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Evaluation of properties of gypsum plaster-superplasticizer blends of improved performance

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Abstract

The effect of SMF-based superplasticizer on the performance of β -hemihydrate plaster has been studied. A 0.6 wt. % SMF content contributes 69 % enhancement in the compressive strength of modified paste as compared to reference sample. The influence of superplasticizer on the hydration characteristics and morphology of the gypsum crystals have been studied by XRD, TGA, SEM and Electrical Conductivity techniques. These studies showed that superplasticizer accelerates the rate of hydration and leads to the formation of a dense and well compacted texture of crystals, thereby imparting high strength and better water resistance to the gypsum matrix than the reference material.

Keywords: superplasticizer; β -calcium sulphate hemihydrates; hydration; adsorption; morphology; porosity

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