

Preparation of refractory calcium aluminate cement composed of 70% alumina

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Abstract: It has been the aim of this project to produce refractory calcium aluminate cement (CAC) with 70% alumina in the laboratory. Pure calcined alumina and lime were mixed and fired at different temperatures and times in a rotary kiln. When the clinker was formed, it removed out of the furnace and cooled rapidly. The presence of optimized amounts of monocalcium aluminate (CA) and Dicalcium aluminate (CA_2) as the major anhydrous phases in clinker were examined by X-ray diffraction method, and the hydraulic properties of powdered samples were measured by evolved heat measurement versus time during setting times. Based on the data acquired by various test methods, 1550 °C and 90 min. were the optimized conditions for preparation of this type of refractory calcium aluminate cement.

Keywords: *Calcium aluminate cement, Monocalcium aluminate, Dicalcium aluminate, X-ray diffraction.*