

## Characteristics of In-rich ore deposits in the Bolivian Sn-polymetallic belt, South America

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Indium for industry use has been extracted from In-rich zinc deposits and recycled electronic equipment. The ore deposits are always Sn-rich base metal ones, composed of two types: vein and massive sulfides. Sn-polymetallic veins of the Bolivian tin belt is one of the most important In-mineralized regions in this world, including the Japanese islands (e.g., Toyoha mine) and southern China (e.g., Dachang mine). Common features of the Bolivian deposits are elucidated and compared with those of the other regions.

The Bolivian veins are generally hosted in sheared fissures of a compressional type, while in Dachang, In-mineralization is controlled by stratigraphic horizon. The host rocks are largely clastic sediments in Bolivia, but carbonate-rich ones in the southern China, where sulfur originated in the host rocks. Volcanic rocks are predominant in the Japanese islands. Many In minerals are discovered, but very sporadically, in these ore deposits. Majority of indium is extracted from trace amounts of indium substituted in the sphalerite in all types of ore deposits.

Indium resource of given ore deposits is best shown by In-content and tonnage of zinc concentrates. In/Zn x 1000 ratios of the concentrates are the highest as 2.1 in the Toyoha mine and 0.45 at the Brunswick No.12 deposits, Canada, both of which have been major producers of indium. This ratio goes down below 0.02 in In-barren ore deposits. In Bolivia, the San Lorenzo mine has the highest In/Zn x 1000 ratio of 2.1, then the mines of Boliver (1.7), Reserva (1.5), Porco (1.2) and Corquiri (0.61). Thus, the Bolivian ore deposits are very high in the In-grade.