

Mineralogical-geochemical characteristics of boudin neck infill of a boudinaged Permian rocksalt/anhydrite association (Morsleben site, Germany)

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Salt rocks from the Anhydritmittelsalz (z3AM, Zechstein, Upper Permian) were collected from the Morsleben site in Northern Germany. The z3AM is characterized by a rhythmic stratification of rocksalt and intercalated competent layers of anhydrite rock, which are strongly deformed by folding, boudinage, and fracturing [1]. Fissures and boudin necks are filled with halite and minor carnallite.

The anhydrite rocks, salt rocks and boudin necks were analyzed geochemically using XRF, ICP-OES and ICP-MS.

The bromide content of halite displays the sedimentary record and decreases towards the anhydrite layer from ca. 120 to 240 µg/g. In boudin necks, the bromide content of halite is reduced to ca. 140 µg/g.

The bulk rock content of Ba varies between 0.1 and 3.6 mg/kg, Cu 0.03 to 0.19 mg/kg, Li 0.12 to 0.73 mg/kg, and Rb 0.02 to 0.13 mg/kg, which are common values for rocksalt [2]. Element ratios of Br/Rb and K/Rb point to a depletion in Rb relative to expected values, derived from their evaporation level. A significant difference between boudin neck infill and surrounding rocksalt was not observed.

The content of Sr depends strongly on the anhydrite content and reaches max. 0.155 wt.%.

The decrease of element concentrations, especially of Br and Rb, can be explained by the influence of metamorphic intrasalinare brines which are involved in the rocksalt flow during deformation. Since the variations are low and restricted to certain elements, the spatial origin and zone of interaction seems to be limited.

[1] Behlau & Mingerzahn (2001) *Eng. Geol.* **61**, 83-97. [2] Mertineit et al. (2018) *Proceedings SaltMech IX*, 159-172.