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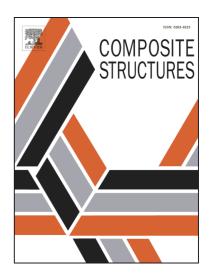
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## CCEPTED MANUSCRIPT

Bending failure mechanism and flexural properties of GLARE

laminates with different stacking sequences

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**ABSTRACT** 

Failure mechanisms of GLARE laminates with different structure were investigated by the

combination of experiment and numerical simulation methods to predict the damage behaviors of

GLARE in practical applications. In this study, bending properties were obtained under varied

experiment parameters. Results indicated that the value of span-to-thickness ratio (L/h ratio),

which could change the failure mode of laminates, had the most significant impact on bending

properties. Effective bending failure occurred when L/h ratio ranged from 14 to 24. Moreover,

the bending properties of GLARE laminates with different structures such as 3/2 (3 aluminum

sheets and 2 glass/epoxy plies), 4/3, 5/4 and 6/5 were measured and compared. The data revealed

that bending modulus decreased with structural expansion. However, the bending strength of

unidirectional laminates increased with structural expansion, while the bending strength of

cross-ply laminates decreased. SEM observation showed that the failure of GLARE laminates

consisted of elastic stage, plastic stage, local fracture of fiber layer and delamination stage.

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