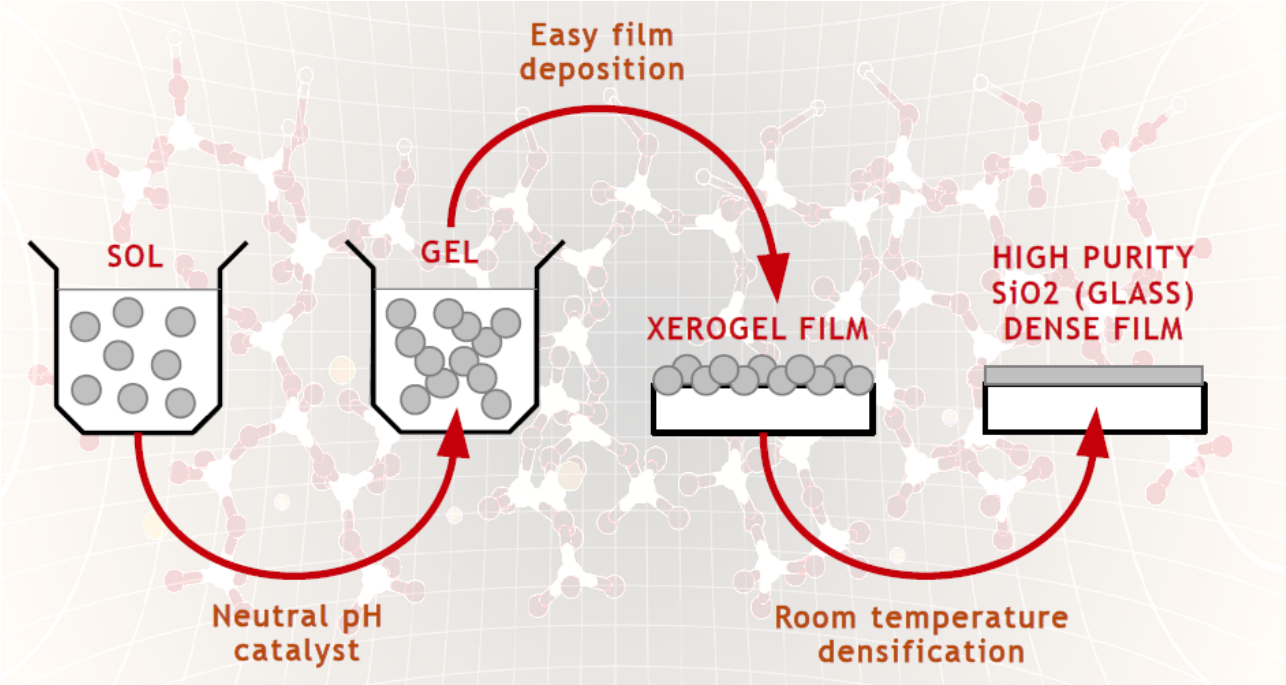
SILTEA
il futuro delle superfici

The product of Siltea are liquid gels obtained with the sol-gel technology thanks to a method developed at the University of Padua (Italy).
The protection od the material is provided by molecular layers of silica (the main component of glass and quartz)l obtained at room temperature. The nanometric treatment protects without altering the aesthetic features of the coated surface.

THE SOL-GEL TECHNOLOGY

The sol-gel process allow obtaining ceramic oxides as silica (usually requiring tempertures up to 1000°C) with an easy method, rapid and at room temperature.



SOL is a stable suspension of nanoparticles (dimensions between 1 e 100 nm): Controlled chemical reactions of hydrolysis and condensation transform the SOL in a WET GEL, a pre-cross-linked fluid that can be applied to the surfaces.
The product forms a thin coating of XEROGEL. The hardening – the transition from the porous XEROGEL to the solid structure of the silica FILM- takes place at room temperature, in short time, without controlled atmosphere or thermal treatments.

