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Mechanical Characterisation of *Cytisus Scoparius* Natural Fibres – A Preliminary Study

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The use of natural fibres as reinforcement in polymeric matrix composites is gaining popularity sustained not only by a logical search of more ecological alternatives to the conventional fibres in the development of renewable products but also by economic reasons. Although the conventional glass and other synthetic fibre-reinforced plastics possess high specific strength, their fields of application are limited because of their inherent higher production cost and their lack of recycling possibilities. The use of natural fibres from autochthones plants without commercial value for “green” composites production should be enhanced once the higher value-in-use may mean increasing the content of a local material (a natural fibre) in the local production of a part (a composite) [1]. This work’s objective is to provide one first approach to mechanical characterisation of scotch broom (*Cytisus Scoparius*) natural fibres in order of its future use in natural fibre reinforced composites production. Fibres to be tested have been extracted from year scotch broom branches using traditional techniques that consisted in smashing the branches, a maceration period, rip them to remove the soft organic tissue and then naturally dry the obtained fibres. For natural fibres characterisation was develop a special mounting frames to allow them to be essayed according the ASTM D2343 – 09 standards [2]. From the extracted data in yield strength tests over scotch broom fibres it can be concluded that those represent a promising complimentary choice to other natural fibres in natural fibre reinforced composites manufacturing, whose application can be settled as medium strength appliances. Also, usually local non-valuable resource is explored contributing to forest residues cleaning with added benefits. This works is being followed by polymeric composite plates production, using these fibres, with a random orientation, as a first approach, and then with usual defined orientations and its testing in order to realise which mechanical characteristics can be expected as a composite.

[1] F.T. Wallenberger, and N. Weston, 2004. Natural fibers, plastics and composites, F. T. Wallenberger & N. Weston, eds., Springer US, 2004.

[2] ASTM, 2009. ASTM D2343-09, West Conshohocken, PA: ASTM International.