

## **The Impact of CEC, Salinity, Mineralogy, and Particle Size Distribution on Multistage Triaxial Measurements of Reconsolidated Mudrocks**

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### **ABSTRACT**

Triaxial testing is commonly used to determine the failure envelope for mudrocks. The most common application of this technique requires multiple identical samples. In heterogeneous formations identical samples are often difficult to obtain. Performing 'multistage' tri-axial tests allows the friction angle and cohesion to be measured on a single sample. These tests were performed on reconsolidated mud rocks to determine their strength properties as a function of CEC, brine salinity, and sand content. All the reconsolidation experiments were performed to 4000 Psi.

Friction angle was observed to increase as CEC decreased. This may be caused by either double layer or grain size effects. At high CEC no relationship was found between salinity and cohesion or friction angle. At lower values of CEC the friction angle was found to increase with increasing salinity. This effect is believed to be due to double layer or porosity effects. No relationship was observed between cohesion and salinity.

Friction angle increases with increasing sand percentage, while cohesion decreases with increasing sand percentage. Future work is investigating the role of total porosity and porosity type, grain size distributions, and percolating mineralogy.