

*GIANT HYDROTHERMAL HEMATITE DEPOSITS WITH Mg-Fe METASOMATISM:  
A COMPARISON OF THE CARAJÁS, HAMERSLEY, AND OTHER IRON ORES*

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**Abstract**

The genesis of banded iron formation (BIF)-hosted high-grade hematite deposits has been debated for nearly a century. Recent worldwide recognition of magnetite- and/or hematite-, carbonate-, and talc-rich mineralization, deep below the modern weathering in these deposits, and recognition of Mg-Fe metasomatism in wall rocks implies that hydrothermal upgrading preceded supergene formation of the economic ores. The profiles show a systematic mineralogical variation that may reflect the temperature and depth of ore formation. The deepest deposits are characterized by magnetite-silicate (carbonate) assemblages (Krivoy Rog). Intermediate deposits have a combination of magnetite-carbonate and hematite-carbonate assemblages (Mt. Tom Price), and the shallowest deposits are characterized by hematite-dolomite (calcite) assemblages (Carajás, Thabazimbi).

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