



Modification of textural properties of pore space in sedimentary rocks by conservation agents: mercury porosimetry study and indirect interpretation of durability

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Textural properties of porous sedimentary rocks (various types of sandstone, clayey-calcareous silicites, bioclastic limestones) have been modified by applying some conventional conservation agents (lime water, water glass, esters of silicon acid) used for consolidation and/or hydrophobization treatments of natural stone. Many of these treatments are applied in practice without knowing the real effect on material properties. To partly fill this gap in knowledge, laboratory-scale study performed on disc-like specimens was focused on the detailed investigation of textural properties of pore space of above mentioned types of natural stone by means of mercury porosimetry and on indirect evaluation of durability from pore space textural properties. Depth of penetration of treatments in some of the studied rocks was also controlled by microscopic techniques. Our results show significant variability in the effectiveness of various treatments for different lithologies not only in terms of total porosity change but also in terms of modification of pore size distribution and specific surface area. Data obtained confirm importance of the detailed trials of the effect of specific conservation agents on respective stone types before their final application in real scale.