

Data Dictionary for a manuscript with a title of “A pulse-decay method for low permeability analysis of granular porous media: I. Analytical solutions and experimental methodologies”

Compiled by Mr. Tao Zhang

Point of Contact: Prof. (Max) Qinhong Hu; maxhu@uta.edu

July 2020

File: Supplementary Data.xlsx

1. *Sheet “Temp & Humidity”*

This sheet includes the temperature and humidity data that were captured before the incubator was opened and after it was closed, the total time lasted for 9 hours and only the first 2 hours' data were used in the manuscript and shown in this dataset, as the remaining data did not vary.

2. *Sheet “Pressure variation (pulse-decay & GPT)”*

This sheet includes pressure variation in the first few seconds in the pulse-decay method. The data in this part were mainly shown in Fig. 8a and 8b of the manuscript. Data in the left part in this sheet were the pulse-decay values, and data in the right part were captured from SMP-200 for Gas Permeability Technique (GPT). For data in pulse-decay values, the red line was linearized through the origin. For data in GPT, two samples (X-1 & X-2) were used; pressure and time were the main data that we've analyzed for the manuscript.

3. *Sheet “GPT Different size”*

This sheet includes the data used to analyze the influence of granular sizes on the pressure variation in GPT. Sample X-3 was used and data for five granular sizes were shown in this sheet, along with some information and testing condition were also collected and shown in this sheet; again, pressure and time were the main data that we've analyzed.

4. *Sheet “GPT Different gas”*

This sheet includes the data tested by SMP-200 through sample X-1 for four different gases (i.e., Ar, CO₂, N₂, and He); again, pressure and time were the main data that we've analyzed.

5. *Sheet “MIP”*

This sheet includes the data tested by MIP for sample X-4. Data in this sheet were shown in Fig. 10 of the manuscript. Pressure and time were the main data that we've analyzed, and the volume-based average pore diameters of the sample was also given.