

**Estimating the magnetite content of the Southern part
of Eppawala Phosphate Deposit and its parent rock**

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Abstract

Phosphorus is one of most important plant nutrients because its function cannot be performed by any other nutrient. It is involved in wide range of plant processes such as young, fast growing tissues and performs a number of functions related to growth and development. So that the demand of phosphorous of fertilizer industry is mainly accomplished by phosphate rocks world wide.

Sri Lanka also has such phosphate deposit at Eppawala. It is one of most economically valuable mineral deposit in Sri Lanka. Eppawala phosphate deposit, located in the Anuradhapura district of Sri Lanka, about 200 km from Colombo, was discovered in 1971. This deposit exists as a dense weathering profile underlain by an appetite containing carbonate rock. The ore bodies at Eppawala contain up to 42% P₂O₅, and citric acid solubility of different components varies from 4 to 6%. Owing to intense weathering of the apatite-bearing carbonate rock, a phosphate deposit has been formed by relative accumulation of the primary apatite crystals, together with the secondary products derived from them. The economically useful phosphate is a secondary formation developed over apatite-rich carbonatite parent rock. Former studies revealed that iron leached from the weathering parent rocks played an important role in fixing phosphate and formation of the secondary deposit through *in-situ* diagenesis. This phoscrete-type phosphate deposit has been developed on an appetite-rich carbonatite body. Source of iron is assumed to be magnetite and other iron-bearing minerals.

To get grater benefits from the deposit it necessary to produce value added products such as triple super phosphates. And also Due to considerable amount of iron impurities of magnetite and other iron baring minerals, the production of super phosphate as well as direct use of phosphate rock as a fertilizer is restricted.

This research has been conducted to estimate the magnetite content of Eppawala phosphate deposit, southern part. For the estimation magnetic susceptibility, thin sections of both secondary phosphate deposit and primary deposit and percentage amount of magnetite and XRF results of selected samples were used.

Key words: Magnetite, Apatite deposit, carbonatite rock, Magnetic separation