

Custom Porometer

Description

The Porometer is a versatile instrument capable of measuring bubble point, pore diameter, pore distribution, permeability, and envelope surface area. With suitable attachments, the capability of the porometer can be enhanced for performing tests like liquid permeability, breakthrough pressure, and integrity. The tests can be performed at elevated temperatures, in strong chemical environments, and at high pressures. The sample can be under compressive stress or under cyclic compression. A porometer can also have multiple sample chambers, mobile sample chambers, and sample chambers having a many different configurations to accommodate a wide variety of samples. A porometer can also be equipped with suitable test modes for testing high flow samples or low flow samples in quick quality control mode or the more sophisticated investigative mode.

The characteristics of each porous material are unique and often very complex. The customer desires to test his unique porous material and measure the pore structure characteristics relevant to his applications. Therefore, a custom porometer designed to meet the specific requirements of a customer is appropriate and economical.

Principles of Operation

The differential pressure of an inert gas is slowly increased on the sample and the gas flow rate through the sample is measured as a function of differential pressure. A wetting liquid is allowed to spontaneously fill the pores in the sample and gas flow rates through the wet sample are measured as a function of differential pressure. These data are used to compute the pore structure characteristics. The differential pressure is related to pore diameter.

$$D = 4 \gamma \cos \theta / p$$

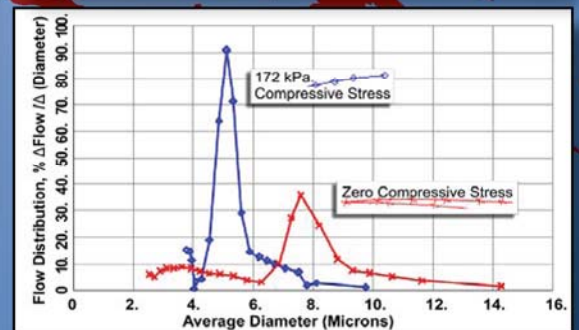
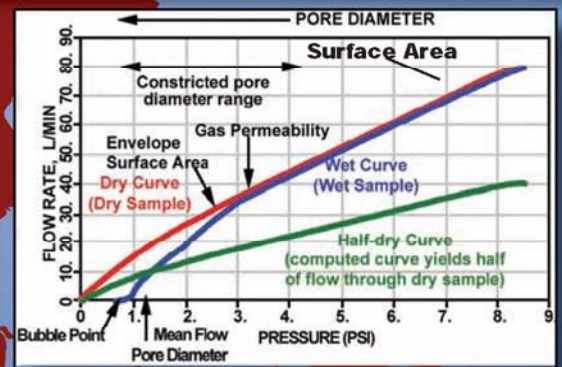
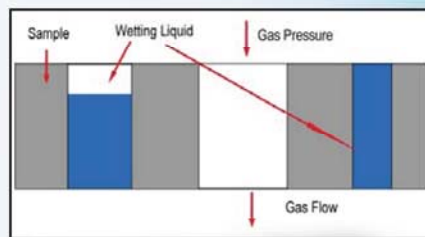
where

D= pore diameter

γ = surface tension

θ = contact angle

p= differential gas pressure



Unique Features

- Multiple sample chamber for fast and efficient characterization
- Clamp-On, In-Plane, Microflow, and other configuration sample chambers to accommodate customer sample
- Liquid permeability test
- Integrity test
- Pore volume measurement
- Elevated temperature test
- Test in a chemical surroundings
- Test under humidity and vapor pressure controlled atmospheres
- Testing of samples under compression or cyclic compression
- Testing in several modes such as rapid QC mode or sophisticated research mode

Specifications

Pressure Accuracy: 0.15 % of reading

Test Pressure: Up to 500 psi (up to 2,000 psi with microflow)

Flow Rates: Up to 200 SLPM (standard liters per minute) (Up to 10,000 SLPM optional)

Flow Accuracy: 1 % of F.S.

Sample Size:

Standard: 0.25" - 2.5" diameter (up to 1.5 " thick).

Standard: 5 mm - 60 mm diameter (up to 40 mm thick).

Others available

Pressure and Flow Resolution:

1/60,00 of full scale (1 part in 60,000)

Compressive Stress: Up to 1,000 psi

Maximum Pore Size Detectable: 1,000 μm

Minimum Pore Sizes Detectable: 0.013 μm
(0.004 μm with microflow)

Sample Type: Sheets, Rods, Tubes, Hollow Fibers, Cartridges, Powders, High Flow Samples, Cartridges, Nearly Impermeable Samples, and many more.

Other PMI Products

Porometers

Capillary Flow Porometer
Clamp-On Porometer
Compression Porometer
Cyclic Compression Porometer
QC Porometer
In-Plane Porometer
Microflow Porometer
Custom Porometer
Complete Filter Cartridge Analyzer
Integrity Analyzer

Permeameters

Bubble Point Tester
Liquid Permeameter
Diffusion Permeameter
Gas Permeameter
Water Vapor Transmission Analyzer
Envelope Surface Area Analyzer

Porosimeters

Liquid Extrusion Porosimeter
Mercury/Nonmercury Intrusion Porosimeter
Water Intrusion Porosimeter (Aquapore)

Sorptometers

BET Liquisorb
BET Sorptometer

Pycnometers

Gas Pycnometer
Mercury Pycnometer

Also Available:

Testing Services
Consulting Services

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