

Use of Polymeric Materials in the Architectural Preservation

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Abstract : These Fluorinated polymers and polyacrylics have known a wide use in the field of historical monuments. PVDF provides a great easiness to processing, a good UV resistance and good chemical inertia. Although the quality of physical characteristics of the PMMA and its low price with a respect to PVDF, its deterioration against UV radiations limits its use as protector agent for the stones. On the other hand, PVDF/PMMA blend is a compromise of a great development in the field of architectural restoration, since it is the best method in term of quality and price to make new polymeric materials having enhanced properties. Films of different compositions based on the two polymers within an adequate solvent (DMF) were obtained to perform an exposition to artificial ageing and to the salted fog, a spectroscopic analysis (FTIR and UV) and optical analysis (refractive index). Based on its great interest in the field of building, a variety of standard tests has been elaborated for the first time at the central laboratory of ENAP (Souk-Ahras) in order to evaluate our blend performance. The obtained results have allowed observing the behavior of the different compositions of the blend under various tests. The addition of PVDF to PMMA enhances the properties of this last to know the exhibition to the natural and artificial ageing and to the saline fog. On the other hand, PMMA enhances the optical properties of the blend. Finally, 70/30 composition of the blend is in concordance with results of previous works and it is the adequate proportion for an eventual application.

Keywords : blend, PVDF, PMMA, preservation, historic monuments

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