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EFFECT OF MATERIAL AND STITCHING ON TENSILE PROPERTIES OF WOVEN FABRICS

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Recent years have seen a considerable spread in polymer composite structural materials, which allows the development of alternatives that fulfill technical requirements and methods for improving their mechanical performance. Glass and carbon fibers are being widely used for making composites used in conditions of high loads. While basalt fibers have recently gained attention due to their advantages in terms of cost, physical and chemical characteristics and for the reinforcements of thermosetting polymers as compared to the conventional glass or carbon fibers. Yao and Zhu investigated the strain-rate effect on the tensile behaviors of unidirectional glass,basalt, carbon and plain-woven aramid fabrics. While Liu et al investigated the mechanical properties of basalt and glass fiber composite. Similarly Lopresto et al compared the E-glass and basalt fiber reinforced plastic laminates and shows the high performance of basalt materials.
Most of the work has been done on composites while it is necessary to understand and evaluate the mechanical properties of woven structure before being used in composites. In this research work, the possibility of basalt material in comparison with E-glass as reinforcement material has been analyzed. For this, the effect of material, stitch distance and stitching in between has been analyzed on tensile strength and toughness of woven fabric. The significance of these parameters has been evaluated to optimize woven structures for future use.

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