

Characterization studies of tannery sludge, flyash and GGBS

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This work focuses on characterization of CETP tannery sludge, flyash and GGBS and the properties of the CETP tannery sludge is compared with flyash and GGBS using a variety of techniques, including Fourier transform infrared (FTIR) spectroscopy, scanning electron microscopy (SEM) analysis, X-Ray diffraction (XRD) and X-ray fluorescence spectroscopy. Heavy metal composition in the sludge, flyash and GGBS is given by XRF studies. SEM diagrams for cross sectional area of the samples were taken. The microscopic images of GGBS, flyash and tannery sludge are found to be flaky, spherical and granular respectively. XRD studies proved that GGBS is amorphous due to the presence of amorphous silica and alumina. The tannery sludge and flyash is found to be crystalline with minority of amorphous phase. In this study, Fourier Transform Infrared Spectrophotometry (FTIR) provides a quick and relatively inexpensive method for identifying, quantifying and to determine the frequency of functional groups tannery sludge, flyash and GGBS. This research quantified the resemblance of the characteristic properties of the flyash GGBS and tannery sludge.

Keywords: CETP tannery sludge, flyash, GGBS, XRF, SEM, XRD, FTIR analysis.