عنوان مقاله:

Systems engineering method in effective Factors on Compressive Strength of Cement Mortar Using Response Surface

محل انتشار:

سومین کنفرانس بین المللی مهندسی صنایع و سیستم‌ها (ICISE ۲۰۱۷) (سال: 1396)

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خلاصه مقاله:

Cement mortar as a cementitious material is one of the components of concrete, which has a significant impact on the compressive strength of concrete. Therefore, modifying the properties of cement mortar is due to earn the most compressive strength of concrete. The condition of achieving the highest compressive strength is the presence of effective factors on their optimal levels in the mixing plan. In this study, the compressive strength of 18 samples of cement mortar has been studied by statistical optimization method of the response surface affecting by three factors of water to cement material (Binder) ratio at three levels of 0.35, 0.4, and 0.5, fine aggregate to cement material (Binder) at levels 2, 2.5 and Nano-sio2 at levels of 4.5, 9, and 13.5. Results obtained from the response surface method indicate that the water to binder and Nano-sio2 has significant effect on the compressive strength of cement mortar. Additionally, the optimum levels of each factor in order to obtain the highest compressive strength of cement mortar are level of 0.35 for the water to binder, level of 2 for fine aggregate to Binder and level of 13.5 for Nano-sio2 . The high statistical accuracy and close proximity to the actual results prove that this statistical method is considered as a reliable method for optimization.Keywords—Cement morta

کلمات کلیدی:

Cement mortar; water to binder; fine aggregate to binder; Nano-sio2; Optimization; Response surface