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**Ageing of sandwich composites with E-glass fibre/vinylester skins and PVC foam
core in synergistic environmental agents**

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Abstract

The current work is concerned with ageing behaviour of sandwich composites constituted of E-glass fibre-reinforced vinylester bonded to PVC foam core being in service near the sea as a reference and basis for materials selection. In order to simulate the properties evolution of sandwich composites as real as possible, the sandwich composites were exposed to the two accelerated synergistic environmental conditions: solar radiation in conjunction to water vapour and hygrothermal atmosphere alternating thermal cycling for 1680 hours, and the weight change and mechanical properties degradation were carried out. The results shows that the sandwich composites loss weight in the condition A while gained weight in the condition B, and shear strength of sandwich composites fell finitely, revealing that PVC foam core is insensitive to the two ageing conditions. Meanwhile, the core fracture, interface-core fracture, interface debonding, and piles peel were observed as the increase of exposure time in the flatwise tension test, indicating debonding properties between skin and foam as well as between piles of composites skin were influenced by the two synergistic ageing conditions.

Keywords

Ageing, vinylester, sandwich composites, solar radiation, moisture

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