P-2-1178

POLY(VINYL BUTYRAL)-LEATHER COMPOSITES

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Natural fibers, especially short cycle production fibers, have been applied in numerous studies as reinforcing agents in polymer composites from macro to nano scale. Among these natural fibers, leather residues stands out because collagen is the main component of the fibers. Leather treated with chromium oxide during the tanning process is used on a large scale in the footwear, automotive, garment and personal protective equipment (PPE) industries, generating a large amount of residues. An alternative solution for these residues is recycling (reuse), which can be focused on the same sectors that generate the residue. This study reports the preparation and characterization of a composite with recycled poly (vinyl butyral) (PVB) and *wet blue* leather fiber with leather contents of 30 wt%, 50 wt% and 70 wt%. Although a single screw extruder is more suitable for the extrusion of profiles, it can be used as a mixer when it presents a barrier flight that helps the melting and the dispersion mixing the components, as a Maillefer screw. The components of the composite were characterized using Thermogravimetric Analysis (TGA) and Infrared Spectroscopy (FTIR). After extrusion, the PVB/leather composite plates were compression molded to obtain specimens for testing of tensile properties and abrasion resistance. The morphology of the composite was analyzed by scanning electron microscopy (SEM). The thermal analysis by TGA showed that leather fibers lose a significant quantity of water starting at 100°C, and that the leather fibers are degraded beginning at 320°C. The recycled PVB showed no mass loss until 200°C. The FT-IR analyses showed that PVB contained plasticizer. The mechanical properties of the PVB/leather composite were strongly influenced by the leather fiber concentration. Increased fiber concentration improved the elastic modulus under tension, and it reduced the properties of abrasion resistance, tensile strength and elongation at break when compared to the PVB matrix.