

The Mechanical Behavior of Mudrocks as a Function of Pore Fluid Salinity

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ABSTRACT

My research involves resedimenting mudrocks in different pore fluid environments by altering the salinity, and then performing Constant Rate of Strain (CRS) and triaxial tests on the resedimented material. Mudrocks I am working with for CRS testing include Boston Blue Clay (BBC) and London Clay while triaxial testing is being performed on BBC only.

The BBC samples for triaxial testing are resedimented to a stress of 200kPa, at salinities of 1,000, 4,000 and 256,000ppm and then tested in a triaxial cell. The in-situ salt was leached from some of the specimens tested prior to resedimentation, and then resedimented to the desired salt content in an attempt to control the initial flocculation behavior and fabric formation.

The specimens are K_0 consolidated and then sheared undrained in compression (CK_0UC). Initial results indicate an increase in friction angle with increasing pore fluid salinity for a leached soil. Leached BBC tests show lower friction angles than those expected for BBC sheared in a particular stress range.

The results will be compared to intact BBC soil taken from below the MIT campus in Summer of 2010 to compare resedimented behavior to natural material.



Fig. 1: Failure plane for a resedimented BBC soil specimen tested in a triaxial device.

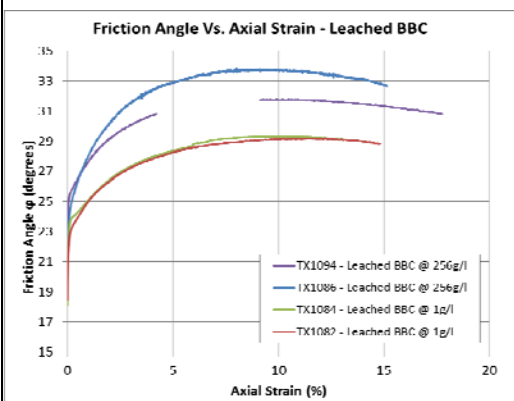


Fig. 2: Results from soil resedimented to 1,000 and 256,000ppm tested in triaxial device



