

Accepted Manuscript

Wetting and swelling property modifications of elementary flax fibres and their effects on the Liquid Composite Moulding process

Monica Francesca Pucci, Pierre-Jacques Liotier, David Seveno, Carlos Fuentes, Aart Van Vuure, Sylvain Drapier

PII: S1359-835X(17)30094-5
DOI: <http://dx.doi.org/10.1016/j.compositesa.2017.02.028>
Reference: JCOMA 4589

To appear in: *Composites: Part A*

Received Date: 15 November 2016
Revised Date: 20 February 2017
Accepted Date: 26 February 2017

Please cite this article as: Pucci, M.F., Liotier, P-J., Seveno, D., Fuentes, C., Vuure, A.V., Drapier, S., Wetting and swelling property modifications of elementary flax fibres and their effects on the Liquid Composite Moulding process, *Composites: Part A* (2017), doi: <http://dx.doi.org/10.1016/j.compositesa.2017.02.028>

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.



Wetting and swelling property modifications of elementary flax fibres and their effects on the Liquid Composite Moulding process

Monica Francesca Pucci^a, Pierre-Jacques Liotier^{a,*}, David Seveno^b, Carlos Fuentes^b, Aart Van Vuure^b, Sylvain Drapier^a,

^a*Mechanics and Materials Processing dept, Lab. G. Friedel UMR CNRS 5307, Mines Saint-Étienne, 158 Cours Fauriel CS 62362 42023 Saint-Étienne, France*

^b*Department of Materials Engineering (MTM), KU Leuven, Kasteelpark Arenberg 44 3001 Leuven, Belgium*

Abstract

Flax fibres were thermally treated, to prove that in the same manufacturing conditions, modifying wetting and swelling properties of fibres changes the flow during LCM processes and thus could enhance the final material health of composite parts. Swelling of untreated and treated fibres was measured with optical and tensiometric methods proving that the thermal treatment increases the dimensional stability of flax fibres. A methodology to minimise the dispersion of contact angle values was also developed, and surface energy components of untreated and treated fibres were then determined in the frame of the Owens and Wendt theory. It was evidenced that the thermal treatment makes fibres less hydrophilic. Composite half plates reinforced with untreated and treated flax fabrics were then simultaneously manufactured

*Corresponding author

Email address: liotier@emse.fr (Pierre-Jacques Liotier)

Download English Version:

<https://daneshyari.com/en/article/5439632>

Download Persian Version:

<https://daneshyari.com/article/5439632>

[Daneshyari.com](https://daneshyari.com)