

The Preparation of Silicon and Aluminum Extracts from Tuncbilek and Orhaneli Fly Ashes by Alkali Fusion

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Abstract : Coal fly ash is formed as a solid waste product from the combustion of coal in coal fired power stations. Huge amounts of fly ash are produced globally every year and are predicted to increase. Nowadays, less than half of the fly ash is used as a raw material for cement manufacturing, construction and the rest of it is disposed as a waste causing yet another environmental concern. For this reason, the recycling of this kind of slurries into useful materials is quite important in terms of economical and environmental aspects. The purpose of this study is to evaluate the Orhaneli and Tuncbilek coal fly ashes for utilization in some industrial applications. Therefore the mineralogical and chemical compositions of these fly ashes were analyzed by X-ray fluorescence (XRF) spectroscopy and X-ray diffraction (XRD). The silicon (Si) and aluminum (Al) in the fly ashes were activated by alkali fusion technique with sodium hydroxide. The obtained extracts were analyzed for Si and Al content by inductively coupled plasma optical emission spectrometry (ICP-OES).

Keywords : extraction, fly ash, fusion, XRD

Conference Title : ICCPE 2015 : International Conference on Chemical and Polymer Engineering

Conference Location : Rome, Italy

Conference Dates : May 05-06, 2015