

Association between phosphorus and iron oxides in manganese ores

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ABSTRACT

Four manganese ore samples were subjected to sequential extractions with hydrogen peroxide and dithionite-citrate-bicarbonate. The first attack was meant to remove all manganese-bearing phases, whereas the second treatment was done to remove any residual manganese and the iron oxyhydroxides. The ores and the residues of both treatments were characterized by chemical analyses, X-ray diffraction, optical microscopy, and Mössbauer spectroscopy. The combination of a hydrogen peroxide extraction followed by the well-known dithionite-citrate-bicarbonate extraction allowed to establish how phosphorus is present in these ores. No correlation between phosphorus and the manganese phases was found in any sample. In one sample, phosphorus was found as crandalite, an aluminum phosphate. On the other hand, the association between phosphorus and goethite was clearly observed in the other samples.

Keywords: Manganese ore, phosphorus, selective dissolution