ABSTRACT

Wood ash is generated as residual waste from combustion done in paper factories, thermal power generating facilities, burning of wood for charcoal among other sources. Since wood is a renewable source of energy and an environmentally friendly material, there is an increased requirement of using waste wood for the purpose of energy production thus leading to formation of more wood ash waste. The study focused on incorporation of wood ash in combination with OPC while using it for various structural works. A research on XRF test, hydrometer analysis, specific gravity, slump, compressive, tensile and flexural strength of WA blended cement in concrete produced significant results to emphasize the study process.

The concrete mixes were replaced with blue gum tree WA having grain size of less than 75 microns in proportions of 0%, 5%, 10%, 25%, 40% and 60%. From the research, it was found out that wood ash concrete compared well with Portland cement concrete up to 10% cement replacement. Further replacement, however, resulted in a decrease of the strength of concrete. Also, it was found that less temperatures are required to produce WA as compared to the production of cement. There was a slight notable increase in workability upon 5% replacement. The main recommendation therefore was to replace cement with 10% WA for hardened concrete.