

QUANTITATIVE DETERMINATION OF GLASS AND MINERALOGICAL ANALYSIS OF COAL COMBUSTION FLY ASHES

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ABSTRACT

The significance of glass in several fly ash applications, specially in geopolymers production conducted research towards investigation of methods for an easy glass content determination. Although, the fly ash glass content can be obtained by difference using the RIM method other methods were investigated. The glass content was calculated by means of the mineral standard addition method. The slag produced in the Puertollano IGCC power plant was selected as a standard for glass. This slag is made up of 100 % Al-Si glass and the contents of major oxides are in the range of that of European fly ash. A number of combustion fly ashes were selected to test the suitability of this method for glass content determination. Glass standard/fly ash mixtures of 50:50, 75:25, 65:35 and 90:10 were performed and then analysed by XRD. These mixtures were selected on the basis of glass content obtained for fly ashes by difference using the RIM. The addition of more proportion of glass standard to the fly ashes resulted in a reduction of the XRD intensity for the crystalline phases, while kept constant the intensity of the XRD background. The glass content was calculated by obtaining the net area between 20 and 40 2 theta degree. The results obtained by this method are in agreement with those obtained by difference with the RIM method, demonstrating the suitability for the glass content determination.

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