عنوان مقاله:

Determining the Optimum Dosage and Composition of Activator for Alkali-Activated Blast-furnace Slag

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Ali Allahverdi - *Cement Research Center, School of Chemical Engineering, Iran University of Science and Technology, Narmak ۱۶۸۴۶۱۳۱۱۴, Tehran, Iran*

Babak Shaverdi - *Cement Research Center, School of Chemical Engineering, Iran University of Science and Technology, Narmak ۱۶۸۴۶۱۳۱۱۴, Tehran, Iran*

Ebrahim Najafi Kani - *Cement Research Center, School of Chemical Engineering, Iran University of Science and Technology, Narmak ۱۶۸۴۶۱۳۱۱۴, Tehran, Iran*

خلاصه مقاله:

This work is devoted to determine the optimum dosage and composition of an alkali-activator suitable for activating blast-furnace slag from Isfahan steel plant. Sodium hydroxide and water glass were used to prepare a number of mixes from ground granulated blast-furnace slag. The mixes were designed in such a way to contain different levels of sodium oxide including 1, 2, 3, 4, 5, and 6% by weight of dry binder with activators having different silica modulus (SiO2/Na2O) of 0.3, 0.4, 0.5, and 0.6. The most important physico-mechanical properties of the binder including workability, initial and final setting times, 28-day compressive strength, total 90-day shrinkage, and efflorescence were measured. After observation of the results of 28-day compressive strength and efflorescence test, mixes with acceptable amount of efflorescence which contain Na2O contents of 1, 2 and 3 % by weight of dry binder were chosen for investigating their autogenous and drying shrinkages. The results confirm the possibility of achieving 28-day compressive strengths up to 37.5 and 50 MPa for mixes with sodium oxide content of 1 and 2 wt% respectively, which were chosen as the mixes having optimum dosage of activator.

کلمات کلیدی:

Alkali activator, Blast furnace slag, Compressive strength, Shrinkage