Temco, Inc.

Design Excellence in Core Analysis Instrumentation

Capillary Pressure Apparatus

CPA-860

The Mercury Injection Capillary Pressure Apparatus is designed to determine the bulk volume, pore size distribution and the capillary pressure/fluid saturation relationship in porous media. This data is required for reservoir engineering calculations, such as the evaluation of connate water percentages, by utilizing the capillary pressure curves. It also provides a rapid means to reach equilibrium with working pressures up to 10,000 psi.

Uniform and non-uniform test specimens or particles can be tested with equal results. The above features make this device ideally suited for all types of research laboratories.

Temco's Positive Displacement Pumps of either 50 cc or 100 cc are normally supplied with the system, and various types of pycnometers can be supplied, with a variety of volumes, and with observation windows or other means to observe the mercury level. The integral pumps provide a scale and dial to read within 0.01 cc, and with an optional vernier, the volume can be read to 0.0013 cc.

Operating Procedure

Prior to operation, the pump scale and dial are zeroed in respect to a reference mark. An extracted, dried test sample is evacuated within the pycnometers. Mercury is injected into the chamber until atmospheric pressure is achieved. The bulk volume of the core is determined from the pump scale. Nitrogen pressure is subsequently applied to the pycnometers. The mercury volume is re-zeroed, and the volume of mercury that has entered the core plug is determined. This procedure is repeated at various pressures.

Nitrogen is admitted to the chamber to increase the immersing pressure of the mercury into the specimen. This will cause the mercury level to drop, and additional mercury is injected into the sample chamber, by utilizing the pump, until the reference level is again obtained. The variation in the pump reading is the amount of volume of mercury which has entered the specimen under the test conditions. This test can be repeated until adequate data is obtained.

Some of the options available for the system include pycnometers for 1.5" and 2" cores, higher pressure pycnometers (5000 and 10,000 psi), a vernier for direct reading to 0.0013 cc, and a larger volume (100cc) hand pump.