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Effect of sampling and sample preparation on the determination of alkali-silica reactivity of sands

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Alkali-silica reactivity makes common problem encountered in concrete. The reactivity of aggregates (crushed stone, sands and gravels) is conventionally studied by various methods (petrographic, chemical, dilatational). The heterogeneity of natural material, namely of natural aggregates formed by sedimentary processes, is evident but has been ignored in most of the previous studies.

This study presents results from the detailed analysis of one of the Quaternary sand pits that shows pronounced variation in the petrographic and mineralogical composition. The sampling, sample treatment before testing (i.e. splitting to test specimens) and further analysis by quantitative petrography (image analysis of thin sections) and dilatational tests clearly demonstrated the effect of the variability of the source material. Based on these results, the importance of pre-testing treatment is evident.