

عنوان مقاله:

Inclusion of Mineral Admixtures in Cement Pastes for High Performance Concrete

محل انتشار:

دومین کنفرانس بین المللی بتن و توسعه (سال: 1384)

تعداد صفحات اصل مقاله: 12

نویسندگان:

S.A. Rizwan - *Institut fur Keramik, Glas-und Baustofftechnik, Agricolastr.17, ۰۹۵۹۹ Freiberg, Germany*

T.A. Bier - *Institut fur Keramik, Glas-und Baustofftechnik, Agricolasrt.17, ۰۹۵۹۹ Freiberg, Germany*

خلاصه مقاله:

Cement pastes play a very significant role in the overall response of high performance concretes (HPC) and there is a scarcity of published work on such pastes. Therefore a study has been carried out on self-leveling cement pastes used for high performance concrete, using three types of cements (provided by Schwenk Germany) including normal Portland cement (Cem 1 42.5 R) and two others having 30 and 70% blast furnace slag contents (Cem 11-B/S 32.5R and Cem111/B 32.5 N NW/HS/NA respectively) at four mixing water contents. The mineral admixtures selected in the study for comparison purposes included as produced dry silica fume (SF provided by RW-Fuller Silicium GmbH Germany) powder and imported rice husk ash (RHA) at 10% cement replacement level. These mineral admixtures were characterized by the chemical composition, XRD, surface area and particle size distribution. Third generation powdered superplasticizers supplied by DEGUSSA Germany were used to reduce the water demand and to have a reasonable flow ($200\pm10\%$) of resulting durable self leveling cement paste systems which were characterized by water demand, setting, flow, calorimetry, pore structure and strength. The results show an almost a linear increase in the water demand with the addition of mineral admixtures in such systems. Slightly lesser water and plasticizer requirement by RHA was obtained, despite being finer than SF, for the same pre-selected level of flow. RHA cement pastes in general gave almost similar and at times greater strengths than silica fume paste systems, when both were used as cement replacement materials, under similar conditions. All these results are indicative of an excellent comparative performance of RHA in the cement pastes so that it could be economically used, instead of SF, in making high performance concrete structures especially in the rice growing developing countries

کلمات کلیدی:

High performance concrete, mineral admixtures, silica fume, rice husk ash, pozzolan, water demands, superplasticizers, blast furnace slag cement

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1574>

