

عنوان مقاله:

Effect of mixing rate of plaster with water on properties of gypsum plaster

محل انتشار:

اولین کنگره بین المللی صنعت ساختمان با محوریت تکنولوژی های نوین در صنعت ساختمان (سال: 1397)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Gypsum plaster is widely used building material, as it is inexpensive and mechanically strong and to make gypsum model for ceramics manufacture as modeling material. When in contact with water, calcined gypsum rehydrates through dissolution, nucleation and crystallization steps. In this work, the mixing rate of plaster with water was investigated on their effect on the properties of hardened gypsum pieces, focusing on the structure–function relationship. The mixing plaster with water was done at 120, 240, 360 and 600 rounds per minute with constant water/plaster ratio of 0.77. The results showed that with increasing mixing rate, the setting time decreased and the mechanical strength of the hardened piece increased. The apparent porosity, water absorption and water diffusion coefficient of the hardened piece decreased with increasing mixing rate. The microstructure of gypsum with the high mixing rate not only seems to be denser, with crystals interlaced, but also shows short crystals, which may improve the mechanical strength of the specimen. The higher mixing rate can lead to the higher rate of the nucleus formation, the smaller crystals and denser structure are formed. This material can have higher strength

کلمات کلیدی:

Gypsum plaster, Mixing rate, Setting time, Strength, Microstructure

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