Fluid inclusion studies in a Li-pegmatite from Covas do Barroso area, Northern Portugal – Preliminary Results

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The Covas do Barroso area comprises several pegmatite veins that crosscut metasediments of upper Ordovician to lower Devonian age. These veins contain spodumene and/or petalite mineralization.

Aiming at characterizing the fluid composition associated with Li-mineralizations, preliminary fluid inclusion studies were carried out in the quartz from a pegmatite vein from "Barroso Mine".

The fluid inclusions (FI) contain a liquid and vapour phase, at room temperature, with Flw from 0.4 to 0.7, and develop a second fluid phase on cooling. The microthermometric analyses display $TmCO_2$ between -58.5 to -57.5ºC, TmIce from -8.3 to -6.5ºC , TmClath from +6.8 to +7.1ºC and $ThCO_2$ between +19.0 and 23.3ºC into the vapour phase or by meniscus fading.

The fluids trapped in these FI have a high water content (between 84.2 and 91.0 mol%), and a volatile phase dominated by CO_2 (between 6.6-13.1 mol%) with low amounts of CH_4 (between 0.1-0.5 mol%). NaCl content is around 2 mol% and the bulk density is between 0.50 and 0.98 g/cm^3 .

Fluid inclusion results reveal that the fluids involved are aqueous-carbonic H_2O-CO_2-CH_4-NaCl with distinct densities. Similar fluids were already described by Dória et al. [1] for spodumene in the same pegmatite field. The fluids derived from spodumenene+quartz pegmatite are H_2O-CO_2 with fO_2 between QFM and HM.

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[1] Dória et al. (1989). Fluid inclusion studies in spodumene bearing aplite pegmatite dikes of Covas do Barroso, Northern Portugal. ECROFI X, London, 25.