

Hydrothermal Fluids with in Pillow Lava Lobes and Pipes of an Extrusive Basalt Dome, Product of Triassic Rifting Magmatism, North Croatia.

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Extrusive basalt lava dome, placed within radiolarian cherts and shales of Carnian-Norian age and micritic limestone, is a product of Triassic rifting magmatism, related to spreading of the Thethyan ocean. It consists of several facies units: 1. Coherent pillow lavas 2. Closely packed pillows 3. "In situ" hyaloclastite 3.1. Isolated pillow breccia 3.2 Pillow fragment breccia 3.3 Peperitic hyaloclastites. Pillow lobes and pipes embrace cavities encrusted with secondary, hydrothermal minerals: calcite, quartz, chlorite, pumpellyite, prehnite, zeolites. Transparent parts of quartz and calcite contain suitable fluid inclusions for thermometric measurements. The study reveals following types of FI: 1. One phase (L) 2. Two phase (L+V) high density, moderate salinity 3. Two phase (V+L), low density, low salinity, 4. Multiphase (V+L+S_{halite}), low density, high salinity 5. Multiphase (L+V+S_{gypsum}), high density, high salinity 6. Multiphase (L+V+S_{gypsum}+S_{carbonate}), high density, high salinity 7. Gas (G). FI are filled with NaCl-CaCl₂-H₂O solutions, recognized by low T_e= -71 to -60 °C, T_{hy}= -47.6 to -26.0 °C, T_{M ice}= -1.4 to -18.5 °C, T_H= 113.5 to 170.7 °C (exclusively more than 460 °C), Salinity has wide span between sea water and 21 wt.% NaCl equ. The fluids are product of interaction between hot basalts and sea water and/or wet sediments. Alteration processes, particularly spilitization, introduces calcium into the fluids. The higher salinity the higher CaCl₂/NaCl ratio.