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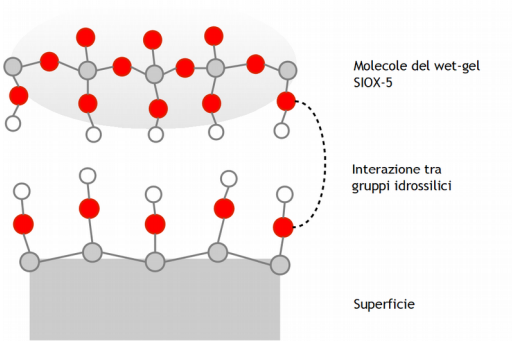
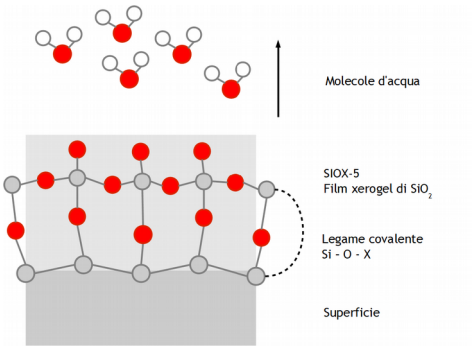
PROPERTIES OF THE COATING

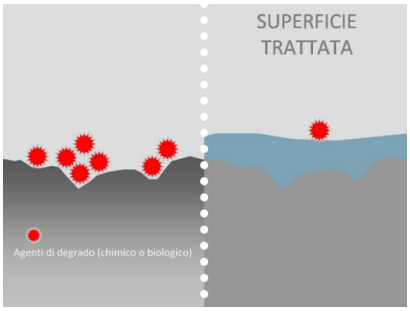
The products are characterized by a high compatibility with silicate materials and with all the surfaces with OH terminal groups. Once applied the coating has self-levelling behaviour and the active silica molecules interact with surface. Strong chemical bonds of the type of Si-O-X (where X represent the surface) are formed thanks to a reaction that releases water molecules. The chemical bonds continue to form while the water and the solvent evaporate.

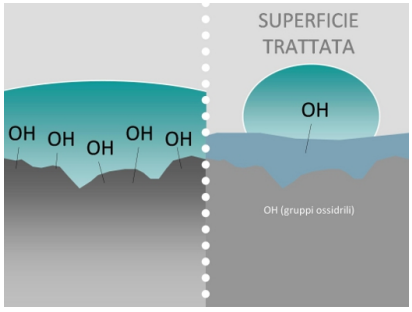




BEHAVIOUR ON NOT ABSORBENT SURFACES

The product applied to smooth and not absorbent material as glass reduces the surface roughness.





The protectione is given by the reduction of the specific surface exposed to whetering and by the smaller number of OH groups able to interact with water.

BEHAVIOUR ON POROUS SURFACES

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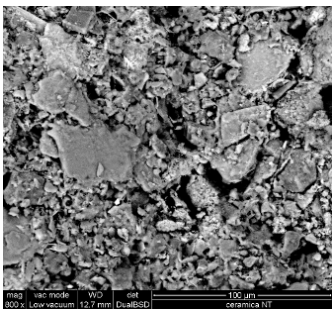
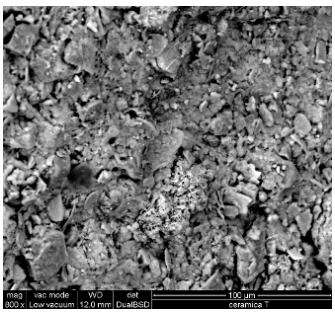
The products coat the pores and penetrate deep while maintaining the natural transpiration of the material. The protection is given by functional groups bonded to silica able to enhance water repellent properties.

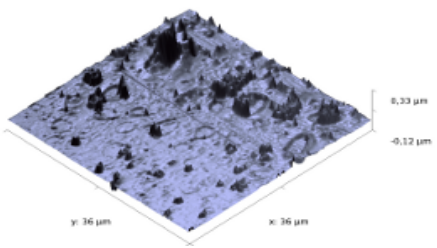
Not treated

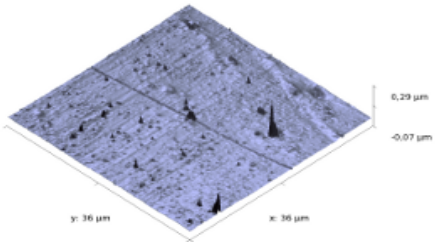


Treated



ESEM-EDS analysis (Environmental Scanning Electron Microscopy) on terracotta.





AFM images (Atomic Force Microscopy) on glass samples.

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