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Tensile strength on seven type of fruits skin fiber thermoplastic poyurethane (Tpu)

Abstract

Natural fibers of trees, fruit skins and many other resources are considered as recyclable and are used as filler materials in polymer composites. For decades, natural fibers have become the attention of researchers as an alternative to commercial, synthetic and costly fibers. Therefore, this study has used 7 types of natural fibers from local fruit waste parts in Malaysia (sugarcane, coconut husk, durian, banana, mangoesteen, rambutan and pineapple), as fillers in TPU. This composite was produced via melt mixing technique, with different filler loading from 5 wt% to 20 wt%. Different types of natural fiber and its loading, showed different mechanical properties which resulted through tensile strength and elongation at break. Also, it is found that each of these natural fibers gives maximum tensile strength to the optimum loading between 5 wt% and 10 wt%. The composite with pineapple fiber is the composite with the highest tensile strength value at 5 wt% filler load, as well as the most elastic composite with the highest elongation at break percentages.

Keywords

Fruits skin fiber; Natural fiber; Thermoplastic polyurethane