

9.13: Effect of Temperature on Mudrock Compression

Amanda Parry, Tufts University

ABSTRACT

The objective of this study is to evaluate the effect of temperature on the compression properties of mudrocks. Temperature increase with depth is a potential reason for the difference between field measurements of porosity with depth and experimental data from uniaxial compression experiments. A series of constant rate of strain tests were performed on RGoM-EI mudrocks at 60°C and 20°C, in order to compare the compression curves, permeability, and compressibility as a function of stress level. Based on these experiments, there is no change between the compression behaviors when the material is compressed at 20°C verse 60°C. Therefore, temperature is not responsible for the differences seen between laboratory data and field measurements. Figure 1 is a series of compression curves for 60°C and 20°C compression tests. Figure 2 is the permeability verse porosity curve of the material when tested at different temperatures.

**CLICK ON IMAGE FOR
LARGER VIEW**

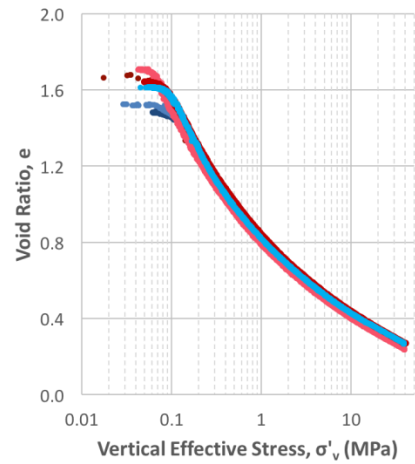


Fig 1: Compression curves for RGoM-EI tested at 20 and 60 degrees C.

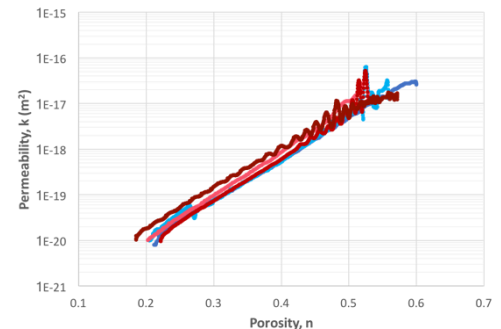


Fig 2: Permeability verse porosity relationship for RGoM-EI tested at 20 and 60 degrees C.

