

## Study on the mechanical characterization of composite materials for automotive wheel application

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### Abstract

Nowadays the development of using fiber-reinforced polymer composites in the field of aviation, defense, automotive, and marine industry is growing due to their lower density as compared with conventional materials. In the automotive industry, the requirements of reduction of weight and fuel consumption have become an essential study without losing any mechanical strength. Fiber-reinforced polymer composite materials are an alternative automotive wheel materials having outstanding mechanical properties via lower density, high fatigue resistance, flexibility of design, stability of dimension, better resistance of corrosion, the resistance of high temperature, high mechanical strength and light in weight, etc.

To determine the mechanical properties of fiber-reinforced carbon epoxy composite material using quasi-isotropic orientation having [45/0/0/0/0/-45/90/90/90/90/-45/0/0/0/0/45]s stacking sequences with a total number of 32 plies was prepared and mechanical characterization was performed. To quantify this analysis tensile and compression test were performed by fabricating the samples through hand layup as per ASTM standards. From the result, fiber-reinforced carbon epoxy composite material has excellent tensile strength in the longitudinal direction and moderate compressive strength in the transversal direction.

### Biography

Eneyw G has completed his MSc at the age of 27 years from AASTU University, Ethiopia. He is the lecturer in Dilla University, Ethiopia. He has one open access publications that have been cited in different journals.



3rd International Conference on Materials Science and Chemistry | July 23, 2020

**Abstract Citation:** Eneyw Gardie, Study on the mechanical characterization of composite materials for automotive wheel application, Euro Materials Chemistry 2020, 3rd International Conference on Materials Science and Chemistry, July 23, 2020, Page 09