

FLUID INCLUSION STUDIES OF AU-BEARING QUARTZ VEINS - SERRA DO ITABERABA GROUP, SÃO PAULO, BRAZIL

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Fluid inclusions in both Au-bearing and barren quartz veins and Au-bearing metacherts from Tapera Grande - amphibolite facies, Serra do Itaberaba Group (São Paulo, Brazil) - were classified into four groups according to the phases ratios at room temperature: i) monophasic aqueous; ii) two-phase (H₂O-rich, CO₂-poorer); iii) two-phase/three-phase (H₂O-CO₂-rich, CH₄-poor/absent, with variable V/L ratio), and iv) multi-phase (with additional crystalline phase to the aqueous and gaseous phases). These studies show slight variable physical-chemical conditions for fluid inclusions from non-mineralized and mineralized rock types as the average homogenization and CO₂ melting temperatures for the former are 21°C and -57°C, whereas for the latter the average temperatures are 27°C and -56.8°C respectively. Average clathrate melting temperatures for both types are 7.6°C and 8°C respectively, indicating low salinities (3.0-4.9 wt % NaCl equiv.) for the Au-bearing fluids. The deposition occurred over a temperature range of 220°C to 370°C, but typically between 250°C and 350°C. The physical-chemical conditions (presence of the CH₄, lack of H₂S, predominant H₂O-CO₂-rich fluid inclusions and immiscibility of fluids) and high oxygen stable isotopic data obtained for the same rock types (+12 to +15 per mil) indicate that the fluid sources may have been metamorphic-hydrothermal, keeping similarities with the Archean and Paleoproterozoic lode-type gold deposits.