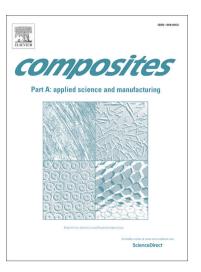
#### Accepted Manuscript

Low velocity impact resistance and energy absorption of environmentally friendly expanded cork core-carbon fiber sandwich composites

Joe Walsh, Hyung-Ick Kim, Jonghwan Suhr

PII:	S1359-835X(17)30209-9
DOI:	http://dx.doi.org/10.1016/j.compositesa.2017.05.026
Reference:	JCOMA 4678
To appear in:	Composites: Part A
Received Date:	13 March 2017
Revised Date:	17 May 2017
Accepted Date:	20 May 2017



Please cite this article as: Walsh, J., Kim, H-I., Suhr, J., Low velocity impact resistance and energy absorption of environmentally friendly expanded cork core-carbon fiber sandwich composites, *Composites: Part A* (2017), doi: http://dx.doi.org/10.1016/j.compositesa.2017.05.026

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

## Low velocity impact resistance and energy absorption of environmentally friendly expanded cork core-carbon fiber sandwich composites

Joe Walsh<sup>a</sup> Hyung-Ick Kim<sup>b,c</sup>, and Jonghwan Suhr<sup>a, b, d,\*</sup>

<sup>a</sup> Department of Mechanical Engineering, University of Delaware, 126 Spencer Lab,

Newark, Delaware 19716.

<sup>b</sup> Center for Composite Materials, University of Delaware, Newark, Delaware 19716

<sup>c</sup>Region Advanced Manufacturing Technology Agency Korea Institute of Industrial

Technology, Jinju 660-805, South Korea

<sup>d</sup> Department of Polymer Science & Engineering and Department of Energy Science, Sungkyunkwan University, 2066, Seobu-Ro, Jangan-Gu, Suwon, Gyeonggi-Do 16419, South Korea

\*Corresponding Author. Email: <u>suhr@skku.edu</u>.

#### Abstract

This study investigates the use of expanded cork (a 100% natural lightweight agglomerate material) as a core material in composite sandwich structures with carbon fiber face sheets. The characterization performed focused particularly on energy absorption capability. Rohacell® 110 IG, a synthetic foam commonly used as a core material in high performance aerospace applications, was also used and characterized to compare the energy absorbing characteristics of the sandwich composites. Bending tests were done to examine the stiffness of the sandwich beams. Wavenumber and damping tests were performed to characterize the acoustic and vibrational damping properties of the composites. Both full penetration and partial penetration low velocity impact tests were Download English Version:

# https://daneshyari.com/en/article/5439410

Download Persian Version:

https://daneshyari.com/article/5439410

Daneshyari.com