

Influence of the aggregate and the alkali content in concrete  
on the alkali-aggregate reaction

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Alkali-reactive constituents in the concrete aggregates of Schleswig-Holstein are mainly opaline sandstone, possibly also the so-called "reactive flint". Dense flint occurring in the aggregates consists mainly of microcrystalline quartz. It only causes a slight expansion if it is used as aggregate in concrete with a higher content of alkali-rich cement than is usual in practice. Generally the expansion decreases as the porosity of the flint increases.

Tests with opal as aggregate have indicated that even under pessimum conditions no expansion occurs if the alkali content of the concrete does not exceed 3 kg  $\text{Na}_2\text{O}$ -equivalent per  $\text{m}^3$  concrete. From further tests with Pyrex glass it can be concluded that this limit value for the alkali content is not constant but increases as the cement content decreases.