

**FABRICATION OF ROOFING SHEETS  
USING AGRICULTURAL WASTE MATERIALS**

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**Sri Lanka**

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Thesis submitted in partial fulfillment of the  
Degree of Master of Science in Material Science

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**July 2020**

## DECLARATION

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## ABSTRACT

Modern roofing products are very popular in various applications due to their specific features to satisfy the local and global demand. Asbestos roofing products are currently used as a roofing solution in very large scale worldwide due to its competitiveness. However, these products indicated some environmental and health problems during and after the usage.

The key objective of this research is to develop an environmentally friendly roofing product to cater local and global market based on locally available agricultural waste materials.

Since Sri Lanka is an agricultural based country, paddy cultivation is a key area of an agricultural sector. Large amount of waste materials generated after the paddy harvest. They are used in some of the applications but most of applications these waste create social and environmental issues. One of the key aspects of this research is to provide value addition to these locally available paddy wastes. The developed roofing product was a rice and paper waste based polymer product and it indicated low cost and biodegradable properties.

The replica and the mould were fabricated in accordance with the available roofing sheet standard. This developed roofing product displayed the minimum water permeability and water absorption features. Product provided the required loading bearing capacity. All produced product showed UV resistivity during the testing period without showing any appearance change on inner surface or outer surface. According to the experimental results, sample containing 65% dry rice husk and 35% paper satisfied the usage requirements successfully. These products can be used as environmentally friendly, low cost, decomposable substitute that can easily be manufactured using locally available agricultural waste and available technologies.

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