

Abstract

In the pursuit of new sources of aluminosilicates for alkaline cement manufacture, the present paper reports on the compositional and mineralogical assessment of the reactive potential of several types of bentonites. A number of factors affect strength development in these materials, in particular their potentially reactive silica and aluminium content. While bentonites normally have a high SiO_2 content, the amount of reactive Al_2O_3 present is not always sufficient for the purpose at hand. The present study consequently also explored the effect of adding aluminium correctors (commercial sodium aluminate and bauxite) to the mix. The findings showed that de-hydroxylated bentonite reacted with an alkaline activator, yielding materials with cementitious properties. The addition of 10 % sodium aluminate raised mechanical strength, which was unaffected by the inclusion of bauxite. The primary reaction product was consistently found to be a (N,C)-A-S-H gel, with zeolites as the secondary products.