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REVIEWER'S REPORT

Manuscript No.: IJAR-59748

Title: CHARACTERIZATION OF THE PHYSICAL AND MECHANICAL PROPERTIES OF CORN COB PANELS PRODUCED WITH NERE POD HUSK (CGN) WITH THE INTEGRATION OF LOW-DENSITY POLYETHYLENE (PEBD)

Recommendation:
Accept

Rating	Excel.	Good	Fair	Poor
Originality	Yes			
Techn. Quality		Yes		
Clarity	Yes			
Significance		Yes		

Reviewer's ID: JPR- 015

Detailed Reviewer's Report

Reviewer's Comment for Publication.

Acceptance Comment are mentioned below suitable for the paper titled "**CHARACTERIZATION OF THE PHYSICAL AND MECHANICAL PROPERTIES OF CORN COB PANELS PRODUCED WITH NERE POD HUSK (CGN) WITH THE INTEGRATION OF LOW-DENSITY POLYETHYLENE (PEBD)"**

Reviewer Comments: Accept

Reviewer Comments –

1. Introduction

The introduction establishes the importance of agricultural waste utilization and sustainable material development. The use of corn cobs as a raw material for particleboard production represents an innovative approach to reducing agricultural waste. The integration of Néré pod husk and low-density polyethylene as binding materials adds further value to the research. The study addresses a relevant industrial and environmental challenge, particularly in the context of developing sustainable construction materials.

2. Literature Review

The manuscript addresses an important research area related to agricultural residue-based composite materials and particleboard manufacturing. The investigation of natural and polymer-based binders provides an interesting contribution to the existing body of knowledge. The study offers useful insights into the physical and mechanical performance of panels produced using alternative raw materials. The

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findings are relevant to ongoing research on sustainable composites, waste valorization, and environmentally responsible material development.

3. Solution Approach / Methodology

The experimental methodology is appropriate for investigating the physical and mechanical properties of the developed particleboards. Different binder proportions, ranging from 5% to 20%, were considered to evaluate their influence on panel performance. The study incorporates water absorption, thickness swelling, bending, and tensile tests to assess the material characteristics. The systematic evaluation of density, modulus of elasticity, modulus of rupture, tensile strength, and elongation provides a comprehensive experimental assessment of the developed panels.

4. Results and Discussion

The results demonstrate that binder content significantly influences the physical and mechanical properties of the developed panels. The reported density values indicate the potential classification of the panels for different commercial and industrial applications. Although the thickness swelling and water absorption results indicate limitations in moisture resistance, the mechanical performance demonstrates promising characteristics. The reported MOE, MOR, MOT, and elongation values highlight the potential of the proposed composite panels for indoor applications. Overall, the findings provide meaningful insights into the relationship between binder composition and panel performance.

5. Conclusion

The study successfully demonstrates the potential of utilizing corn cobs and Néré pod husk, with the integration of low-density polyethylene, for particleboard manufacturing. The experimental findings establish the influence of binder content on the physical and mechanical characteristics of the developed panels. The research contributes to sustainable material development by promoting the productive utilization of locally available agricultural residues. Despite certain limitations concerning moisture resistance, the developed panels show promising mechanical properties for dry indoor applications. The manuscript offers relevant scientific and practical contributions to sustainable composite material research.