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Kinetic study of the RTM6/TiO2 by DSC/TGA for improved hardness of resin

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Abstract :

The aim of this paper is to obtain an epoxy resin with best properties such as good cure of polymer (by using DSC and TGA). The thermal stability and kinetic parameters of epoxy resin RTM6 using non-isothermal thermogravimetry/derivative thermogravimetry (TG/DTG) analysis with a series of different ratios of TiO_2-PC500 1%, 2%, 5% and 10% with epoxy resin were evaluated. The kinetic parameter was evaluated by integral and approximation methods. Results obtained indicated that these parameters were dependent on different ratios of TiO_2. According to the thermogravimetric curves it is shown that the activation energy at high of higher conversion increases with increasing the percentage of TiO_2 particles and epoxy resin. The SEM analysis suggests that TiO_2 particles are uniformly distributed within the material, besides the mechanical property of materials are found to the addition of TiO_2.

Keywords

DSC, TG/DTG, RTM6, TiO2, Kinetic parameter, Mechanical property.

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