

Summary of the research project

"Verification of the influence of standardized water on the leaching behavior of construction materials in the inverse column test as part of the normalization of the inverse column elution of Schössner "

The assessment of the environmental impact of construction materials is based on the principles of "assessment of the effects of construction materials on soil and groundwater" by the German Institute for Structural Engineering. The leaching potential of mobilisable substances of construction materials is examined by the inverse column test. Drinking water is used as eluent in the inverse column experiment. The use of drinking water, however, is to be considered critically since the chemical composition of drinking water varies regionally.

The aim of this research project was to investigate the influence of standardised test water (eluent) on the release of organic content, measured as TOC, and other parameters such as pH and electrical conductivity compared to the previously used eluent drinking water in the inverse column test.

For this purpose, five different construction materials (polyacrylate, cement, polyurethane resin, epoxy resin, silica gel) were eluted with water, deionised water and artificial test water.

In another series of experiments the influence of changed various experimental conditions was examined on the basis of a polyacrylate. The focus was on the variation of the flow rate and the start of elution at different times after mixing the two components of the construction material and the following injection into the test column.

The investigated construction materials reacted in different ways due to the eluents. However, a significant influence on the release of organic substances was measurable only in the cement paste and polyacrylate. In polyacrylate, a significant difference could only be determined between standardized water and drinking water. The low influence of the drinking water to the release of substances from construction materials also matches in the determined slight changes in the chemical-physical parameters conductivity and pH during the elution. In view of the results obtained here, drinking water, also in view of the limitation of cost and practicability in implementation, is to be recommended continues as an eluent for the inverse column elution.