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## Comparison Effect of Delamination Factor (F-d) on Unidirectional and Woven Kenaf Fibre Reinforced Plastic Composite Materials during Milling Process

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### Abstract

Kenaf fibre is a fibre-based plant in the natural fibre group that is becoming more widely used. Kenaf fibre was mixed with polymer (epoxy) materials to develop a new material with good mechanical properties with low manufacturing costs. The workpiece is divided into two types which is the unidirectional kenaf fibre and the woven kenaf fibre. The experiment will focus on comparison the effect of delamination factor (F-d) which was produced during milling process on that materials with the most optimum set of parameter to reduce the effects of F-d. This experiment will be conducted based on roughness surface methodology (RSM) analysis with the Box-Behnken Design approach to get the effects of dependant factors on response. The factors involved are cutting speed, feed rate and depth of cut. The straight line (slotting) milling process will be conducted to indentify the effect of F-d using high speed steel (HSS) uncoated and tungsten carbide uncoated end milling with 10 mm diameter cutting tools. Image from microscope shown the unidirectional kenaf fibre composite material has a high delamination factor compared to effect on woven kenaf fibre composite material. On optimum parameter setting, unidirectional kenaf fibre workpiece is low cutting speed, feed rate and depth of cut. While for woven kenaf fibre workpiece, the optimum parameter setting is low cutting speed with high feed rate and depth of cut.

### Keywords

Author Keywords: [Delamination factor](#); [optimization](#); [RSM Box-Behnken](#)

KeyWords Plus: [DESIGN EXPERIMENTS](#); [GLASS](#)

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1. **Prediction of tool life in end milling by response surface methodology** Times Cited: **61**  
 By: Alauddin, M; ElBaradie, MA; Hashmi, MSJ  
 JOURNAL OF MATERIALS PROCESSING TECHNOLOGY Volume: 71 Issue: 3 Pages: 456-465 Published: NOV 23 1997
2. **Effect of machining parameters on milled natural fibre-reinforced plastic composites** Times Cited: **25**  
 By: Babu, G.D.; Babu, K.S.; Gowd, B.U.M.  
 Journal of Advanced Mechanical Engineering Volume: 1 Issue: 1 Pages: 1-12 Published: 2013
3. **Optimization of machining parameters in drilling hemp fiber reinforced composites to maximize the tensile strength using design experiments** Times Cited: **13**  
 By: Babu, G. Dilli; Babu, K. Sivaji; Gowd, B. Uma Maheswar  
 INDIAN JOURNAL OF ENGINEERING AND MATERIALS SCIENCES Volume: 20 Issue: 5 Pages: 385-390 Published: OCT 2013
4. **A novel approach based on digital image analysis to evaluate the delamination factor after drilling composite laminates** Times Cited: **178**  
 By: Davim, J. Paulo; Rubio, J. Campos; Abrao, A. M.  
 COMPOSITES SCIENCE AND TECHNOLOGY Volume: 67 Issue: 9 Pages: 1939-1945 Published: JUL 2007
5. **A study on milling of glass fiber reinforced plastics manufactured by hand-lay up using statistical analysis (ANOVA)** Times Cited: **75**  
 By: Davim, JP; Reis, P; Antonio, CC  
 COMPOSITE STRUCTURES Volume: 64 Issue: 3-4 Pages: 493-500 Published: JUN 2004
6. **Damage and dimensional precision on milling carbon fiber-reinforced plastics using design experiments** Times Cited: **136**  
 By: Davim, JP; Reis, P  
 JOURNAL OF MATERIALS PROCESSING TECHNOLOGY Volume: 160 Issue: 2 Pages: 160-167 Published: MAR 20 2005
7. **Chopped glass and recycled newspaper as reinforcement fibers in injection molded poly(lactic acid) (PLA) composites: A comparative study** Times Cited: **267**  
 By: Huda, Masud S.; Drzal, Lawrence T.; Mohanty, Arnar K.; et al.  
 COMPOSITES SCIENCE AND TECHNOLOGY Volume: 66 Issue: 11-12 Pages: 1813-1824 Published: SEP 2006
8. **Manufacturing Engineering and Technology** Times Cited: **1**  
 By: Kalpakjian, S; Schmid, S. R.  
 SI Units Published: 2010  
 Publisher: Pearson (Prentice Hall), New Jersey
9. Title: [not available] Times Cited: **18**  
 By: Myers, R. H.; Montgomery, D. C.; Anderson-Cook, C. M.  
 Response Surface Methodology: Process and Product Optimization Using Designed Experiments Pages: 1-10 Published: 2009  
 Publisher: Wiley, Oxford
10. **Anisotropic chip formation models of cutting of FRP.** Times Cited: **2**  
 By: Puw, H. Y.; Hocheng, H.  
 P ASME S MAT REM SUR Published: 1995
11. **Resin transfer molding of natural fiber reinforced composites: cure simulation** Times Cited: **73**  
 By: Rouison, D; Sain, M; Couturier, M  
 COMPOSITES SCIENCE AND TECHNOLOGY Volume: 64 Issue: 5 Pages: 629-644 Published: APR 2004
12. **A review of bast fibres and their composites. Part 1-Fibres as reinforcements** Times Cited: **253**  
 By: Summerscales, John; Dissanayake, Nilmini P. J.; Virk, Amandeep S.; et al.  
 COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING Volume: 41 Issue: 10 Pages: 1329-1335 Published: OCT 2010
13. **Natural fibres: can they replace glass in fibre reinforced plastics?** Times Cited: **1,165**  
 By: Wambua, P; Ivens, J; Verpoest, I  
 COMPOSITES SCIENCE AND TECHNOLOGY Volume: 63 Issue: 9 Pages: 1259-1264 Published: JUL 2003

14. [Kenaf natural fiber reinforced polypropylene composites: A discussion on manufacturing problems and solutions](#)

Times Cited: 209

By: Zampaloni, M.; Pourboghrat, F.; Yankovich, S. A.; et al.

COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING Volume: 38 Issue: 6 Pages: 1569-1580 Published: 2007

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