

Characterization of high strength mortars with nano Titania at elevated temperatures.

ABSTRACT

This study focused on the chemical composition, microstructural changes and residual mechanical properties of high strength mortars with presence of 1%, 2% and 3% nano Titania at elevated temperatures. XRD, SEM and gas permeability tests were conducted to investigate the chemical composition and microstructural changes of mortars after being exposed to elevated temperatures up to 1000 °C. The residual compressive strength, energy absorption per unit volume and relative elastic modulus were also obtained. Addition of nano Titania increased residual compressive strength up to 14% and enhanced elastic modulus and energy absorption of mortars at temperatures up to 600 °C.

Keyword: Nano Titania; Elevated temperatures; Mechanical properties Chemical composition; Microstructure; High strength mortar