



## **Evaluation of Mechanical Properties of Alkali treated Basalt and Pineapple Leaf Fiber reinforced Hybrid polymer composite**

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**Abstract :** The current study investigates the effect of alkali surface treatment for basalt fiber and pineapple leaf fiber (PALF) on mechanical properties of basalt fiber and pineapple leaf fiber reinforced epoxy hybrid composite. Vacuum bag moulding technique is used to fabricate the unidirectional basalt, and pineapple leaf fiber hybrid reinforced epoxy matrix. The basalt and pineapple leaf fibres are subjected to alkaline (NaOH) surface treatment to improve the adhesion property between the matrix and the reinforcement. By varying the fiber orientation and stacking sequence, four different samples were fabricated. The fabricated samples were tested for tensile, impact and flexural strength for the hybrid composites with and without alkali treatment. The scanning electron microscope images are obtained for fractured tensile test specimen to explore the arrangement of fibres and fibre pull-out. The result shows that fiber orientation, stacking sequence and surface treatment of reinforcements influences the mechanical properties of the hybrid composite.

**Keywords :** Basalt fiber, Pineapple Leaf fiber, Vacuum bagging, Alkali treatment, Mechanical properties.