



SYNTHETIC PRECURSOR TO MAKE HYBRID ALKALINE CEMENTS

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The present work explores the effect of thermal treatment on the reactivity of a synthetic precursor, prepared with a chemical composition similar to a type-C fly ash (~ 20% CaO wt., $\text{SiO}_2/\text{CaO} = 3$, $\text{SiO}_2/\text{Al}_2\text{O}_3 = 3$). Three temperatures were selected; 1000 °C, 1100 °C and 1250°C. The precursor obtained was used to make hybrid alkaline cements (30% PC +70% precursor) which were hydrated in the presence and absence of a solid alkaline activator (5%). Cements with 70% sand (instead of precursor) were also prepared and used as a reference system.

Mechanical compressive strength was determined at 2 and 28 days. Kinetics of hydration was determined by isothermal conduction calorimetry. Both, the precursors and the hybrid alkaline cements (hardened paste) were characterized by different techniques: X-ray diffraction (XRD), Fourier Transform Infrared Analysis (FTIR), Scanning Electron Microscopy (BSEM/EDX) and Nuclear Magnetic Resonance (NMR).