

Geochemistry Modeling and Mineralogy of the Banded Iron Formation, West Moeda Syncline, Quadrilátero Ferrífero Region

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At the western flank of Moeda Syncline, a BIF-hosted with variable grades lithotypes: Hematite (≥ 64 wt.% Fe), Rich Itabirite (58 to 64 wt.% Fe), Intermediate Itabirite (45 to 58 wt.% Fe), Poor Itabirite (20 to 45 wt.% Fe), Poor Limonitic Itabirite (20 to 45 wt.% Fe), Intermediate limonitic Itabirite (45 to 58 wt.% Fe) and Manganese-rich Itabirite (20 to 45 wt.% Fe). The metasedimentary sequence is correlatable with phyllites and quartzites of the Caraça Group at the base of the Minas Supergroup. The sedimentary/diagenetic bedding of the metamorphosed BIF (itabirites of the Cauê Formation) is generally transposed by a planar schistosity. The 76 drill holes carried out between 2005 and 2014, and nine additional samples taken from the deposit were classified into different facies of itabirite based on the degree of enrichment in iron, aluminum, and manganese in the chemical analyses, and the degree of compactness of the material, resulting in eleven different lithotypes (with their respective average iron values). Lithotypes with an Al_2O_3 content above 2% are called Limonitic, and those above 1% of Mn are Manganese. Both XRD and optical microscopy studies indicate a mineralogical composition of quartz, granular hematite, goethite, and a very fine-grained mixture of iron oxides and hydroxides (limonitic material). The diverse and extensive lithotypes pose considerable difficulties for exploration - as well as opportunities regarding different sample media and the formation of resources within them. The development of appropriate geochemical understanding is exceedingly important for better exploratory planning. This data aims to provide a concise introduction to the ore geology of the part of Moeda Syncline iron ore deposit.

Keywords: Iron ore, Quadrilátero Ferrífero Region, Geochemistry Modeling, Mineralogy, XRD.