Helium pycnometry reference sheet

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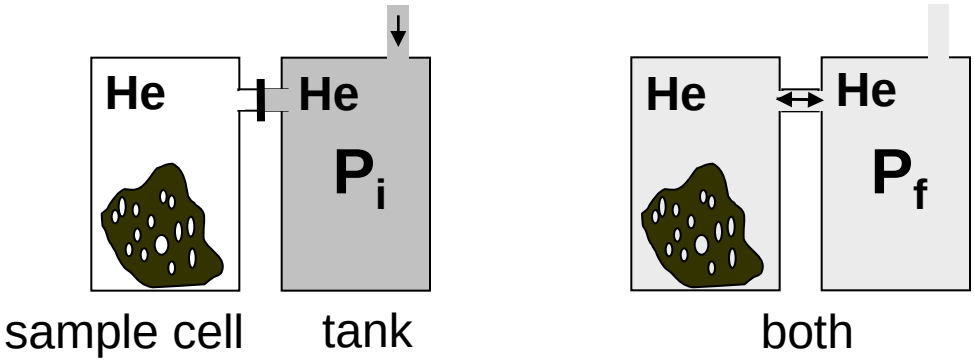
Instrument: Quantachrome Multipycnometer

$$V_{fragment} = V_{sample\ cell} - V_{tank} (P_{initial} / P_{final} - 1)$$



sample cell tank both

Sample cells

Large volume	148.483 cm^3; depth 7.3 cm; inner diam. 4.85 cm
Medium volume	58.003 cm^3; depth 3.8 cm; inner diam. 3.95 cm
Small volume	28.827 cm^3; depth 3.6 cm; inner diam. 2.45 cm
Micro volume	12.364 cm^3; depth 2.3 cm; inner diam. 1.55 cm

Reference cells ("tank")

Large tank	88.595 cm^3
Small tank	11.629 cm^3
Micro tank	6.177 cm^3

Aluminum inserts (approx. volume)

Large A	51.491 cm^3
Large B	52.454 cm^3
Medium	40.367 cm^3
Small	11.281 cm^3
Micro	2.642 cm^3

Note: Aluminum inserts should be *measured* to obtain correct grain volume to subtract from Sample cell volume. Approx. volumes are from mass/Al density.

Reference spheres (NIST)

Large sphere	56.5592 ± 0.0023 cm^3
Medium sphere	28.9583 ± 0.0018 cm^3
Small sphere	7.0699 ± 0.0006 cm^3
Micro sphere	1.0725 ± 0.0004 cm^3