

Proterozoic Phosphate Deposits near Fortaleza de Minas, Southwest Minas Gerais, Brazil.

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Supracrustal rocks related to the Araxá, Canastra and Bambuí Groups outcrop southwest, northwest and northeast of the Morro do Ferro Greenstone Belt, near the Fortaleza de Minas and Itaú de Minas villages. Geological mapping in the area, revealed a sequence of chemical and pelitic meta-sedimentary rocks, formally described as Itau Unit, composed by chlorite/sericite phylites, meta-marls, marble, pyritic carbonaceous phyllite, banded iron formation and beds of meta-phosphorite, along a strike length of 25 km. These phosphorite beds usually display widths around 6m dipping 40 to 60 degrees to the West and average grade of 25% P₂O₅. Late traverse faults are quite often breaking the continuity of the phosphorite beds.

The ore is formed by massive layers of fluorapatite, in conformance with a cataclastic foliation and with subordinate and disseminated quartz, alternated with layers with dominance of quartz with disseminated apatite. Besides fluorapatite (between 10 and 70%), quartz (05 to 8%), micas and kaolinite (2 to 15%), monazite, wavelite, hematite and native copper also occur. The ore is interpreted as being formed in a shallow marine environment, based on the dominant lithological association and by the presence of algae lamination, well preserved in the massive portions.