Weathering influence on the mechanical properties of PVC-coated polyester fabrics with special emphasis on irradiance control

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Abstract

Weathering resistance assessment of membrane material is very important while studying the durability of membrane structures. However, until now only few studies have been focused on it (e. g. [1], [2], [3]). The first objective of this paper is to show the importance of coating (both main and top coating) on the weathering resistance of PVC-coated polyester fabrics by using an artificial accelerated weathering chamber. The quantitative degradation rates for PVC-coated and uncoated polyester fabrics are compared using a standardized artificial weathering procedure. The outcome illustrates the quantitative protection potential of the coating system against weathering.

The second objective is to determine the influence of different amounts of irradiance on the degradation of uncoated woven polyester material while the final radiant energy is the same. Increasing the amount of irradiance on PES/PVC fabrics while the degradation mode for mechanical properties is the same as during natural outdoor weathering can provide a suitable accelerating approach of artificial weathering. These tests were carried out on uncoated polyester fabrics in order to study the effect directly on the load bearing component of the composite PES/PVC.

References

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