Water absorption associated with gamma irradiation on kevlar/oil palm EFB hybrid composites

ABSTRACT

The objective of this work is to analyse the water absorption behaviour on the gamma irradiated Kevlar/Oil Palm EFB hybrid composites. The hybrid composites were fabricated through manual hand lay-up method. Different layering sequence of hybrid composites were fabricated which is Oil Palm EFB/Kevlar/ Oil Palm EFB (OP/K/OP) and Kevlar/Oil Palm EFB/Kevlar (K/OP/K). Various Gamma radiationdoses;25 kGy, 50kGy and 150 kGy were exposed to the composites. The results showed that for both layering pattern, the water absorption for non-irradiated hybrid composites absorbed more water than irradiated hybrid composites. Water uptake for non-irradiated K/OP/K is 51% and with radiation is 21% at 50 kGy. Hybrid OP/K/OP that is not irradiated absorbed less water which is 27% as compared to the same hybrid but with radiation only 17%of water being absorbed at 50 kGy. The results showed that irradiated hybrid composites absorb less water compared to non-irradiated hybrid composites. This suggest that crosslinking took place due to the radiation. This implies that with radiation of certain dose could improves the properties of water absorption forKevlar/ Oil Palm EFB hybrid composites.

Keyword: Gamma irradiation; Hybrid composites; Water absorption