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Experimental Study on the Behaviour of Ceramic Waste as Partial Replacement of Coarse Aggregate in Concrete: A Green Concrete Approach

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Abstract : In most percentage of industrial wastes come in the form of ceramic wastes asindustrial waste obtained in various forms like ceramic powder, brokentiles and slurry waste, the disposal of which creates issues in the form of environmental pollution.These waste materials sometimes can be used to replacement of cement, fineaggregate, coarse aggregate also act as a supplementary addition inconcrete. This research study focused on structural behaviourof the partial inclusion of Ceramic tile Waste (CTW) as coarse aggregates in the concrete. Different percentage of concrete were produced with 0 to 40 % in stepcontent of 10 % as a partial replacement of Ceramic tile Waste (CTW) as coarse aggregates.The results of the research showed thatworkability of the mixes increased with percentage increase in the CTWcontent up to 30% and thereafter decreased. There was gradual decrease in thecompressive strength, spilt tensile strength and Flexural strength of the specimens with increase in the CTW. The water absorption rate of the samples increased withincrease in the CTW content up to 30%. Based on the result obtained, concretemix ratio which contains not more than 40% CWT content is not recommended for use in concrete mix.

Keywords : Coarse aggregate, Ceramic tiles, concrete, compressive strength,workability.

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