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Experimental Investigation of the Thermal Performance of Scrap Tire Rubber-Concrete Blocks

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Abstract:

In this paper, the thermal behavior of concrete blocks with different rubber ratios was examined experimentally. The rubber of 0%, 5%, 10%, 15%, and 20% used instead of fine aggregate in a concrete block raw materials. The size of the rubber granules used in this study is between 0-1 mm. The concrete approved mixing ratios are 1:2:1. The indoor solar simulator with 700 w/m² light intensity was applied on the external surface of each block and thermocouples were used to measure the temperature on the external and internal surfaces. The other block surfaces are insulated. The results indicated that the use of rubber aggregate with the concrete block reduced the inner surface temperature by increasing the thermal resistance of the heat flux. For 20% rubber added, produce 8.5% low-weighted construction materials and with high thermal resistance that works to save energy consumed in the building sector.



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