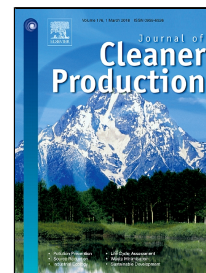


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# Characterization of pervious concrete with blended natural aggregate and recycled concrete aggregates

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## Abstract:

The utilization of recycled coarse aggregates (RCA) from construction and demolition wastes to produce green concrete serves as a sustainable solution with manifold environmental benefits. This study aims to widen the potential uses of RCA to fabricate pervious concrete for non-structural applications. The mechanical and surface properties, permeability, and greenhouse gases assessment of pervious concrete made with blended normal granite aggregates and RCA were investigated in this work. RCA replacement levels of 20%, 40%, 60%, 80% and 100% were used. Experimental results showed that the RCA mixes produced lower mechanical properties. Microscopic analyses using Field Emission Scanning Electron Microscope showed that the lower strength of RCA mixes was attributed to the failure path of RCA specimens occurred at the weaker adhered mortar on RCA. Despite the drop in strength, all RCA-mixes attained the minimum BS EN 1338 requirements in terms of skid and abrasion resistance. In the mix with 100% RCA, the waste content in the pervious concrete mix was 87% by weight and 73% by volume. The greenhouse gases assessment also shows that the CO<sub>2</sub> emission of this 100% RCA mix is 24% lower compared to the control mix.

**Keywords:** abrasion; concrete waste; greenhouse gases; mechanical properties; permeability; skid resistance

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