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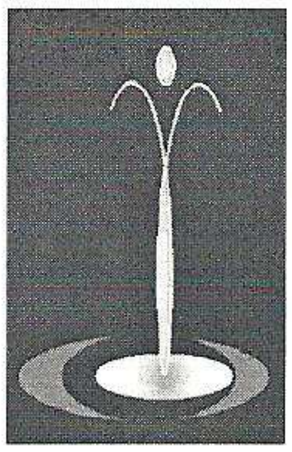

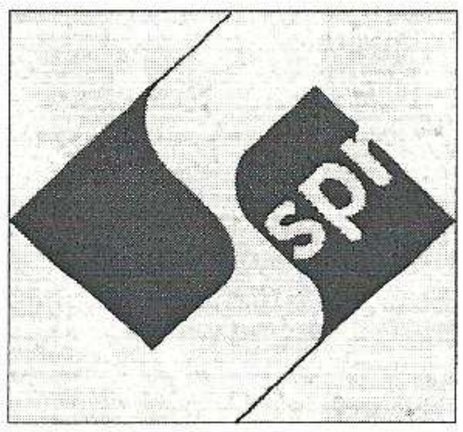

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Influence of calcium sulfate source on the rheological behaviour of calcium sulfoaluminate cements

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Calcium sulfoaluminate (CSA) cements are receiving increasing attention since their manufacture produces much less CO_2 than ordinary Portland cement (OPC) [1]. In addition, they show interesting properties such as high early-age strengths, short setting times and impermeability. The main uses of these CSA cements are for quick repairs and pre-cast products or floor concrete applications. They are prepared by mixing the clinker with different amounts of a calcium sulfate set regulator such as gypsum, bassanite or natural anhydrite, or mixtures of them. This work studies the effect of the amount and type of calcium sulfate (gypsum, anhydrite and bassanite) added to a commercial CSA clinker on the rheological behaviour of fresh cement pastes, setting time, phase assemblage, and hence, compressive strength of the corresponding mortars. This study demonstrated that the rheological behaviour is not affected by the addition of different gypsum contents, but the addition of bassanite increases the viscosity of fresh pastes, and considerably reduces the setting time. All the chemistry evolved in these pastes affect the compressive strengths of the corresponding mortars. Finally, mortars prepared from CSA cements with 25 wt% of anhydrite showed a compressive strength of 64.1 ± 0.6 MPa just after 3 hydration days.

•Reference:

[1] Aranda, M.A.G., and De la Torre, A.G. (2013). In Eco-efficient concrete (Pacheco-Torgal, F., Jalali, S., Labrincha, J., and John, V.M. eds.), pp. 488-522, Woodhead Publishing Limited, Cambridge.