

Review of: "Investigation of Mechanical Properties of Sisal Fiber and Sugar Palm Fiber Reinforced Hybrid Composites"

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Potential competing interests: No potential competing interests to declare.

Report on the Review of paper

Title of paper: **Investigation of Mechanical Properties of Sisal Fiber and Sugar Palm Fiber Reinforced Hybrid Composites.**

Authors: V. Hariharan, G. Rajeshkumar

Comments:

1. The authors stated "To remove cellulosic matter and improve the surface roughness of the fibre, it was treated with NaOH for 24 hours".

The above statement should be reviewed. In fact the alkaline treatment removes the surface impurities and amorphous constituents, such as wax, hemicellulose and to some extent lignin. This leads to a roughening of the surface.

2. There is a need to provide the definition of "CG and KG fibre".

3. The findings of Muralidharan et al. with respect to tensile strength and service life have not been reported.

4. There is a repetition of the following sentence: "Common failure modes for the bast fiber-reinforced composite include fiber pull-out, fiber fracture, and matrix cracking, while delamination was reported as the major failure mode for the hybrid composite".

5. In general, there is a need to significantly improve the literature review by doing a critical analysis and synthesis of relevant up to date studies (including a proper reporting of the findings) in order to identify the knowledge gaps, which then justify the scope of the present study.

6. There is a need to justify the scope of the study "In this experimental study, hybrid composites were made with sisal fibre and sugar palm fibre, and their mechanical properties were analyzed".

It is important for the authors to explain the rationale of mixing sisal and sugar palm fibres.

7. It would be important to provide an explanation for the following statement "The results indicated that sugar palm fibers have the potential to be used in many applications, especially those requiring high water resistance".

8. The methodology adopted by the authors has to be properly justified.

The authors stated the following “Sisal and sugar palm fibers were treated with a NaOH solution of 20% concentration. The fibers were treated with the NaOH solution for 3 hrs, and they were allowed to dry at room temperature for 8 hrs”.

It is important for readers to understand the rationale of using a 20 % (wt) NaOH solution and also how the duration of 3 hours was chosen. Moreover, the drying process needs to be clarified.

9. The laying or mixing of the two fibres is not clear.

10. There is also a need to explain the choice of the length of fibres used (20 mm and 30 mm).

11. The authors should also report the standard deviation for each mean value and should perform relevant statistical tests to ascertain whether there is a statistical difference among the three mean values for the tensile strength.

The same comment applies to the results of the flexural strength and impact tests.

12. Based on the results of the water absorption test, the authors stated “The maximum percentage of water absorption is due to the more amount of sugar palm fibers.”

However, earlier in the methodology section, the authors stated that sugar palm fibres were used particularly for water resistance applications. The findings of the water absorption test seem to contradict this statement. This needs to be explained or clarified.

13. There is a need for an improved analysis and interpretation of the findings with respect to the literature and also with respect to the intended application.

14. The authors have used both American and British English in the manuscript, such as fibre and fiber. It is recommended to be consistent and use either American or British English.