE ALKALI-SILICA REACTION IN CONCRETE

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The work deals with the alkali-silica reaction (ASR) in concretes and mortars, which is one of the possible causes of failures of concrete structures. The aim of the work was to study the effect of different supplementary cementitious materials (SCMs) on the ASR. The results were evaluated using an accelerated expansion test according to ASTM 1260. Firstly, it was necessary to solve the issue of the low-reactive aggregate. These aggregates did not allow a clear evaluation of the effect of SCMs on the ASR. This problem was solved by replacing a part of the aggregate with glass shards, which led to an increase in the reactivity. In addition, the effects of different amount and different glass fractions on the ASR were studied. A subsequent experiment with SCMs showed a positive effect on the ASR elimination for all tested SCMs. The greatest effect on the ASR elimination was detected for fly ash together with metakaolin followed by the Sorfix binder. The least effective was a blast furnace slag.