Preparation of different phases of hemihydrate from Alamout natural gypsum and study of effective parameters on setting time.

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Abstract: In this research the α and β phases of hemihydrate have been prepared from Alamout natural gypsum and their setting times have been measured. The IR spectroscopy has been used for characterization of α and β phases of hemihydrate from gypsum. The α and β phases of hemihydrate distinguished from each other by X-ray powder diffraction (XRD). The setting times of pure α and β phases and mixtures of them have been measured by Vicat method. The effects of various additives such as accelerators (NaCl, K₂SO₄, Na₂SO₄) have been studied on setting time. Among them, potassium sulfate had maximum accelerating effect. Optimum concentration of the additive has been determined. This amount is %3 w/w. Less and more than this amount have inverse effects on setting time.

Keywords: Gypsum, Hemihydrate, Phases, Preparation, Setting time, Additives.