

New insights on the metallogenesis of the Neves Corvo deposit: mineralogy and geochemistry of the zinc-rich Lombador orebody.

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Neves Corvo is an outstanding, world-class VHMS deposit in the Iberian Pyrite Belt, hosting one of the largest concentrations of massive sulfides (>300 Mt) known in the world. In addition to Cu and Zn, a suite of metals occur in significant concentrations, which represent important (Sn, Ag), or promising (Au, In or Se) bi-products.

This study focuses on the ore geology of the Lombador orebody, a zinc-rich, massive and stockwork mineralization located in the northern sector of the Neves Corvo camp (> 70 Mt). The ongoing research includes structural reconstruction based on drilling, and detailed hydrothermal alteration and ore petrography, ore geochemistry, spatial distribution/mineral allocation of In and Se, and Pb, Nd, and Sr isotopes (in progress). At the Lombador footwall succession, hydrothermal alteration is classically zoned, its mineralogical and geochemical signatures indicating mildly acid and moderate to low interaction temperatures in a long-lived system.

In occurs as a trace component in some sphalerite (0.01-4.30 wt% In), but there is a general negative correlation between In and Zn at the orebody scale. Indium couples with Cu grades in the Cu-rich ores (specially in the stringer ores), and Se associates preferentially with either Cu- or Zn-dominated massive ores. Expectedly, chalcopyrite shows low In and Se average contents (0.05 wt% and 0.02 wt%, respectively). In and Se occur as trace elements in stannite (0.10-7.42 wt% In; 0.01-0.07 wt% Se), tetrahedrite (0.01-0.17 wt% In; 0.01-0.11 wt% Se), and cobaltite (up to 0.06 wt% In and 0.54 wt% Se). High Se content has been found in galena (up to 0.85 wt%) and probable juncoite (up to 9.86 wt% Se).

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