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Study on machinability effect of surface roughness in milling kenaf fiber reinforced plastic composite (unidirectional) using response surface methodology (Article)

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Abstract

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The surface roughness factor (Ra) of a milled kenaf reinforced plastic are depending on the milling parameters (spindle speed, feed rate and depth of cut). Therefore, a study was carried out to investigate the relationship between the milling parameters and their effects on a kenaf reinforced plastic. The composite panels were fabricated using vacuum assisted resin transfer molding (VARTM) method. A full factorial design of experiments was used as an initial step to screen the significance of the parameters on the defects using Analysis of Variance (ANOVA). If the curvature of the collected data shows significant, Response Surface Methodology (RSM) is then applied for obtaining a quadratic modelling equation which has more reliable in expressing the optimization. Thus, the objective of this research is obtaining an optimum setting of milling parameters and modelling equations to minimize the surface roughness factor (Ra) of milled kenaf reinforced plastic. The spindle speed and feed rate contributed the most in affecting the surface roughness factor (Ra) of the kenaf composite.

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Full factorial design of experiments | Kenaf reinforced epoxy | Milling | RSM | Surface roughness

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