Executive summary of the EFFACEUR project

Graffiti attacks and associated cleaning procedures cost Europe ca. 90 million € / year. Cultural Heritage (CH) is a typical market for SMEs because they provide specific case-by-case solutions; however at present these SMEs cannot offer suitable protection measures against graffiti on CH buildings and monuments, as anti-graffiti coatings are hard to find on the market for the type of materials found in CH. Furthermore the products used in CH must follow the strict guidelines of conservation practice. The development of specific CH anti-graffiti products has been delayed due to the conflicting requirements, high financial risk and lack of R&D infrastructures of the SMEs.

In this context, EFFACEUR is a clear opportunity for them to increase their competitiveness and economic benefit. Previously, the GRAFFITAGE project attracted much attention worldwide because of the innovative approach proposed to solve this problem, which consisted in the development of a polymeric charge complex with proven anti-graffiti behaviour suitable CH materials. The SME partners of EFFACEUR propose to use this novel formulation as the basis for a new anti-graffiti product that will satisfy this market. Thus, EFFACEUR aims at further developing, uspcaling and transferring into the market this novel protective anti-graffiti formulation.

The work and results obtained throughout the two project years are summarized here:

- Both latex and hydrophobised polycation further went through a comprehensive optimisation process. As scale-up proceeded feedback from formulation experiments performed by project partner CMPiW PAN became increasingly important for further adaptations. In the final phase, both main components of the EFFACEUR anti-graffiti formulation, the basic film-forming latex and the hydrophobized polycation, were successfully scaled up to 400 l reactor scale and the industrial viability of the production processes was demonstrated in the Fraunhofer pilot plant centre at Schkopau. Materials obtained in the pilot-scale polymerization runs exhibited low viscosity. Also, the physical parameters, such as solid content and particle size, were in the targeted range.

- The formulation of the new anti-graffiti paint based on modified polyanion and polycation was developed. The production technology and equipment to be used were defined. A large 100 kg charge of a new product for field tests was produced. The Technical Data Sheet, guidelines for paint application and Material Safety Data Sheet were developed.

- Reversibility tests were performed on substrates treated with anti-graffiti samples AP604-40 and the method for “reversing” the system was defined. Cleaning tests were performed with 2 anti-graffiti samples (AP604-40 and AP628-60). In the case of AP604-40, cleaning efficiency after 4 months was also tested. According to these experiments, functionality is better for AP604-40 overall but improvements are still needed. The compatibility of the anti-graffiti product with common conservation products such as water repellents, biocides and consolidants was also studied and in general, it can be said that it is good for all products except for the water repellent selected.

- Prior to applying the product on real case studies pre-tests with anti-graffiti samples AP604-40 and AP628-60 were performed on small samples of different types of substrates to get information on the drying and cleaning behaviour of the product. After, the product was applied in 4 different case studies in Germany, Belgium and UK and aspects the like application method, adherence, gloss, colour and weather resistance were studied. In general, the results were satisfying but it must be mentioned that the product cannot be regarded as permanent but sacrificial.