عنوان مقاله:

Laboratory evaluation on the effectiveness of polypropylene fibers on the strength behavior of CKD-stabilized Soil

محل انتشار:

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خلاصه مقاله:

Improving the engineering properties of soils by chemical stabilization and using reinforcement material are means of complying with geotechnical design criteria. Nowadays, the use of chemical materials such as Portland cement and lime has been criticized despite the acceptable effect due to environmental pollution caused by their production as well as the contamination caused by these materials in the soil. One of the materials used to replace cement and lime is cement kiln dust (CKD), which has been used as filler in asphalt concrete, sewage sludge stabilization, and improving the physical and mechanical properties of soils in recent years. An experimental study was performed to evaluate strength behavior and microstructural characteristics of CKD-soil admixture reinforced by polypropylene fibers. The effect of content and length of fibers on mixture properties was investigated. The results indicated that CKD increases the strength of the soil, but its behavior is fragile. The use of fiber in combination with CKD, in addition to increasing the strength, makes the sample more ductile. The test results showed that the optimum content of polypropylene fibers is ۰.۵%. The failure pattern of fiber-reinforced specimens differed from that of fiberless specimens due to the bridge effect. The results of the UCS test agreed well with the results from the SEM analysis.

کلمات کلیدی:

Soil Stabilization, Cement kiln dust, polypropylene fiber, Compressive Strength