

L'UTILIZZO DI PROTETTIVI SOL-GEL SU LAPIDEI E STUCCATURE.

Il caso del pavimento in *opus sectile* e *tessellatum* della Galleria Franchetti alla Ca' d'Oro di Venezia.

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Abstract.

The phenomenon of “acqua alta” is the main antagonist of the conservation of stone in Venice, where artifacts need constant restoration and maintenance. Innovative solutions based on functionalized silica are viable alternatives to traditional products for stone protection. The sol-gel process applied to cultural heritage (patent of the University of Padua) is a known technology to obtain silica with reactions at neutral pH and room temperature. Hybrid systems obtained from silica precursors and organically modified alkoxides combine performances and stability of mineral treatments to protective function of organic polymers. The floor of Ca' D'Oro is an ideal case for the evaluation of this method in extreme conditions due to the cycles of immersion-emersion and the high concentration of salts. The flooring at the ground level was realized at the beginning of the twentieth century on a project by Baron Giorgio Franchetti. The work is inspired by Byzantine, Cosmatesque and medieval geometric patterns using an antique method of laying of ancient stones, avoiding marble of contemporary quarries. The first intervention was realized in 2018 by I.V.B.C. on a portion of 20 square meters, thanks to the funding of the committee Save Venice. At that time the sol-gel product provided by SILTEA (SIOX-5 RE40) was applied for the protection of groutings and marbles. After one year of monitoring, when several high tide phenomena were recorded, the treatment has shown excellent resistance. A second intervention and laboratory tests were realized in 2019 confirming the previous results. The study revealed a reduction of the water absorption up to 99%. After the intervention it is essential to consider the issue of planned maintenance.

Due to the extreme environmental conditions of the floor, the next step will be the identification of a monitoring system in order to understand how to schedule a new application of the protective treatment.

Keywords: *Ca' d'Oro, sol-gel treatments, stone protection, opus sectile*