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Effect of Talc Filler Content On The Fracture Toughness Of Polypropylene Block Copolymer/Talc Composites Stored Long Term Without Any Daylight

E. Fındık[a], Ş. Şahin[b]

[a]Graduate School of Natural and Applied Science, Kocaeli University, Turkey
E-mail: erkut.findik@hotmail.com
[b]Department of Mechanical Engineering, Kocaeli University, Turkey
E-mail: sensah@kocaeli.edu.tr

Abstract

In this experimental study, bending fracture toughness of talc (TC) filled polypropylene block copolymer (PPB) composite material have been examined according to the content of TC. It is known that strength values of the properties of polypropylene materials can be reduced or increased in dependence on time after manufacturing. To compare this short term tests applied to materials in a short time after they manufactured. But the changes in fracture toughness properties of the PPB/TC composite materials depending on the TC content after a prolonged storage period is still unclear. In this context, the aim is to compare bending fracture toughness depending upon TC-content between pure PPB and PPB/TC composite stored in an environment without any daylight conditions just after their production. The materials used for this aim are; pure PPB, TC filler with 13,00μm average particulate size and PPB/TC composite materials with filler contents in different ratios of 10%, 15% and 17,5% by volume. Pure PPB and PPB/TC composite materials were stored at in this environment for at least 50 months. Three point bending tests were performed in according to ISO 13586. When the experimental results were evaluated according to ISO 13586, it was clearly seen that bending fracture toughness of PPB/TC composite materials is strict related with contents of TC filler amount. Following results were ascertained after evaluations, so that bending fracture toughness of PPB/TC composite materials were higher than its pure PPB for every volume fraction. Also it could be said that the highest increase in fracture toughness was seen on 17.5% TC filled PPB composite material and the lowest on 10% TC filled PPB composite material.

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