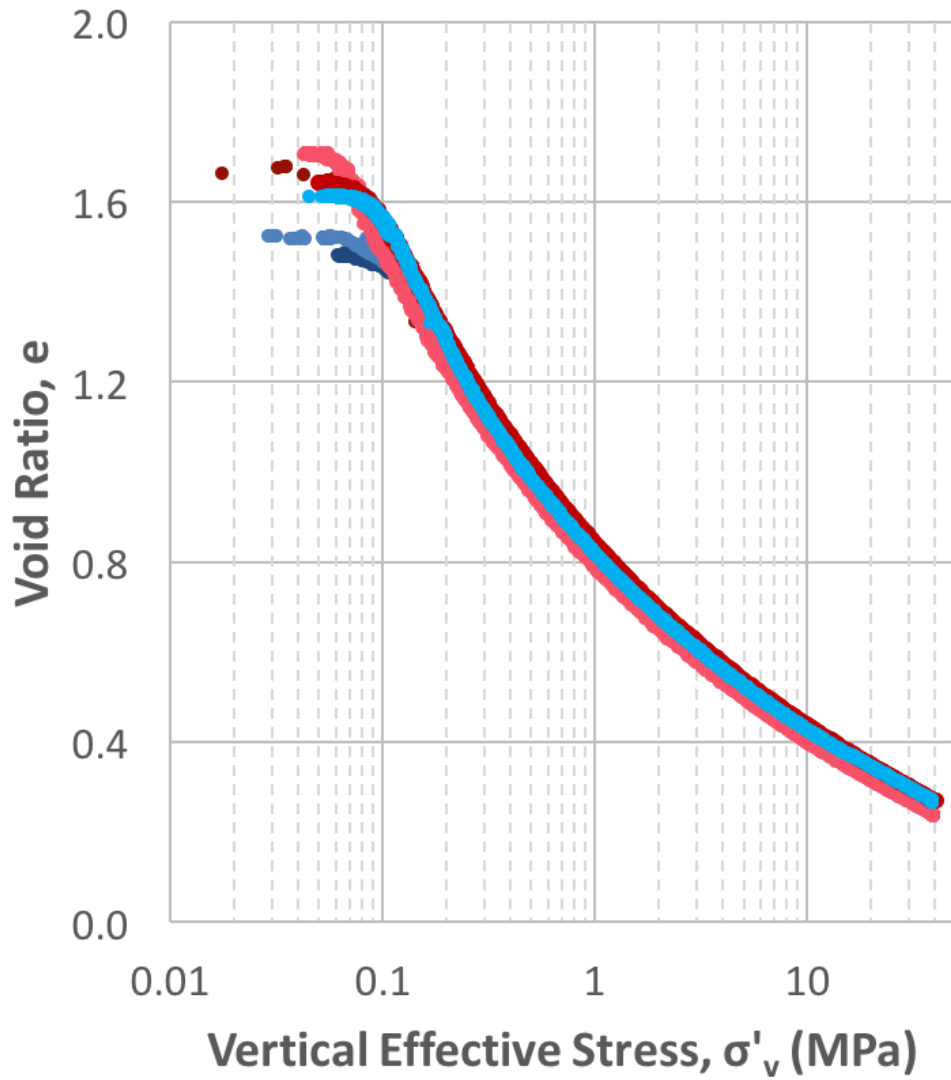


Fig. 1: Compression curves for RGoM-EI material. The red lines (three tests) were performed at 60°C and the blue lines at 20°C. There is no difference between the groups of lines.

[Back](#)

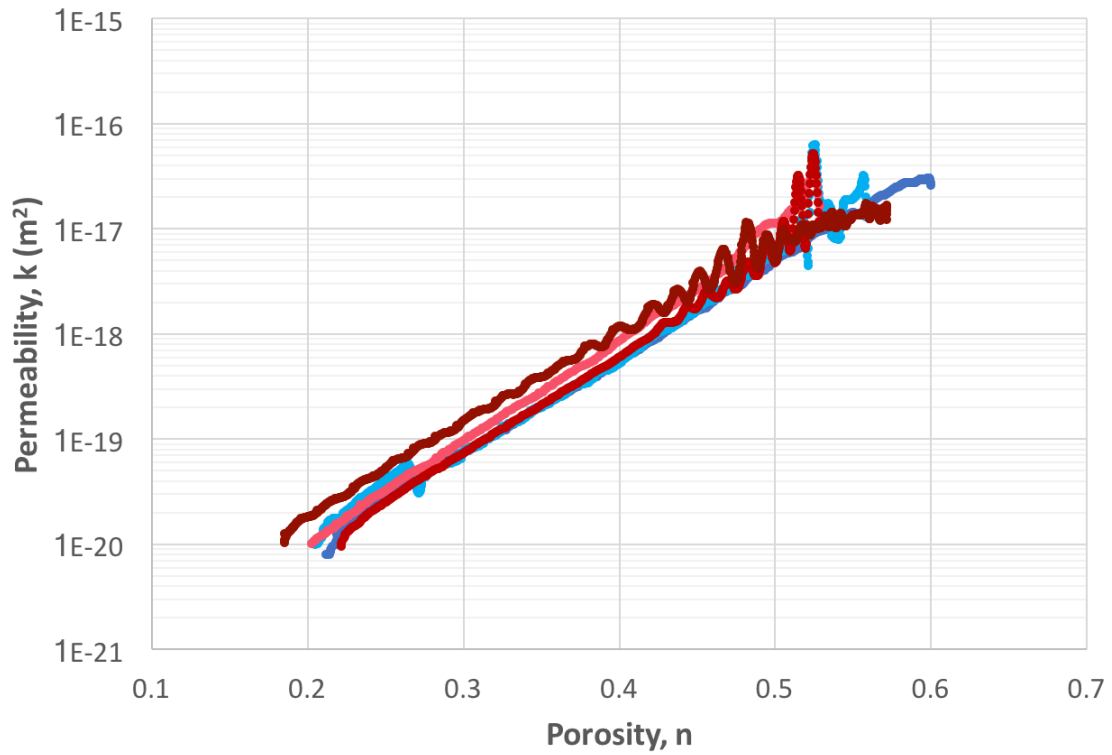


Fig. 2: Permeability verse porosity graph for constant rate of strain tests performed at different temperatures. The red lines are tests run at 60°C and the blue lines are tests at room temperature, 20°C . All tests were run on RGoM-EI material.

[Back](#)