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PERFORMANCE OF CONCRETE CONTAINING WASTE POWDERED GLASS AS PARTIAL REPLACEMENT OF FINE AGGREGATE



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Abstract:

Glass is a non-decay able material and its dumping is an environmental hazard. As a result, it should be recycled or reused. The presented work has been carried out to investigate the performance of concrete containing waste powdered glass (WPG) as partial replacement of fine aggregate. Tensile and flexural strengths of concrete made with mixing WPG have been investigated with different replacement levels of fine aggregates. The replacement levels included 10, 20, 30 and 40 percent by weight of fine aggregates. From durability view point, drying shrinkage, expansion of mortar bars and water absorption have also been studied at these replacement levels. Results indicated that the use of WPG improved the packing of aggregates thus resulting into increased compressive, tensile and flexural strengths compared to the control specimens. Reduced water absorption and drying shrinkage with increased expansion for mortar specimens were noticed when compared with the control specimens. The optimum replacement level of WPG in concrete (as partial replacement) was found to be 20% of fine aggregates. At this replacement level, compressive, splitting and flexural strengths increase whereas water absorption reduces substantially.

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