

Peat Soil Compaction Characteristic and Physicochemical Changes Treated with Eco-Processed Pozzolan (EPP)

ABSTRACT

Peat soil was defined as the highly organic surface layer derived primarily from plant remains. Peat, on the other hand, was the subsurface of wetland systems, consisting of unconsolidated superficial layers with a high non-crystalline colloid (humus) content. Peat soils have a low shear strength of 5 to 20 kPa, a high compressibility of 0.9 to 1.5, and a high moisture content of >100%. The purpose of the study was to prognosticate the potential of Eco-Processed Pozzolan (EPP) as peat soil stabilization material with improved technique and its consequence of the methods, which was the peat soils index properties and analyse the characteristics of the peat soil stabilization before and after treatment using Eco-Processed Pozzolan (EPP). The soil was mixed with 10, 20, and 30% Eco-Processed Pozzolan (EPP) and then compacted (compaction test) in a metal mould with an internal diameter of 105 mm using a 2.5 kg rammer of 50 mm diameter, freefalling from 300 mm above the top of the soil. Three layers compaction of approximately equal depth and 27 blows spread evenly over the soil surface for each layer. The expected result to accomplish the main purpose was to prognosticate the potential Eco-Processed Pozzolan (EPP) as peat soil stabilization material with improved technique and its consequence of the methods. According to the findings, peat soil treated with EPP will transform its qualities from peat to usable soil. However, the presence of moisture will reduce the mixture's ability. According to the findings of this study, the optimum EPP for stabilizing peat soils was 30-40%. Correspondingly, the elemental composition of peat soil mixed with EPP improved regardless of Carbon, Ca composition. Comparatively, the amount of Silicon, Si increased from 6.5% (Peat + EPP 10%) to 12.9% (Peat + EPP 40%) due to the crystallization of EPP and peat.