

Effect of Nano-SiO₂ Solution on the Strength Characteristics of Kaolinite

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Abstract : Today, with developments in science and technology, there is an excessive potential for the use of nanomaterials in various fields of geotechnical project such as soil stabilization. This study investigates the effect of Nano-SiO₂ solution on the unconfined compression strength and Young's elastic modulus of Kaolinite. For this purpose, nano-SiO₂ was mixed with kaolinite in five different contents: 1, 2, 3, 4 and 5% by weight of the dry soil and a series of the unconfined compression test with curing time of one-day was selected as laboratory test. Analyses of the tests results show that stabilization of kaolinite with Nano-SiO₂ solution can improve effectively the unconfined compression strength of modified soil up to 1.43 times compared to the pure soil.

Keywords : kaolinite, Nano-SiO₂, stabilization, unconfined compression test, Young's modulus

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