

عنوان مقاله:

Mechanical and Viscoelastic behavior of TiO₂/Epoxy Nanocomposite

محل انتشار:

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خلاصه مقاله:

In the present research, effect of TiO₂ nanopowder on the mechanical and viscoelastic behavior of epoxy resin have been investigated. For this purpose, the 0.25, 0.5 and 1 Vol.% of TiO₂ mixed mechanically and ultrasonically with epoxy resin. After, processing of homogeneous mixture, some tensile I-shape samples fabricated. The results of tensile tests show that addition of TiO₂ nanopowder will increase the strength and stiffness of epoxy resin. The rupture and ultimate strain of Nanocomposite are decreased. For analysis the viscoelastic behavior of Nanocomposite samples, the creep test and DMTA has been done. Creep test has been done by universal test machine and DMTA. Both results showed that the creep resistance of Nanocomposites have revolutionary improved. Changing of storage modulus, loss modulus and tan (δ) by adding TiO₂ nanopowder examined in two mode of bending and tensile. Also, the water absorption of Nanocomposite samples, are also decreases in all different Vol. percentages of TiO₂. So, all tests showed that adding of TiO₂ in the epoxy resin will improve all experimented properties. So, because of large application of epoxy resin in engineering applications, these results will have great importance. This Nanocomposite is .also can be used as gelcoat in many application especially, in wind turbine composite parts

کلمات کلیدی:

Viscoelastic Behavior, TiO₂/Epoxy Nanocomposite, tensile test, creep test, DMTA, TiO₂ nanopowder

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