

IGARAPÉ BAHIA GOLD MINE (CARAJÁS, BRAZIL): FLUIDS AND THE ALTERATION IN A METAGABBRO AND QUARTZ VEIN FORMATION.

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The protore of Igarapé Bahia Mine is a volcano-sedimentary sequence, including metabasalts and a granophyric gabbro strongly chloritized, with textural relics of a higher temperature amphibolitic alteration. Quartz and/or calcite veins cut this sequence. Fluid inclusions were studied in the quartz veins and in the quartz from both chloritic and amphibolitic alteration. The quartz veins are characterized by two inclusions types: 1) liquid vapor (LV), aqueous two phase inclusions with salinity from 10 to 25% wt. eq. NaCl and Th = 90-190°C; and 2) saturated liquid vapor (SLV), aqueous inclusions with halite and carbonate as daughter minerals, salinity between 28 and 42% wt. eq. NaCl and Th from 100 to 400°C. In both types there is a strong eutectic temperature depression suggesting the presence of cations, other than the usual H₂O + NaCl system, like Ca⁺⁺, Mg⁺⁺ or Fe⁺⁺⁺. Roughly the same types were observed in the quartz from the granophyric gabbro hydrothermal alteration. The differences are the existence of a LV sub-type with salinity from 0 to 12% wt. eq. NaCl, associated only to the chloritized assemblage or the SLV type from the chloritized assemblage that has halite and carbonate as daughter minerals, whereas in the amphibolitic assemblage there are halite, sylvite, iron oxides, carbonate and non-identified solid phases. It seems possible that the fluid inclusions observed in the quartz veins and from the chloritic assemblage are very close, probably coeval and slightly different from the inclusions in the amphibolitic assemblage.