

Replacement of River Sand by Waste Foundry Sand in Paver Blocks

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Abstract: *This study investigates the feasibility of replacing natural river sand with waste foundry sand (WFS) in the production of paver blocks, aiming to address both environmental concerns and resource scarcity. Paver blocks were manufactured using two distinct techniques: the Rubber Mould Method and the Hydraulic Press Method, with WFS replacing river sand at varying levels of 0%, 25%, 50%, 75%, and 100%. Comprehensive experimental evaluations were conducted to assess compressive strength, water absorption, flexural strength, split tensile strength, and abrasion resistance, following IS:15658-2006 and related standards. Results indicated that compressive, flexural, and tensile strengths decreased progressively with higher WFS content, while water absorption and surface wear increased. However, up to 50% replacement, paver blocks demonstrated acceptable mechanical properties and durability suitable for non-traffic, pedestrian applications. Hydraulic pressed blocks consistently outperformed rubber moulded blocks due to superior compaction and reduced porosity. The study concludes that WFS can successfully replace river sand up to 50% without compromising essential performance criteria, offering a sustainable, eco-friendly alternative for paver block manufacturing while contributing to effective industrial waste utilization.*

Keywords: Waste Foundry Sand, Paver Blocks, Compressive Strength, Durability, Sustainable Construction.

