

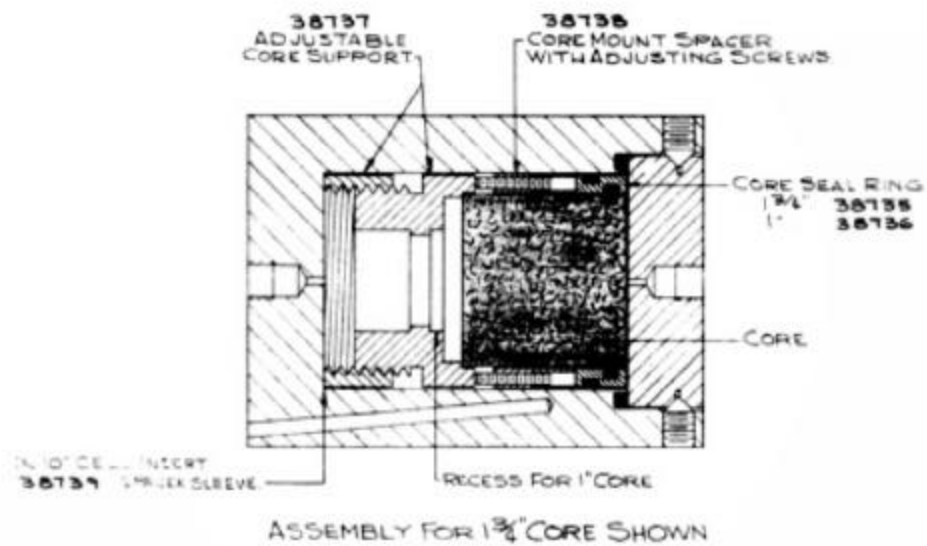
Procedure for determining Permeability of Formation Core Plugs

1. Cut and dry a 1" or 1-3/4" diameter core plug, 1-5/8" to 1-3/4" long with ends squared off axially.
2. If core contains hydrocarbon, it can be extracted with a suitable solvent; i.e., toluene, hexane, etc. A Soxhlet reflux condenser chambered extractor is usually used here.
3. Dry again in an oven, if extracted.
4. Coat exterior of core plug (not the ends) with an epoxy to ensure flow in the axial direction only. Paint epoxy on circumference sparingly to minimize running and allow to cure.
5. Mount core plug in core holder as follows:
 - a. Adjust Core support (38737) so that core face is at, or just below the cell "O" ring groove lip (Refer to Fig. 1).
 - b. Remove the core from the cell and fill to a level so that fluid just touches the bottom of the core when replaced in cell (approximately 15-20 cc).
 - c. Replace core in cell.
 - d. Put Core Mount Spacer (38738) and core seal ring (38735) in place around core as shown in Fig. 1.
 - e. Spacer should be adjusted so that core seal ring is flush with face of core.
6. Put end cap on HPHT cell and tighten set screws.
7. Turn cell so that fluid sample reservoir is above core and place in heating jacket. Cell can be heated if desired.
8. Apply nitrogen pressure to top of cell. Back pressure is needed if the cell is heated above vaporization temperature of filtrate used.
9. Open top and bottom valve stems.
10. Adjust pressure so that flow from bottom valve stem is in droplets rather than a stream.
11. Measure flow rate with a graduated cylinder and a stopwatch.
12. Re-check flow after two minutes to make sure it is stable to ± 1 cc/min.
13. If flow rate is stable (it should be by 20 minutes), terminate test.

14. Calculate permeability as follows:

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- Where: K = permeability, millidarcies, md
Q = flow rate, ml/sec
 μ = viscosity of test fluid, cp
L = length of core plug, cm
 ΔP = pressure drop across core plug, psig
A = cross-sectional area of core plug, cm²



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