Pozzolanic activity of treated bauxite residue (BR) in mix with ordinary Portland cement

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Motivation

Use of BR as alternative, cementitious material?

Modification of BR towards a potential pozzolanic material

Mortar preparation including modified BR slag

Mechanical properties 2, 7 and 28 d

Outlook

Discussion

Further investigations are needed with respect to alternative modifications and firing conditions (potentially the use of suitable fluxes) to obtain more reactive amorphous fraction. A critical evaluation of such a chemical and thermal modification of BR has to be carried out in order to assess the environmental impact as well as the economic feasibility.

A possible explanation for the results described above, is that the amount of amorphous phase is, compared to fly ash, either too low or its chemical composition is not suitable to promote pozzolanic reactions with the formed portlandite. A combination of both factors is also conceivable.

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