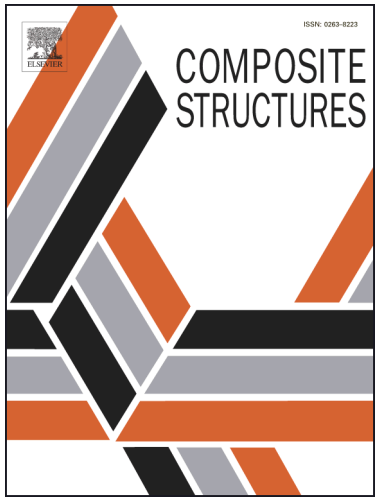

Agglomerated cork: a way to tailor its mechanical properties

P.T. Santos, S. Pinto, P.A.A.P. Marques, A.B. Pereira, R.J. Alves de Sousa

PII: S0263-8223(16)32921-X
DOI: http://dx.doi.org/10.1016/j.compstruct.2017.07.035
Reference: COST 8690

To appear in: *Composite Structures*

Received Date: 20 December 2016
Revised Date: 9 June 2017
Accepted Date: 12 July 2017

Please cite this article as: Santos, P.T., Pinto, S., Marques, P.A.A.P., Pereira, A.B., Alves de Sousa, R.J., Agglomerated cork: a way to tailor its mechanical properties, *Composite Structures* (2017), doi: http://dx.doi.org/10.1016/j.compstruct.2017.07.035

Agglomerated cork: a way to tailor its mechanical properties

P.T. Santos, S. Pinto, P.A.A.P. Marques*, A.B. Pereira, R.J. Alves de Sousa*

TEMA - Centre for Mechanical Technology and Automation,

Department of Mechanical Engineering, University of Aveiro,

Campus de Santiago, 3810-193, Aveiro, Portugal

Abstract:

The use of natural materials like cork has been quickly spreading over the last years due to growing awareness of the scientific community and population about environmental issues. For example, the scrap coming from the production of traditional wine stoppers and other cork products can be reutilized, being generally triturated and agglomerated into new products. The so-called agglomerated cork material is nearly isotropic and has been finding a wide range of utilities, being a good thermal and acoustic insulator, vibration and impact absorber along with pleasant aesthetics. Nevertheless, literature has been addressing agglomerated cork material in a very general way, and defining density and grain size as the two main processing parameters. This piece of research aims to show that, apart from density and grain size, other parameters such as binder type or its quantity may also have a pertinent effect on the mechanical properties of cork in the agglomerated form. To this end, the whole production process is detailed and a campaign of static and dynamic tests is carried out. Conclusions show that agglomerated cork is an easily tailorable material and more information on its production aspects must be provided when employing it for scientific research.

*Corresponding author.

Email: rsousa@ua.pt Tel.: +351 234 370 200, Fax: +351 234 370 953

Email: paulam@ua.pt Tel.:+351 234 370 200, Fax: +351 234 370 953