MINERALOGY OF DIFFERENT TEXTURES OF THE EPPAWALA PHOSPHORITE DEPOSIT

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Microscopic and X-ray diffractrometric studies of the Eppawala phosphorite deposit reveal that its composition varies from place to place. This is attributed to the existence of variable textures. Different types of textures are identified particularly in the leached zone of the deposit. The textures are distinguished on the basis of their physical, chemical and mineralogical properties.

The most prominent feature of the phosphorite deposit is the occurrence of Precambrian apatite crystals in a younger matrix which is commonly fine-grained and laminated. The composition of the crystals is mainly hydroxy-chloro-fluorapatite, $Ca_{10}(PO_4)3$ (OH,Cl,F). An outer envelope has formed around primary apatite crystals due to weathering and diagenesis processes. The envelopes are rich in carbonate-fluorapatite, $Ca_{10}(PO_4)5\ CO_3(OH,F)$. Within the matrix there are two types of fine-grained laminations; light and dark in colour. The light coloured laminations are mainly fluorapatite, $Ca_5F(PO_4)3$, while the dark laminations in addition contain sulphur, silicon and iron. At certain points of the deposit, apatite has been replaced by silica. As a result, the phosphate content is significantly reduced at such points of the deposit and fluorellestadite, $Ca_{10}(SiO_4)3(SO_4)3(OH,F)$ is observed together with silica, SiO_2.

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