

Complex-zoned tourmalines from San Piero in Campo, Elba, Italy

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The Rosina aplite-pegmatite dyke (up to 2 m wide) near San Piero in Campo, Elba, has a complex asymmetric zoning. It contains small to large pockets rich in accessory minerals [1-4]. This locality is also known for beautiful large-zoned tourmaline crystals. Some of these samples collected in 2008 were examined. Black tourmaline (grown directly within the pegmatite) with lattice parameters $a = 15.97\text{-}15.98\text{ \AA}$, $c = 7.15\text{-}7.16\text{ \AA}$, consists mainly of a foitite – schorl species. During crystallization the Fe content decreases, while the Mn and F contents increase (up to 8 wt% MnO and 1.4 wt% F). These olive-green tourmaline zones exhibit lattice parameters of $a = 15.87\text{-}15.94\text{ \AA}$, $c = 7.12\text{-}7.14\text{ \AA}$ and consist mainly of fluor-elbaite – fluor-tsilaite tourmaline. In addition, the Mn content decreases while the Al and Li contents increase (up to 44 wt% Al₂O₃ and 1.7 wt% Li₂O). The color of such tourmaline can be pale green, pale pink, pale purple or the samples are colourless. The zones with the highest Al content also contain [⁴B with up to 21 mol% of the erlilite endmember [5]. These tourmaline zones have lattice parameters of $a = 15.78\text{-}15.82\text{ \AA}$, $c = 7.08\text{-}7.10\text{ \AA}$ and consist mainly of rossmanite – fluor-elbaite. Some of these zones contain up to 14 mol% of the darrellhenryite endmember, an Al-rich oxy-tourmaline. Interestingly, in the final stage of tourmaline crystallization, the F content drops to 0.1 wt% F and the elbaite content increases, while the fluor-elbaite content decreases.

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