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# Micromechanical properties of alkali-activated slag cement binders

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## Abstract

An experimental investigation into the micromechanical properties of alkali-activated slag cement (AASC) binders was carried out using targeted and grid nanoindentation. The results of grid indentation techniques were deconvolved using Gaussian mixture modeling with Bayesian model selection to determine the appropriate number of component phases for the model. The information given by the resulting mixture models and from targeted indentation experiments was disseminated in the context of existing information about the composition and development of the microstructure in AASC binders. The microstructure of sodium silicate-activated slag cement contains only two components (ground mass gel and unreacted slag cement) upon microscopic examination, but indentation data suggest that it is much more complex and varied. The microstructure of sodium hydroxide-activated slag

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