

README

1. Introductory information

The title of the dataset is “Data underlying the publication: Ion-species in pore fluids with opposite effects on limestone fracturing”

The dataset is currently an excel file with 18 tabs, where each tab is the raw and processed data for one experiment.

Each experiment name is built up with the sample code (CL = Comiso Limestone, block number, sample number), exposure time (S = 24 hr; L = 50days; XL = 200 days), the fluid type used during testing and the confining pressure used during tested.

Further questions can be directed to anne.pluymakers@tudelft.nl

2. Methodological information

This is rock deformation data, obtained using a constant strain rate test in standard triaxial testing configuration. Triaxial testing was undertaken in a (commercially available) MTS 815 servo-controlled stiff frame inside a vessel capable of a confining pressure up to 140 MPa. The axial load, axial load actuator displacement, axial stress (axial sigma 1), differential stress (axial delta P), confining pressure (sigma 3), confining pressure actuator displacement, axial strain A and B, and axial average strain, circumferential strain (Axial Circ Extenso; Axial Circ Strain) and temperature (Temp Control Temperature) were monitored throughout the experiments and recorded at two independent sampling frequencies of 1 s (i.e. sampling frequency based on time) and 500N (i.e. sampling frequency based on force, to ensure recording of multiple data points during rapid stress drops). Note that since displacement and force were measured directly on the sample, no additional corrections are necessary to derive strain and stress from displacement and force data respectively. We determined the static Young’s modulus as the slope coefficient of the linear portion of the stress–axial strain curve, chosen as 25 to 75% of peak stress, which ensured a repeatable procedure.

All column headers are included in the above, and units of measurement are given in each table. Sample information redo the calculation of the raw Force and Displacement data are given in the head to each file.

For more information on samples, testing procedures and result, see “Ion-species in pore fluids with opposite effects on limestone fracturing”, published in GETE, by Anne Pluymakers, Audrey Ougier-Simonin and Auke Barnhoorn. See <https://doi.org/10.1016/j.gete.2021.100233>

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