

Biomass concrete: challenges and future

Editorial

Biomass is currently considered as an emerging technology. The application of Biomass in concrete is still prohibited from many agencies such as the American Society of Testing Materials (ASTM) and the American Concrete Institute (ACI), however it was reported that some preliminary results are promising and it is feasible to use biomass in conventional concrete. Wood is considered a biomass source, burned as fuel to generate electricity or to produce heat. Very limited and almost no extensive research has been conducted on the implementation of biomass in concrete. The implementation of biomass in concrete will indirectly advance the renewable energy production and the economic development by decreasing CO₂ emission from cement industry and saving energy as well. Biomass is defined as an organic matter resulting from living, or recently living plants or plant-based materials and is considered a renewable source of energy and are specifically called lingo cellulosic biomass. In 2009, the American coal ash association estimated that nearly 40% of the 63 million tons of coal fly ash generated in the U.S.A were beneficially used. The emerging energy-based substitution material is derived from the combustion of biomass and the co-combustion of the biomass with coal which is called Biomass and co-fired fly ash, respectively. However, the current American Society for Testing Materials (ASTM) and the American Concrete Institute (ACI) standards prevent non-coal derived fly ash from use in concrete because the engineering properties of the non-coal driven materials are not well understood. Very few studies have addressed the use of biomass in concrete and very limited results have been published and reported on the effect of using biomass ash as a supplementary cementitious material (SCM) in conventional concrete. Christopher et al.,¹ reported the effect of binary blend of biomass and the co-fired ash combined with cement on the early-age hydration kinetics, workability, setting time, strength,

permeability, and sulfate resistance. Wang et al.^{2,3} showed that the co-fired and biomass concrete have very comparable strength to the conventional cement mixtures.

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Conflict of interest

The author declares no conflict of interest.

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