



Lifetime prediction

In order to predict the lifetime of compression molded, PLA-based SRPC, specimens were subjected to accelerated ageing under different sets of conditions (T, RH). The tensile strength, considered as a critical property for the envisaged application, was systematically monitored during ageing. Accordingly, the time of ageing that takes for the tensile strength to be reduced by 20 % was considered as the time to failure at each set of ageing conditions.

The time to failure can be expressed as a function of T and RH:

$$t_{\text{fail}} = \frac{\exp(E_a^{\text{eff}}/RT)}{A \cdot \text{RH}}$$

Using the experimental results the values of A constant and E_a^{eff} were calculated. Thereafter the t_{fail} at any set of T, RH can be predicted.

