

THE WEATHERING EFFECT IN THE APPLICATION OF ENVIRONMENTAL INTERACTIVE MATERIALS ON TENSILE FABRIC COATINGS

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Abstract

This paper refers to two different applications. One of them is the application of adequate black pigments, thermo sensible, over white coating materials used in the covering of buildings, like sportive pavilions, greenhouses and other architectonic structures, in order to save energy in a self-control process.

The self-control is based on the fact that in winter and cold days, the thermal flux of low frequency waves that pass through the textile membrane is similar to that of black textile membranes given that the low external temperature of the atmosphere doesn't change the colour of the pigment. Within the covering, the heat absorbed by the floor and other internal elements with capacity of thermal storage is gradually released in the form of high frequency waves, which the textile membrane retains inside, indifferent to the colour of the thermochromic pigments, creating a greenhouse effect. In summer, the black colour of the thermochromic pigment will disappear, allowing the colour white to appear. The result is the reflection of a significant part of solar radiation that strikes on the covering of the building.

The other application is to create advertising outdoors that are able to react to the existing atmospheric conditions to promote different messages. This innovating technique is based on the use of microencapsulated thermochromic, photochromic and flavours inks.

In these applications, where the interactive pigments are exposed to the Sun, photo-degradation will eventually occur.

The increasing of lifetime needs and the effect of the "weathering" (heat, ultraviolet radiation and humidity) and consequent loss of properties of microcapsules, coated materials and binders are specially studied.