

The Sixth Article

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Saleh Abd El-Aleem Mohamed^{*}, “Activation of granulated blast-furnace slag using lime rich sludge in presence and absence of rice husk ash”, International Journal of Innovative Technology and Exploring Engineering; 5 (3) (2015), pp. 43-51.

^{*} **Chemistry Department, Faculty of Science, Fayoum University, Fayoum, Egypt.**

Abstract

These days there is an increasing emphasis on a cleaner environment and maintaining the balance of the eco-system of the biosphere. It is generally believed that, environmental protection with zero risk and economic growth do not go hand in hand, but at the same time it is also true that, sustainable growth with environmental quality is not an unattainable goal. This work aims at studying the effect of lime rich sludge (LRS) as a byproduct of acetylene industry on the activation of granulated blast-furnace slag (GBFS). LRS was calcined at 850°C for 4h and left to cool in furnace, then slaked with water and dried at 80°C for 24 h. GBFS was replaced by 10, 20 and 30 wt., % of LRS. The results showed that, as the amount of LRS increases, the combined water and free lime also increase. The compressive strength values of GBFS-LRS mixes increase with LRS content up to 20 wt., %, and then decrease at 30 wt., % LRS. In order to enhance the compressive strength of the mixture containing 30 wt., % of LRS, different amounts of rice husk ash (RHA) were added. The results indicated that, the compressive strength increases with RHA content. The results of chemical and mechanical properties of GBFS-LRS blends in presences and absence of RHA are in a good agreement with those of XRD, FTIR and TG/DTG analyses.

