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Preliminary studies on alkali-activated binder based on wood waste ash Silva, A.A.S.(1); Pereira, B.C.F.(1); Batista, J.P.B.(1); Moraes, J.C.B.(1); (1) ITA;

Alkali-activated binders (AAB) are inorganic materials produced by a mixture between a solid precursor and an alkaline activator, which their reaction results in a material with properties like Portland cement hydration. The advantages of AAB over Portland cement are the possibility of using alternative materials, demanding low energy and CO2 emission. This study presents production of an AAB using wood waste ash (WWA) as solid precursor with sodium hydroxide as alkaline activator. WWA was obtained by burning wood wastes in an industrial vertical shaft furnace, and then recalcined in a laboratory oven at 600°C. After, the ash was milled and then physicochemically characterized by chemical composition, X-ray diffraction and particle size distribution and scanning electron microscopy. The milled WWA was employed in AAB with mortars and pastes to assess the influence of alkaline activator concentration. In this work, the [Na+] varied in the range of 6.5-12.5 mol.kg-1. Mortars were assessed by compressive strength, whereas pastes were analyzed by Fourier Transform infrared spectroscopy, X-ray diffraction and scanning electron microscopy/energy-dispersive X-ray spectroscopy, which all samples were cured for 7 days at 60°C. Results showed that WWA can be employed as solid precursor in AAB, and the optimum [Na+] concentration was 6.5 ml.kg-1.