

Characterization of Czech coal combustion ashes and their hydrated products via XRD

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Abstract. Czech brown coal ashes and their hydrated products were characterized by X-ray diffraction analysis (XRD), X-ray fluorescence analysis (XRF) and scanning electron microscopy (SEM). The aim of this paper was to determine the amorphous content in the selected pulverized coal combustion ash (PCC FA), sulfocalcic ash (SC ash, CFBC ash) and in hardened SC ash slurries. Amorphous phase was determined by the internal standard method using XRD. The phase composition of the slurries and its changes occurring during the time-dependent hydration were studied. It was found that the selected PCC FA had a 54% amorphous content and the SC ash of 62%. For the hydrated slurries, the amorphous content was time independent and ranged from 57-64%. The compressive strength values after 28 days were about 50 MPa and 80 MPa, respectively, which makes SC binder a perspective material for the building industry.