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Impact of Micro Silica, Pumice and Perlite on Mechanical Properties of Gypsiferous Soils

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Abstract

Lack of knowledge on soil geotechnical properties can cause many problems in the construction and maintenance of irrigation and drainage networks. In general, all of unconventional soils such as gypsiferous soils can cause some problems to irrigation canals. Some studies have been conducted on a variety of problematic soils, but still there is a need for more research activities and field studies. This research was conducted to study the impact of adding perlite and pumice (5%, 10% and 15%) and micro silica (1%, 5% and 10%) on some mechanical properties of soil including shear stress, bearing capacity and Atterberg limits. Statistical analysis was done to compare their averages ($P<0.01$). Results showed that micro silica had the most effect on shear, bearing and condensation parameters and Atterberg limits of gypsiferous soil, and it improved these parameters of soil. Pumice improved shear, bearing and condensation properties of gypsiferous soil. Perlite reduced the shear, bearing and condensation properties of gypsiferous soil.

Keywords: Gypsiferous soil, micro silica, pumice, perlite.

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