Olive stones flour as reinforcement in PVC composite: A step forward in the valorization of the solid waste from the olive industry

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The production of olive oil leads to considerable amounts of solid wastes mainly composed of hard woody endocarp called here olive stones. The aim of the present work is to explore the possible use of ground olive stones as filler for PVC to elaborate composite material with a solid loading up to 50wt%. After grinding, the olive stone flour (OSF) was incorporated into a PVC matrix via a melt compounding and injection molding to elaborate a PVC-OSF-based composite with filler content up to 50wt%. The evolution of the mechanical performances, impact properties and water absorbance behavior according to the OSF content, were investigated. The addition of OSF was shown to enhance the stiffness of the matrix but at the expense of a reduction in the mechanical strength. The thermal properties of the ensuing composite were also studied by thermal thermogravimetric analysis (TGA). A decrease in the temperature of the onset of PVC thermal degradation was observed as OSF is added into the PVC.