

A Study on the Potential of Glass Wastes as Aggregate Replacement Material in Concrete

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ABSTRACT

Generally, glass aggregate is clean, safe, economical, durable, strong and more workable compared to ordinary aggregate. It can be used in road bed, pavement, and parking lot construction, as well as for drainage, backfill, or landscaping purposes. The compressive strength at 28 days depends on the type of glass. The objective of the study is to acknowledge the potential of glass waste as a replacement material for ordinary aggregate in concrete. The size of the glass aggregate used in this study is 10.0 mm. The concrete is designed at Grade 30 with 0%, 10%, 20%, 30%, and 100% of glass waste replacement aggregates. Concrete containing wastes from entertainment outlets (alcoholic bottles) achieved 91.6% of the relative strength whereas concrete containing bottle-bank wastes achieved only approximately 81.8% of the relative strength. A total number of sixty concrete cube specimens were prepared and tested for compressive strength tests at concrete ages of 3, 7, 14, and 28 days. From the study, it is found that, the suitable amount of glass aggregate replacement in concrete is in the range of 10% to 30% of the total aggregate.

Keywords: *glass waste, glass aggregate, replacement material, compressive strength*