

## **Thermal and humidity dependent expansion of rocks**

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Rocks are multicomponent systems with different thermal expansion coefficients of the individual mineral grains. After their genesis at elevated temperature, the grains shrink with different amounts until they reach the surface. As a consequence, microcracks occur between the grains during this process. Water can penetrate into these cracks and can widen the space by the acting surface strengths which results in a loosening of the structure and the weathering of rocks. This humidity dependent expansion is determined along with thermal expansion of Elbsandstone, a popular construction material at Dresden area.

Considering the phenomenological equations of the Irreversible Thermodynamics, both expansions can be defined and determined independently from each other.