

Experimental assessment for the thermal performance of scrap tire blocks as external wall insulators

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Abstract

In this paper, the advantage of reusing scrap tires in Scrap Rubber Block (SRB) to improve thermal insulation in buildings was examined experimentally. By testing the use of SRB in black and white colours as external wall insulators and comparing their performance with walls without insulation. The results indicated that a wall with scrap tire blocks gave the best thermal insulation results when the outer face was painted white. The decrement factor (f) and the rate of heat loss increase, while the rate of heat gain decreases. This was done through the mechanisms of heat transfer by conduction through the layers of the wall and the effect of adding the rubber block on its thermal properties. The results showed that the use of rubber blocks reduces the temperature of the inner surface of the wall by 3-4°C lower than the traditional wall. The thermal diffusion inside the wall was determined effectively in the case of a wall with the rubber block, where the temperature of the inner surface reaches its maximum value by about 0.5-hour difference from the traditional wall in the case of the wall with the rubber block in black colour, and 9.5-hour in the case with the white block.

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