



Study of glazed building ceramics from central Europe (Budapest, Hungary) in aspect of deterioration by environmental factors

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The Zsolnay products are one of the most famous Hungarian ceramics. The glazed building ceramics, which were produced by this factory, were often applied in Hungary and the surrounding countries. Since their outplacements the ceramics have suffered from numerous environmental and human influences. There is no profound knowledge about deterioration of these building materials. Beside the characterization of the Zsolnay ceramics, our purpose is to attempt to explain the deterioration caused by environmental factors considering that these ceramics have never been studied in this aspect before. Other goal is to reveal if there is any influence on the deterioration depending on the location of building covered by Zsolnay ceramics.

The studied objects were used on buildings of the Museum of Applied Arts (in the center with high traffic) and the Hungarian Geological and Geophysical Institute in Budapest (in a quarter with moderate traffic). We examined the physical and chemical features of the glaze and the ceramic body (e.g., phase composition, texture, microstructure, alteration) and the depositions on the glazed and the unglazed sides of some selected ceramics.

Based on the results, three different types of ceramics were used as building materials. We observed several kinds of damage (e.g. cracks, pitting corrosions), black deposition layer and alterations in different extent. Natural and artificial particles (e.g. iron-oxide, mica, calcite and glauberite) and spherules were deposited on the surface. Traces of biological activity were also found and connected to these organic residues calcium-oxalate was detected. On some objects of the Museum the glaze has started to weather and its lead was leached glaze by rainfall. Weathering also occurs along cracks in the glaze interior together with precipitation of lead-rich phases. Gypsum layer frequently covers the ceramics. In conclusions, the ceramics from the Museum are in worse condition than the ceramics from the Institute.