



Supplementary cementitious materials

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ABSTRACT

The use of silica rich SCMs influences the amount and kind of hydrates formed and thus the volume, the porosity and finally the durability of these materials. At the levels of substitution normally used, major changes are the lower Ca/Si ratio in the C–S–H phase and consumption of portlandite. Alumina-rich SCMs increase the Al-uptake in C–S–H and the amounts of aluminates containing hydrates. In general the changes in phase assemblages are well captured by thermodynamic modelling, although better knowledge of the C–S–H is needed.

At early ages, “filler” effects lead to an increased reaction of the clinker phases. Reaction of SCMs starts later and is enhanced with pH and temperature. Composition, fineness and the amount of glassy phase play also an important role. Due to the diverse range of SCM used, generic relations between composition, particle size, exposure conditions as temperature or relative humidity become increasingly crucial.

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