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Performances of different mill cutters in machining of GFRP Composite Laminates

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Abstract

Composite products are often subjected to secondarymachining processes as integral part of componentmanufacture. This paper represents investigation of surface roughness and delaminating factor in use of high speed steel, solid carbide k 10 end mills and special designed carbide tipped end mill. The analyses of these cutting tools behaviour on uni- directional (UD) and bi-directional (BD) ($0^0/90^{0)}$ glass fiber reinforced plastics is important aspect in manufacturing industries such as automobile, aerospace and other applications. Therefore, careful machining needs to perform to obtain dimensional accuracy and minimize the surface damage of various components. The present work is mainly focused on influence of cutting speed, feed rate and depth of cut on delamination damage and surface roughness on UD glass fiber reinforced plastic composites by three different end mill cutters. In this connection Taguchi design method is used to investigate the machining characteristics of GFRP flat (100mmx100mmx10mm) laminates. From the results, the conclusions are drawn based on machining parameters contributing towards the responses. The measured results of delamination and surface roughness of machined surface of the specimens are measured and analysed by using statistical software MINITAB17.

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