

عنوان مقاله:

Improve Mechanical Properties of Expansive Clayey Using Heat Treatment

محل انتشار:

اولین کنفرانس بین المللی عمران و مهندسی خاک و پی (سال: 1398)

تعداد صفحات اصل مقاله: 13

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خلاصه مقاله:

This study examines the effect of heat treatment under laboratory conditions of two popular mineral clayey soils (bentonite and illite). Samples were subjected to five temperature levels, i.e. 100, 250, 500, 800 and 1100°C. Various soil properties were studied including Atterberg limits, particle size distribution, optimum water content, maximum dry density, and shrinkage potential. Experimental results revealed that heat treatment higher than 250°C resulted in a decrease in liquid and plastic limits, optimum water content, and shrinkage of soils tested. However, maximum dry density increased slightly with an increase in temperature to reach a maximum value of 19.7 kN/m³ at 500°C for illite samples compared to 18.3 kN/m³ at ambient temperature. Heating the clayey soils at 500°C decreased the Atterberg limit by 81% and 35% for illite and bentonite samples. Finally, temperature of 500°C for illite and 1100°C for bentonite minerals brings drastic changes in the mechanical properties of the soils and transforming them into very weak soils.

کلمات کلیدی:

.Liquid limit; Plastic limit; Optimum water content; Maximum dry density; Specific gravity; Soil improvement

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1000991>

