

Tensile behaviour of unbalanced woven C-glass/epoxy composite laminated plate with and without circular cutouts

ABSTRACT

In present days experimental investigation for composites material has been a very important study to determine not only the materials properties but also the behaviour of the produced composite. For this study, an experimental investigation to determine the tensile behaviour and failure modes of unbalanced woven C-glass/epoxy composites laminated panels was performed. Series of coupon tests are carried out for the unbalanced C-glass/epoxy laminates according to ASTM 3039 to obtain their mechanical and strength properties which are then used to calculate the load-displacement curves, the ultimate load and the energy absorption capabilities for each coupon panel. Study conducted are by varying the cut-out sizes and varying the fibre angle orientations, it was discovered that cross ply laminates had the highest ultimate load and that increasing the cut-out size reduced the ultimate load of the panels. Visual inspections of the damage specimens using microscopic camera are also carried out for certain type of composite laminates to investigate the mode of failures. In general all of the samples exhibit almost similar types of failure modes such as fibre breakage, delamination, debonding and matrix cracking.

Keyword: Composites; Energy; Glass; Circular cutouts tensile