

Quantification of cement phases and cement replacement materials by Rietveld refinement starting from hydrated cement phases in non-ambient conditions

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Cement replacement materials are often used in modern concrete systems as well as in earlier used concrete. Knowledge of the cement composition is important for quality control, repair and replacement and long term stability.

In this work we will present that quantitative determination of the cement phases calcium trisilicate, calcium disilicate, calcium aluminate, calcium sulfate and common cement replacement materials are possible by measuring the hydrated cement phases in non-ambient conditions.

The hydrated cement sample was investigated by XRD measurement in a range of 20°C to 1000 °C. Rietveld refinement and quantification of recalcinated samples enable the determination of the main mineral phases of the cement mixture.

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