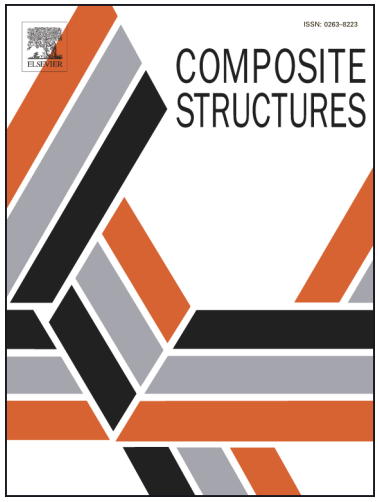

Compression after low velocity impact tests of marine sandwich composites: effect of intermediate wooden layers

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COMPRESSION AFTER LOW VELOCITY IMPACT TESTS OF MARINE SANDWICH COMPOSITES: EFFECT OF INTERMEDIATE WOODEN LAYERS

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Abstract

In the present work, compression after impact (CAI) behavior of sandwich composite materials with intermediate wooden layers was investigated. Sandwich panels were manufactured by using vacuum assisted resin transfer molding (VARTM) method with pinewood and ashwood intermediate layers. 15 and 25 mm thick PVC foams with a same density of 80 kg/m^3 were chosen in conjunction with the face sheets composed of non-crimp biaxial E-glass fabrics and bisphenol-A epoxy vinyl ester resin material system. Impact tests were performed under 30 J (low) and 60 J (high) energy levels with conical and hemispherical impactors. CAI tests were conducted in accordance with the ASTMC364/C364M-07 standard. Using pinewood and ashwood intermediate layers increased the residual CAI strength and decreased the depth of the impact damage. The intermediate wooden layers have also a potential to reduce the thickness of the composite face sheets and foam core which may increase the proportion of the recyclable wooden materials within the sandwich structure.

Keywords: *Sandwich structures; low velocity impact (LVI); compression after impact (CAI); intermediate wooden layers.*

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