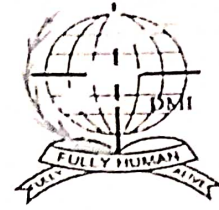




**STUDY OF MECHANICAL
PROPERTIES OF CAFRALL
AND CAKRALL**



A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

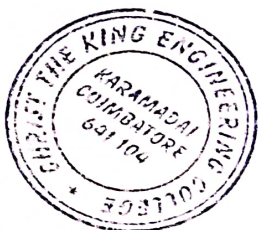
in

MECHANICAL ENGINEERING

CHRIST THE KING ENGINEERING COLLEGE, KARAMADAI

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BONAFIDE CERTIFICATE

Certified that report “STUDY OF MECHANICAL PROPERTIES OF RAFRALL AND CAKRALL” is the bonafide work of ABINESH A (710419114002), PRAKASH D (710419114046), SHANMUGAPANDI K (710419114060), SURYA S (710419114065), who carried out the project work under my supervision.


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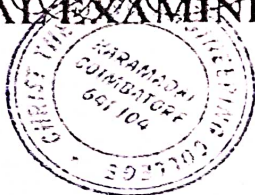
Department of Mechanical Engineering
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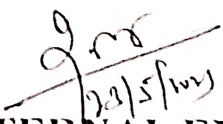

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ABSTRACT

Fiber metal Laminates (FML) are new magnificence of materials that might be in excessive demand due to their superior mechanical and metallurgical residences. Such materials may be synthetic by a ramification of methods relying on length required, stop software, and fee affordability. But FML is at risk of defects which can be governed through factors consisting of the type of pores and skin and center fabric selected, education method used, post-treatment, and load applied. The main focus of this work was to study the tensile, compression, and flexural strengths of the combination of natural/synthetic fibers with metal laminates as reinforcement in a polymer matrix. The materials included flax fibers, kenaf fibers, carbon fibers, aluminum alloy 2024, and epoxy. The two-hybrid fiber metal laminate composites were made from different layers of natural/synthetic fibers with aluminum alloy of the same thickness. The composites were made from carbon and flax fiber-reinforced aluminum alloy (CAFRALL) and carbon and kenaf fiber-reinforced aluminum alloy (CAKRALL). Based on the results obtained from the mechanical tests, the CAFRALL produced better mechanical properties, where it had the highest modulus of elasticity of 4.4 GPa. Furthermore, the CAFRALL was 14.8% and 20.4% greater than the CAKRALL in terms of the tensile and compressive strengths, respectively, and it had a 33.7% lower flexural strength. The results obtained in the study shows that both composites met the minimum characteristics required for use in the fire-designated zone of an aircraft engine due to their suitable mechanical properties.

Key words: Fiber steel Laminates, pores, and skin, middle, practice approach,

Mechanical properties, submit remedy.

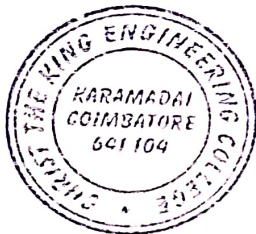




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CHAPTER 7

7. CONCLUSIONS

1. The main objective of this study was to examine the mechanical properties of two FML composites with natural/synthetic fibers and aluminum alloy to determine their ability to be used in the fire-designated zone, by considering the mechanical properties of the existing composite in the zone.
2. The results obtained for the two composites from the tensile, compression and flexural tests were promising. The tensile and compressive strengths obtained from the experimental data showed that the CAFRALL composite had superior properties over CAKRALL composite. However, the kenaf composite had a flexural strength that was almost 33.7% higher than that of the flax composite. The flax composite had 14.8% and 20.4% higher tensile and compressive strengths, respectively than the kenaf composite.
3. The two types of natural fibers used in this study had large influences on the mechanical properties of the composites. It was concluded that both composites can be used as materials in the fire-designated zone.




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