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Sustainability in production of cement composite boards using waste and supplementary cementitious materials

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Cement Composite Board (CCB) is an important construction product, which is used for cladding as well as internal and external walls. The main components of CCB include Poly Vinyl Alcohol (PVA) fibre, Portland Cement (PC) and water. PVA fibres are expensive, not available and accessible in most of developing countries. In addition, over the past decade, to reduce the carbon emission a global movement has been begun to reduce the use of PC in construction industries due to its carbon footprint and greenhouse gas emission. In this research, an attempt has been made to manufacture CCB using the waste cardboard and supplementary cementitious materials. Cellulose fibres extracted from waste cardboard have been treated and processed by chemical solutions. A combination of fly ash and silica fume was replaced for 40% of PC. In this research, a broad range of mix proportions have been designed, made and tested based on the relevant standards. The results showed that some proposed mixes could meet the standards requirement.

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