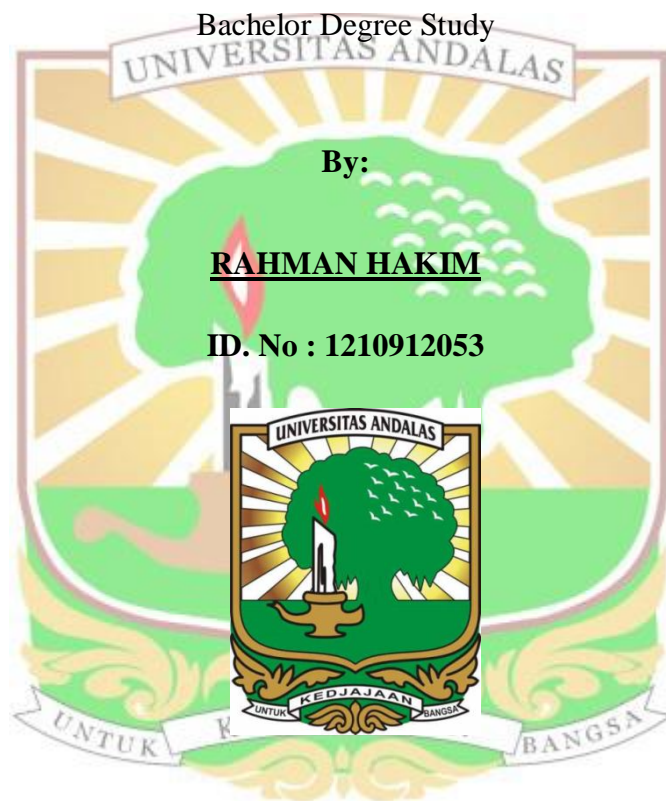


FINAL PROJECT

**EFFECTS OF EGGSHELL ON THE MICROSTRUCTURES
AND PROPERTIES OF PURPLE SWEET POTATOES
EGGSHELL BIOCOMPOSITE**

Submitted as One of Requirement to Accomplish



Supervisors :

- 1. Hendery Dahlan, Ph. D**
- 2. Prof. Dr. Ing. Hairul Abral**

**MECHANICAL ENGINEERING DEPARTMENT
ENGINEERING FACULTY-ANDALAS UNIVERSITY**

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ABSTRACT

The eggshell as a filler for the matrix is a potential source to improve the properties of biocomposite. The renewable and biodegradable of biocomposite make this material very safe for the environment.

The purple sweet potatoes are new material as the matrix of biocomposite. The addition of eggshell as a filler 0 %, 1 %, 2 %, and 3 % is used to improve the properties of biocomposite.

Increasing of eggshell powder improves the mechanical properties of biocomposite such as tensile strength and stiffness. The maximum tensile strength is 12.80 MPa in 1 % addition of eggshell powder. While the tensile strength of purple sweet potatoes is 5.77 MPa. The addition of 2 % and 3 % eggshell powder reduce the tensile strength of biocomposite. The tensile strength of PSP ES 2 % and 3 % are 4.88 MPa and 5.41 MPa respectively, but the elasticity and modulus elasticity are lower.

The agglomeration and pores that are observed on scanning electron microscope (SEM) lead to low adhesion of filler-matrix and reduction of tensile strength. These also make the water absorption of biocomposite increase due to the easiness of water to absorb by PSP ES biocomposite. It is shown by the increasing of hydrogen bonding of PSP ES biocomposite on FTIR analysis.

Keywords: biocomposite, purple sweet potatoes, eggshell, tensile strength, scanning electron microscope (SEM), FTIR, and water absorption.

