Accepted Manuscript

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

F. Balıkoğlu, T.K. Demircioğlu, O. İnal, N. Arslan, A. Ataş

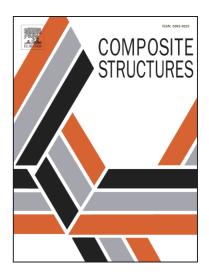
PII: S0263-8223(17)30335-5

DOI: http://dx.doi.org/10.1016/j.compstruct.2017.08.003

Reference: COST 8761

To appear in: Composite Structures

Received Date: 30 January 2017 Revised Date: 5 June 2017 Accepted Date: 1 August 2017



Please cite this article as: Balıkoğlu, F., Demircioğlu, T.K., İnal, O., Arslan, N., Ataş, A., Compression after low velocity impact tests of marine sandwich composites: effect of intermediate wooden layers, *Composite Structures* (2017), doi: http://dx.doi.org/10.1016/j.compstruct.2017.08.003

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

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

F.Balıkoğlu¹, T.K. Demircioğlu¹, O. İnal¹, N. Arslan², A. Ataş^{1*}

¹Department of Mechanical Engineering, Balikesir University, Balikesir, 10145, Turkey ²Department of Energy Systems Engineering, Manisa Celal Bayar University, Hasan Ferdi Turgutlu Technology Faculty, Manisa, Turkey

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/m³ 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.

^{*} Corresponding author: a.atas@balikesir.edu.tr (Tel: +90 266 6121194/5106),

Department of Mechanical Engineering, Balikesir University, Balikesir, 10145, Turkey

Download English Version:

https://daneshyari.com/en/article/6705101

Download Persian Version:

https://daneshyari.com/article/6705101

<u>Daneshyari.com</u>