عنوان مقاله:

Characterization of alkali-activated Phosphorous slag as an inorganic binder

محل انتشار:

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خلاصه مقاله:

The use of alkali-activated cementitious materials especially over the past decades has significantly been increased not only due to their potential in reducing CO2 emission from manufacture of Portland cements, but also due to their superior long-term engineering properties. Alkali-activated materials can be formed by mixing an alkali-activator with a wide variety of glassy silica and alumina rich minerals such as: clay, ground rock, ash, and slag. In this paper, the results of a study on the influence of proportioned mixture of sodium silicate and sodium hydroxide as activator at 20±2 on the setting time and 28-day compressive strength of alkali-activated phosphorous slag (AAPS) are presented. Experiments were carried out using different levels of alkalinity including; 1, 3, 5 and 7 % Na2O by weight of dry binder. The silica modulus of the activator was adjusted at three different levels of 0.5, 1 and 1.5. The results obtained reveal that AAPS exhibiting relatively high 28-day compressive strength up to 82.5 MPa can be obtained. Increasing in alkalinity percent led to increase in 28-day compressive strength. By increasing Ms, setting time decreased. On the basis of this investigation, sodium silicate with Ms = 1 and 5% alkalinity is recommended as best formulation for AAPS

کلمات کلیدی:

Phosphorous slag, Sodium silicate, Compressive strength, Setting time