

README

1. Introductory information

Title of the dataset: Heterogeneous swelling of an isotropically compacted bentonite-based material: experimental observations and modelling (dataset)

Description: The dataset contains the data published in:

Dieudonné A.C., Gatabin C., Dridi W., Talandier J., Collin C. and Charlier R. (2023) Heterogeneous Swelling of an Isotropically Compacted Bentonite-Based Material: Experimental Observations and Modelling. Rock Mechanics and Rock Engineering

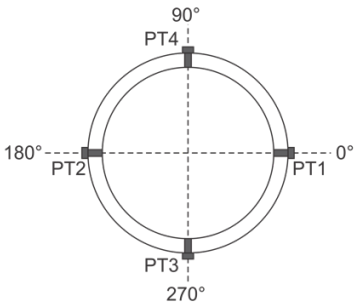
In this paper, a compacted sample of a bentonite/sand mixture (with a respective proportion of 70/30 in dry mass) was subjected to hydration under constant volume conditions. The tested sample was isotropically compacted before being hydrated under constant volume conditions until full saturation was reached. The injected water volume, total axial pressure, and total radial pressures at four different heights of the sample were recorded over time.

The present dataset contains the injected water volume (Fig. 4 of the journal publication), total vertical pressure (Fig. 7) and radial pressures (Fig. 8) over time.

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2. Methodological information

To follow the hydromechanical state of the sample during hydration, the total vertical pressure and the injected water volume were recorded over time. The load cell used to monitor the vertical total pressure had a maximum loading capacity of 18 MPa with an accuracy of 0.9 kPa. The sample cell was also equipped with four total radial pressure sensors, named PT1 to PT4, and placed at different heights of the sample. These sensors were piezoresistive flush diaphragm pressure transducers configured in a Wheatstone bridge circuit. They allowed a measurement range of 0–10 MPa with a sensitivity of 0.9 mV/MPa. The positions of the total radial pressure sensors are:

Reference	Angle (°)	Height (mm)	Representation
PT1	0	12.5	
PT2	180	37.5	
PT3	270	50	
PT4	90	75	

Position of the total radial pressure sensors. Height is measured from bottom (injection) end of the sample.

4. Sharing and access information

Data falls under the creative commons license CC-BY.