

**THERMAL AND ACOUSTIC PROPERTIES OF TIGER GRASS POLLEN
INSULATION MATERIAL WITH ARROWROOT STARCH AS BINDER**

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ABSTRACT

Tiger grass pollen is disregarded as a valuable agricultural waste; thus this study explored its potential and beneficial use as an alternative building insulation material with arrowroot starch as binder.

Samples were prepared with the following mix proportions. Mixture A: 250 grams - tiger grass pollen and 100 grams - arrowroot starch which is equivalent to 40% of the tiger grass pollen weight. Mixture B: 250 grams - tiger grass pollen and 125 grams - arrowroot starch which is equivalent to 50% of the tiger grass pollen weight. Mixture C: 250 grams - tiger grass pollen with 150 grams - arrowroot starch which is equivalent to 60% of the tiger grass pollen weight. The samples were air-dried for 10 days. The thickness of the particleboards ranges from 8 mm to 10 mm. Based on the tests conducted for acoustic properties, thickness swelling, water absorption, and thermal conductivity, Mixtures B and C demonstrated acceptable results having met the allowable limit values.

The particleboard produced was eco-friendly because the main ingredients of the material used were organic and found locally. Thus, it proved that tiger grass pollen can be of great help in the society particularly in the construction industry.

As a recommendation, apply some surface treatments to avoid the occurrence of molds or fungi caused by the binding agent. In addition, conduct further study on how to employ a combination of tiger grass pollen with other agricultural waste products to enhance the quality of the particleboard for building insulation.