

عنوان مقاله:

(Moisture Diffusion Properties of Fabric Composite (Glass Fiber/Epoxy Resin

محل انتشار:

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خلاصه مقاله:

In this study, the effect of hygrothermal conditioning on the moisture diffusion properties of the fabric composite (glass fiber/epoxy resin) was investigated. The water uptake of the specimens conditioned in humid environment at different relative humidities (0, 60 and 96 % r.h) at constant temperature (60 °C) was evaluated by weight gain measurements. The moisture diffusion properties of the fabric composite (glass fiber/epoxy resin) were determined using standard weight gain method. The weight gain experiments were performed to determine the equilibrium moisture content  $M_m$  of the fabric composite as a function of relative humidity (r.h). The measured weight gain is then fit to the solution to the diffusion equation (Fick's law) to determine the diffusivity  $D$ . The comparison carried out between the values obtained of the characteristic parameters ( $D$  and  $M_m$ ) of the kinetics of water absorption by the hygrothermal test of conditioning carried out into the laboratory and those given by Loos and Springer confirms the following principal remarks clearly: the diffusion coefficient  $D$  and the maximum weight gain  $M_m$  depend not only on the nature of material but also of the environmental conditions (hygrothermal conditioning). The maximum concentration of water (matrix+interface) obtained from calculations based on measured values, where a homogeneous diffusion phenomenon is assumed inside the material ( $D_f=0$ ), shows clearly that the presence of fibers in a polymeric matrix reduces the .water up-take of the matrix by about 4 times

کلمات کلیدی:

Moisture Diffusion Properties, Hygrothermal Conditioning, Fabric Composite Materials

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