

**MECHANICAL PROPERTIES CHARACTERISTICS OF  
CARBON FIBER POLYMER MATRIX COMPOSITE MANUAL  
LAY UP VACUUM METHOD WITH VARIATION OF CURING  
TEMPERATURE**

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**ABSTRACT**

*In the field of engineering today, especially material technology, many developments and new innovations have emerged. The need for certain types of materials with certain characteristics is increasingly abundant. Composite is the mixing of two or more types of materials that have different characteristics, with the aim that the material has superior characteristics. In this study, researchers used woven carbon fiber as a reinforcement material. The advantage of carbon fiber compared to steel and iron is that carbon fiber has stronger and lighter properties. This study aims to determine the effect of curing temperature variations of 50°C, 75°C, and 100C on tensile strength and impact. Where the manufacturing process will be done by manual lay up vacuum method then curing process for 30 minutes. From the results of tensile tests that have been carried out, the highest average tensile stress results are found at a curing temperature of 100 ° obtained a tensile stress value of 268.97 N/mm<sup>2</sup> and the lowest average tensile stress value is found at a curing temperature of 50 °C of 226.40 N/mm<sup>2</sup> where as the curing temperature increases it shows an increase in tensile strength. From the results of impact testing that has been carried out, the highest average impact price is found at a 100°C curing temperature of 0.242 J/mm<sup>2</sup> and the lowest average impact price value is found at a 50°C curing temperature of 0.189 J/mm<sup>2</sup> where the impact specimen is stronger to withstand the impact load as the curing temperature increases.*

**Keywords:** *Composite, Carbon fiber, curing*