

Greener Concrete from Wood Fly Ash and Coal Fly Ash
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ABSTRACT

This investigation was carried out to establish production of concrete mixtures incorporating wood fly ash (FA). Two series of non-air entrained concrete mixtures were developed for this project using two different sources of wood FA and two different sources of ASTM C 618 Class C coal FA. Each series of concrete mixtures consisted of eight different mixture proportions including a reference mixture without any wood FA or coal FA. Three of these mixtures were developed to have wood FA contents of approximately 15%, 25%, and 35% as a partial replacement of cement. Four additional mixtures were developed using blends of wood FA and Class C coal FA. Two levels of blended ash of approximately 25% and 35% were used. The effect of source of wood FA was noticeable different on the performance of concrete. Blending of wood FA with Class C coal FA improved performance of wood FA to a significant extent. The results revealed that structural-grade concrete can be made using wood FA and/or its blends with Class C coal FA as a replacement of cement. Compressive strength values of up to 40 to 50 MPa (6,000 to 7,500 psi) at 28-day to 91-day ages were achieved.