

# **RECOVERY OF END-OF-LIFE WOOD-PLASTIC COMPOSITES (WPC) PRODUCTS: INFLUENCE OF WASTE FIELDS NATURE AND OF AN COMPATIBILIZER ON RECYCLED WPC BENDING PROPERTIES**

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## **Abstract.**

The use of Wood-Plastic Composites (WPCs) is experimenting a growing rate in the building and automotive sectors. Therefore, the volume of the end-of-life WPCs products is expected to rise, in the following years [1]. However, the end-of-life WPCs end up predominantly in landfills, since, currently, there is no economically profitable waste treatment process for these materials. Then, the goal of this work is to establish a recovery approach, to limit the amount of WPCs wastes in landfills. Specifically, two end-of-life WPCs wastes fields, with varying ageing degrees, were selected for recovery. The first one consists in a batch of defective decking boards, named CDP-ref, which has never been commercialized and exposed outside. The second one, called FDV-ref, is composed of decking boards exposed for about 10 years outdoors. The WPCs wastes fields are first grinded, before being reincorporated into an extrusion process. They are reincorporated with unaged WPC granules, labelled WPC-PE, at different contents: 0, 50 and 100wt%. Results showed that bending mechanical properties close to the unaged WPC-PE could be achieved for these two WPCs wastes fields. Moreover CDP-ref could be recovered until 100wt%. For FDV-ref, a maximum in bending properties was achieved for WPC-PE/FDV 50/50 wt%. Finally, PE grafted maleic anhydride (2 and 4wt%) was added during the extrusion to improve FDV-ref and CDP-ref dispersion within WPC-PE.

- [1] V. Le Ravalec, “Identification des gisements et valorisation des matériaux biosourcés en fin de vie en France,” *Etude réalisée pour le compte l’ADEME par Tech2Market, FRD NaturePlast*, 2014.