

Experimental study on erosive effects of sodium hydroxide solution on compacted clay

Song Yu¹, Chen Xuejun¹, Chen Hongbin^{1*}, Chen Lijie, Huang Xiang¹, Zhou Xing¹, YangYue¹

¹ College of Civil Engineering and Architecture, Guilin University of Technology, Guilin, China

* 344036473@qq.com

Abstract

Direct shear tests were performed on red clay soaked in different concentrations of sodium hydroxide solution and different soaking time. The microstructure of red clay samples was observed by scanning electron microscopy (SEM). The results show that the shear strength of red clay soaked in sodium hydroxide solution decreases as the soaking time and the sodium hydroxide solution concentration increases. The sodium hydroxide solution eroded the cement in the red clay, resulting in the increase of pores between clay particles. The fractal dimension of the red clay particles increased with the increase of the corrosion. The average particle size and average particle area of the red clay particles decrease with the increase of the sodium hydroxide corrosion, and the shape of the soil particles becomes irregular.