

# Performance validation of low-cost building insulation materials via the thermal characteristics and costs of insulation materials

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## ABSTRACT

Because the envelope accounts for 50–60% of total heat gain/loss in a building, building envelope insulation is critical for an energy-efficient and comfortable inside environment. The importance of building insulation materials in our daily construction of structures is critically examined in this study. This research compares various building insulation materials (thermal, reaction to fire, environmental, and cost). Energy saving is becoming a more pressing concern in the building sector. As a result, interest in thermal insulation solutions has risen in recent years. Thermal insulation decreases heat transfer (the transmission of thermal energy between objects of different temperatures) between items in thermal contact or within the range of radiative effect. The selection of optimum thermal insulation offers significant potential for energy savings. This study examines the properties of various insulation materials and low-cost insulation materials, and easily accessible waste materials that may be substituted as insulation materials to save cost while simultaneously addressing environmental issues