

Characteristic and Physicochemical Properties of Peat Soil Stabilized with Sodium Hydroxide (NaOH)

ABSTRACT

Peat in various phases of decomposition has poor shear strength and high compressive deformation. For this research study, it will focus on stabilizing peat soil using NaOH. There are two main tests that were conducted in this research study, which are index property testing and the compaction test. For index property testing, there were six (6) experiments conducted to study the index properties of disturbed peat soil, which are moisture content, fiber content, organic content, liquid limit, pH, and specific gravity. Then, for the compaction test, a 4.5kg rammer was used to determine the best mixture of stabilizer blended with different volumes of 5%, 7%, and 9% stabilizer. The desired outcome of this study is to stimulate further research into the use of the chemical NaOH as a peat soil stabilizer for improved soil usage. 7% and 9% of NaOH only have a slightly different percentage, and it can be concluded that this was the optimum percentage of NaOH as a chemical stabilizer for peat soil. It can be seen clearly that 5% is the higher dry density with a lesser moisture content of the peat. When the percentage of NaOH was increased, the graph pattern also changed. NaOH has been observed as an alteration agent for peat soil dry density. It can be seen clearly that 5% NaOH is the higher dry density of the peat with the lesser moisture content and is suitable as a peat soil stabilizer. The increment of oxygen content recorded changes from 13.3% to 23%, while the sodium (Na) content decreased significantly with the increment of oxygen (O). Sodium content decreased from 8.7% for untreated specimens to 4.5% and 5.5% when peat was treated with NaOH, with 5% of NaOH and 9% of NaOH.