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The Earth is made up a series of layers [2]. Its density increases continually with depth, reaching over 13 gm/cm^3 at the centre. This increase is not smooth, instead there are sharp discontinuities, as in the figure. Reference [2] gives the general picture.

Reference [1] contains detailed tables of variables (including density) which may be used for calculations on this zomb.

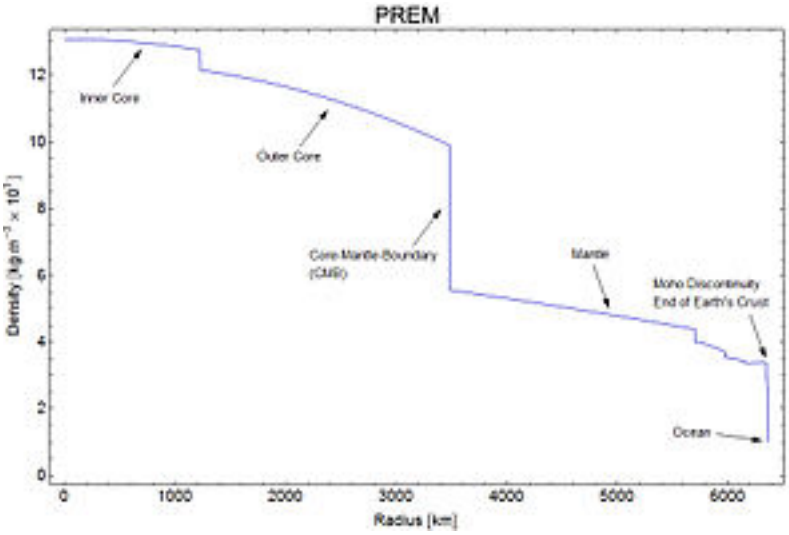

Figure 1. Earth's radial density distribution according to the preliminary reference earth model (PREM). [2]

The biggest discontinuity is the Mesolayer (Outer Core) / Mantle boundary, at a depth of 2885 km.

[1]. Preliminary Reference Earth Model (PREM). <http://geophysics.ou.edu/solid_earth/prem.html> .
[2]. Structure of the Earth. <http://en.wikipedia.org/wiki/Structure_of_the_Earth> .
[3]. Gravimeter. <http://en.wikipedia.org/wiki/Gravimeter> .
[4]. Mössbauer effect. <http://en.wikipedia.org/wiki/Mössbauer_effect> .

Gravimeters have been built with high accuracy (1 in 10^−12) [3], but these are not necessarily applicable in the present usage.

It is possible that the Mössbauer Effect [4] may be of use here.