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# *Interactive comment on* "Database of Petrophysical Properties of the Mid-German Crystalline High" *by* Sebastian Weinert et al.

**Anonymous Referee #2**

Received and published: 5 October 2020

Line 41: Can the authors provide a few references here?

Lines 135-136: Surely these volumes should be reported as cm3? Mass per unit volume is a density, no?

Lines 141 and 163: "...on the..."

Line 182: "oven-dry". At what temperature? The samples were dried in a vacuum oven or a conventional oven/furnace?

Line 187: "Grain density" could be confused with the solid density (i.e. the density of a powdered aliquot of the sample). To avoid confusion, perhaps the authors could write "skeletal" in brackets after "grain"?



Line 192: The authors should make it clear that the "effective porosity" is also, and often, called the "connected porosity".

Lines 206-213: The descriptions of the permeability measurements require more detail, in my opinion. Did the authors use a small confining pressure to ensure that air did not travel along the interface between the sample and the jacket/device? If not, how were the samples clamped to try to prevent this? Did the authors just assume that the Klinkenberg correction was required each time, or did they first determine whether it was indeed necessary? Was the air dried and, if so, how? Scant information is provided about the "mini permeameter". Are the authors talking about a "TinyPerm"? If yes, I'm somewhat sceptical that this device can provide accurate values for low-permeability samples.

Lines 226-227: Although the authors quote a standard practice, I think they should provide more details here. The sentence also requires rewording. For example, what was the force rate used? What was the displacement/strain rate used? How was displacement measured?

Lines 320-232: The descriptions of the triaxial measurements require more detail, in my opinion. What was the displacement/strain rate used? How was displacement measured? What confining fluid was used? How was the confining pressure held constant during the experiment? What type of jacket was used? It also may help to very briefly explain why lower pressures were used for the harder rocks (I assume these samples were too strong to break in the triaxial setup at 30 MPa?). How were the cohesion and the angle of internal friction measured (these parameters were mentioned at the start but not explained)?

Line 233-234: Although the authors quote a standard practice, I think they should provide more details here. The authors are also measuring the indirect tensile strength, not the tensile strength. What stressing rate was used? It might also help to state that the samples were loaded diametrically in compression.

Figure 4: Although choices need to be made, why did the authors choose to plot these graphs? Skeletal density as a function of thermal conductivity? Surely thermal conductivity as a function of porosity would make more sense? What about UCS as a function of porosity? Permeability as a function of porosity? Unless there are good reasons to show these plots, I suggest that the authors rethink what they show here.

Line 358: Is it not useful for the reader to state (with references) whether the trends found are similar to those found in previous studies?

Line 358: Although I understand the importance of a database of laboratory values, these are not the values to be used in large-scale geothermal modelling. For example, laboratory values of permeability underestimate the permeability of a typical rock-mass, which contains fractures and other discontinuities. I think that it's very important for the authors to outline that these measurements require upscaling (so as not to mislead modellers looking for values for their models) and offer a short referenced paragraph that explains how this is typically done.

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