

Abstract

The aim of this study was to investigate whether the uniaxial compression have any influence on the rate of salt decay. Tests were performed on several types of rocks, mainly sandstones from the Czech Republic and the USA. The first tests were made on Strelec sandstone blocks that were loaded with a mass of 6-24 kg, slowly saturated by solutions of NaCl, $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ and $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$ and dried at room temperature. Because the weathering rate was too low, another method was used for other rocks. Cubes cut from rock were compressed by steel frame with a torque wrench to 0.75 Nm, which corresponds approximately to the uniaxial compression of 1.2 MPa. These compressed samples were tested according to a modified standard EN 12370, saturated by solution of Na_2SO_4 and subsequently dried in an oven. The cycle was repeated until the complete decay of the sample or until the residual weight of samples fall below 10 grams. Weight of the samples was plot over numbes of cycles. Approximately after first two cycles increase in weight due to the salt crystallization within samples was observed. In following cycles the samples begun to lose weight. All compressed samples wistand more cycles than their non-compressed counterparts. The experiment continues to find out how many cycles will the compressed samples last longer than the non compressed ones. The test results show that the compression has strong effect on salt decay in varius lithologies over the globe.