

CHARACTERIZATION OF TOURMALINES FROM DIFFERENT SERRA DO ITABERABA GROUP UNITS - SÃO PAULO, BRAZIL

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Tourmalines occur either: a) hosted in quartz veins, b) tourmalinites and metacherts, c) disseminated in metasediments, calc-silicate and basic/intermediate rocks in the volcanic-sedimentary sequence of the Serra do Itaberaba Group. Semi-quantitative analyses by EDS coupled to SEM revealed compositional variations from schorlitic to dravitic, both for quartz veins and metacherts from Tapera Grande (south) and Quartzito (north of the volcanic-sedimentary sequence). Schorlitic tourmalines present Mg# (atomic proportions) varying from 0.36 to 0.49 whereas for the dravitic the ratios vary from 0.73 to 0.80. RAMAN spectroscopy showed for the 150-1550 cm⁻¹ spectral range that the dravitic tourmalines from the Quartzito area are characterized by a well-defined band around 216 with peaks at 666 and 1023, while the schorlitic tourmalines from Tapera Grande area present a well-defined band around 234 with peaks at 638 and 692. The former fall in the dravite-buergerite-uvite and the latter in the buergerite-scholarite groups. d¹⁸O values for dravitic and schorlitic compositions cluster around +12 and +13 per mil respectively, with corresponding dD values of -90 and -103 per mil. These values are not typical of either magmatic or meteoric waters. Moreover, d¹⁸O values for associated vein quartz are very similar, suggesting that both minerals were deposited from waters of uniform isotopic compositions. Homogenization temperatures given by fluid inclusions in these quartz crystals fall in the 260-360°C range, suggesting that the fluids were predominantly metamorphic and were able to mobilize elements (e.g. boron) from the sediments, accounting for the widespread presence of tourmalines in the whole volcanic-sedimentary sequence.