

عنوان مقاله:

The effect of environmental conditions on geotechnical properties of the stabilized silty soil by glass powder-based geopolymer

محل انتشار:

سومین کنگره بین المللی علوم و مهندسی (سال: 1398)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

In this study, the stabilization of silty soil by glass-based geopolymer cements is investigated. Also, the effects of soaking of the control and geopolymer specimens in Caspian seawater as a severe environment, on unconfined compressive strength (UCS) and microstructure of the specimens are studied. The calcium carbide residue (CCR) was used as an alkaline activator in the amounts of 7, 10, and 13% by dry weight of geopolymer specimens. Also, the recycled glass powder (RGP) was used as a precursor, in a constant amount of 15% by dry weight of the geopolymer specimens. For comparison, the common control specimens were prepared by addition of 5 and 10% of ordinary Portland cement (OPC) to the silty soil. The stabilized specimens were cured for 28 days at room temperature. Then, the half of each prepared specimens were placed in open-air condition, and other half were soaked in seawater container for 3 and 30 days, for comparison between the effects of natural and severe environments on compressive strength of the specimens. After of each environmental period (3 and 30 days), the unconfined compressive strength test was carried out on the specimens, and the values of UCS, failure strain, and increasing or decreasing in UCS of the specimens were investigated. Results shows the more resistance of geopolymer cement than the OPC against the chemical attacks that occurred in seawater environment.

کلمات کلیدی:

.Recycled glass powder, Calcium carbide residue, Open-air, Seawater, Geopolymer, Soil stabilization

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