Effect of palm oil fuel ash (POFA) content on volumetric shrinkage strain of granite residual soil

ABSTRACT

Laboratory experiment was carried out to determine the effect of palm oil fuel ash (POFA) content on volumetric shrinkage strain (VSS) through drying process on the material to be used as hydraulic barrier in landfills. Granite residual soil treated with up to 15% POFA was compacted using standard and modified proctor compactive effort; with moulding water content between -2% to +4% of the optimum moisture content obtained from the compaction curves. Soil samples were compacted, extruded and allowed to dry in the laboratory at room temperature for a period of thirty days. The results showed that VSS increased with higher moulding water content and also at higher initial degree of saturation for all compactive efforts. The influence of POFA treatment generally showed a decrease in the VSS with increase in POFA content due to the pozzolanic property of POFA. It was concluded that VSS depends most on the moulding water content, percentage of POFA, initial degree of saturation and compactive effort.

Keyword: Granite residual soil; Hydraulic barriers; Moulding water content; Palm oil fuel ash; Volumetric shrinkage strain