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Vicoforte sandstone in Cultural Heritage

Paola Marini and **Rossana Bellopede**
Politecnico di Torino, DIATI, Torino, Italy (paola.marini@polito.it)

The large family of sandstone covers stones with different grains, porosity, cement or matrix, compactness, chemical composition etc. and it is widely used as cladding stone, even in historic buildings. From literature, its decay is usually connected to the action of salts or to black crusts because of pollution.

Being sandstone a sedimentary rock deposited in layers, often the quarry produce material with a high variability in aspects and mechanical properties. This can be also evident in the resistance to decay shown in the monuments that is typical of each facies though it has been exposed for the same lapse of time and under similar climatic conditions. This is the case of Arenaria di Vicoforte used on the facade of the Vicoforte Sanctuary (Vicoforte - Mondovì) and probably on the external pilaster of the Monte dei Cappuccini church in Turin. Both the catholic monuments were designed by architect Ascanio Vitozzi at the end of the XVI century . It is possible to compare the high degree of weathering of the pilasters of the Monte dei Cappuccini church with the good ageing behaviour shown by the Vicoforte Sanctuary sandstone.

Different durability tests were carried out: resistance to salt crystallisation, resistance to ageing due to SO_2 action in the presence of humidity, frost resistance. The mass weight difference, method used to evaluate the forecast of decay in various european standardardized methodologies, does not always offer a satisfactory estimation of the decay of stone after salt crystallization while water absorption, which is well correlated to the physical mechanical characteristics of the stone, together with a visual inspection, is a good index of the decay in order to obtain a distinction, in terms of durability, between different sandstones even of a same geological district.

A visit to the quarry solved any doubts: two different facies of the Vicoforte sandstone were quarried, one yellowish and the other grey. The first, mainly silicatic, was used for the Sanctuary near the quarry, the grey one (with a carbonate content of 18%) could be the one sent to Turin.

The variability of the rock characteristics in the quarry should therefore be taken into account when evaluating the durability of the sandstone.

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