**Moisture absorption bahaviour of sugar palm fibre reinforced epoxy composites**


ABSTRACT

In engineering practice, moisture absorption test is generally used for quality control purposes and to measure the degradation of the quality for the composite materials. The objectives of this study are to investigate the value of Fickian diffusivity constant, moisture equilibrium content and correction factor for the natural fiber composites. Tests were carried out on composite plates, which was a combination of sugar palm fiber and epoxy resins and two different fiber compositions have been chosen which were 10% and 20% by weight. Pure epoxy plates have been used for the control measures. The specimens were oven dried for 60 h in an air-circulating oven operated with 108 °C before being immersed in the constant temperature water bath, which the distilled water was set at 40 °C for the moisture absorption behavior test for 33 days. From this study, plates with 20% fiber loading possessed the highest amount of moisture prior to the moisture absorption behavior test, which is 0.93%. In moisture absorption behavior test, the corrected value of Fickian diffusivity constant for the 20% fiber loading is 3.76 × 10−7 mm2/s, which is the highest among other composites. It is shown that, for composite plates that contain higher fiber composition, the moisture absorption rate is even higher.



**Keyword:** Moisture absorption: Composite materials; Fiber composites: Diffusion processes