

INFLUENCE OF THE ADDITION OF INCREASING AMOUNT CHESTNUT SHELL TO BENTONITE/POLYESTER COMPOSITES

Günce Alp ADIGUZEL, Alev Akpınar BORAZAN

Bilecik Seyh Edebali University, Turkey

Corresponding Author's e-mail: alev.akpinar@bilecik.edu.tr

ABSTRACT

Nowadays, consumption is increasing depend on population and wastes are caused great problems as an outcome of this. The majority of waste is generated in the food industry and these are used for manufacturing low economic value products. The wastes of the chestnut candy factories are usually used as biomass/biochar source. We have to find or create/ alter new forms of chestnut wastes to increase their value and to minimize environmental issues. Composite materials, especially polymer composite are the part of growing and developing modern industry. There are two different types of fillers used in composite materials. The first one is called reinforcing fillers which are used for improving the mechanical properties. The latter is called cost reduced fillers and commonly used for commercial purposes. In this study, composites were manufactured using chestnut waste and bentonite as filler and polyester as the polymer matrix. For curing, methyl ethyl ketone peroxide was used as an initiator, it was accelerated with cobalt naphthenate for curing process at room temperature and the last additive was Polyethylene graft maleic anhydrite as coupling agent. The effect of filler ratios (chestnut shell) and bentonite content on mechanical, physical properties of composites was assessed by measuring the bending strength, flexural modulus, hardness, water absorption capacity, and apparent porosity. Increasing the filler ratio of the chestnut shell were increased some properties of composites. Nevertheless, some properties were decreased with chestnut shell content.

Keywords: Polyester Composite; Chestnut shell; Bentonite; Bending Properties; Physical Properties.