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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 (R_a) 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 (R_a) of milled kenaf reinforced plastic. The spindle speed and feed rate contributed the most in affecting the surface roughness factor (R_a) of the kenaf composite. © 2006-2016 Asian Research Publishing Network (ARPN).

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- 1 Davoodi, M.M., Sapuan, S.M., Ahmad, D., Ali, A., Khalina, A., Jonoobi, M.
 Mechanical properties of hybrid kenaf/glass reinforced epoxy composite for passenger car bumper beam

 (2010) *Materials and Design*, 31 (10), pp. 4927-4932. Cited 121 times.
 doi: 10.1016/j.matdes.2010.05.021

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 J.A.

- 2 Jeyanthi, S., Janci Rani, J.
Improving mechanical properties by KENAF natural long fiber reinforced composite for automotive structures

(2012) *Journal of Applied Science and Engineering*, 15 (3), pp. 275-280. Cited 24 times.

- 3 Rowell, R.M.
A new generation of composite materials from agro-based fiber
(1995) *Proceedings of the 3rd International Conference on frontiers of polymers and advanced materials*, pp. 659-665. Cited 30 times.

- 4 Babu, G.D., Babu, K.S., Gowd, B.U.M.
Effect of machining parameters on milled natural fiber-reinforced plastic composites
(2013) *J. Adv. Mech. Eng.*, pp. 1-12. Cited 28 times.

- 5 Wambua, P., Ivens, J., Verpoest, I.
Natural fibres: Can they replace glass in fibre reinforced plastics?

(2003) *Composites Science and Technology*, 63 (9), pp. 1259-1264. Cited 1361 times.
<http://www.journals.elsevier.com/composites-science-and-technology/>
doi: 10.1016/S0266-3538(03)00096-4

[View at Publisher](#)

- 6 Yousif, B.F., Shalwan, A., Chin, C.W., Ming, K.C.
Flexural properties of treated and untreated kenaf/epoxy composites

(2012) *Materials and Design*, 40, pp. 378-385. Cited 119 times.
doi: 10.1016/j.matdes.2012.04.017

[View at Publisher](#)

- 7 Schmid, S.R., Kalpakjian, S.
(2009) *Manufacturing Engineering and Technology*, pp. 172, 216-226, 662 and 662-668. Cited 105 times.
6th ed. New Jersey:Prentice Hall

- 8 Chawla, K.K.
(2012) *Composite Materials*, pp. 81-83. Cited 260 times.
New York, NY: Springer New York

- 9 Hafizah, N.A.K., Hussin, M.W., Jamaludin, M.Y., Bhutta, M.A.R., Ismail, M., Azman, M.
Tensile behaviour of kenaf fiber reinforced polymer composites

(2014) *Jurnal Teknologi (Sciences and Engineering)*, 69 (3), pp. 11-15. Cited 8 times.
<http://www.jurnalteknologi.utm.my/index.php/jurnalteknologi/article/download/3138/2340>
doi: 10.11113/jt.v69.3138

[View at Publisher](#)

- 10 Abilash, N., Sivapragash, M.
(2013) *Optimizing the delamination failure in bamboo fiber reinforced polyester composite*. Cited 4 times.

- 11 Erkan, Ö., Birhan, I., Çiçek, A., Kara, F.
(2012) *Prediction of Damage Factor in end Milling of Glass Fibre Reinforced Plastic Composites Using Artificial Neural Network*. Cited 3 times.

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