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## Damaging effect of salt crystallization on highly porous limestone from Hungary

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One of the most important weathering processes on stone-built monuments is the crystallization of salts. Since the transport material of these substances is water, the porous rock types are particularly affected. In Hungary many monuments and historic buildings have been constructed from oolitic Miocene limestone. So in this study, the effect of salt crystallization on the physical and mechanical properties of high porous limestone has been investigated. Samples were obtained from Sósút (near to Budapest, the capital city of Hungary).

At first the petrophysical properties of the stone were determined. The porosity of the investigated stone type was 26-34 V/V%, the uniaxial compressive strength (4-5 MPa) and the Brazilian tensile strength (0,4-0,5 MPa) were very low. A special proper of this rock type is the large-pore system (2-3mm) between the ooid fragments.

Sodium chloride (NaCl) and sodium sulphate ( $\text{Na}_2\text{SO}_4$ ) were used to investigate the effect of salt crystallization. Cylindrical rock samples were exposed to salt solutions of 14 m/m%  $\text{Na}_2\text{SO}_4$  (MSZ EN 12370) and 5% NaCl solution (sea water salt content). After 15 salted water saturation- drying cycles the changes of mineralogical and petrophysical properties and indirect tensile strength of the samples were investigated. The damages on the pore walls were determined with scanning electron microscope (SEM) and the building of scaling layers on the stone surfaces were investigated with optical microscope.