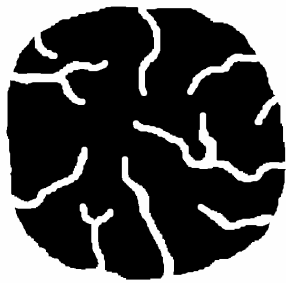


Agreement of GeoPyc[®] Data with Other Methods

Envelope density is not an intrinsic property of a solid; its value depends on the method of measurement. Agreement of results between the various methods available for determining envelope density can vary widely.

One factor determining how closely results from available methods agree is the shape and internal structure of the sample. Consider the following illustrations, which depict cross-sections of two different samples.



Sample A



Sample B

Sample A has a relatively smooth surface interlaced with small interstices. The surface of Sample B, however, is quite irregular, and its pores have varying entrance dimensions and depths. Unlike Sample A, it is difficult to determine where Sample B's surface irregularity ends and pore openings begin.

In the case of Sample A, envelope density measurements from immersion in mercury, wax coating, and superficial drying techniques should agree well with each other and with GeoPyc measurements, after shape effects are removed by calibration.

Much less agreement can be expected with samples that are highly irregular (like Sample B) because each method treats pore entrance characteristics differently. Which method gives the "right" answer? It depends on how one chooses to define where surface irregularity ends and pore entrance begins.

When you use the GeoPyc to analyze a highly-irregular sample, such as Sample B, you can achieve agreement with data from another method. For best results, calibrate the GeoPyc with a reference sample, using absolute density and porosity data obtained by the method with which you seek agreement.

For some applications, such as some quality control functions, repeatability or agreement with another method is more important than obtaining the most accurate envelope density or porosity value. In such cases, the user can select input values that cause analysis results to match an expected or target value. Once a methodology for obtaining agreement with another method is determined, that methodology can be used for subsequent analyses on the same type of sample. Results should be highly repeatable, and they should agree closely with those obtained by the other method.

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