Prediction of potential compressive strength of Portland clinker from its mineralogy

Based on a statistical model first applied for prediction of compressive strength up to 28 d from the microstructure of Portland cement, potential compressive strength of clinker has been predicted from its mineralogy. The prediction model was evaluated by partial least squares regression. The mineralogy was described by patterns from X-ray diffraction analysis in the 20-regions 29.88-30.70 degrees and 32.90-34.10 degrees (using CuK α-radiation). It has been shown that prediction of potential compressive strength of clinker up to 28 d from the observed variation in the mineralogy gave a significant variation of the strength at both 1 and 28 d. Sensitivity analysis based on simulation, optimisation and prediction made it possible to study the influence of the mineralogy on the strength in more detail.

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