Compression Porometer

Description

The pore structure characteristics of products experiencing considerable stress during service could be appreciably different from those evaluated in the laboratory. This award winning instrument provides a unique opportunity for evaluating the component under true service conditions.

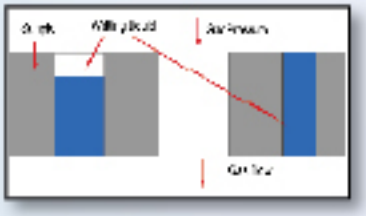
Principle of Operation

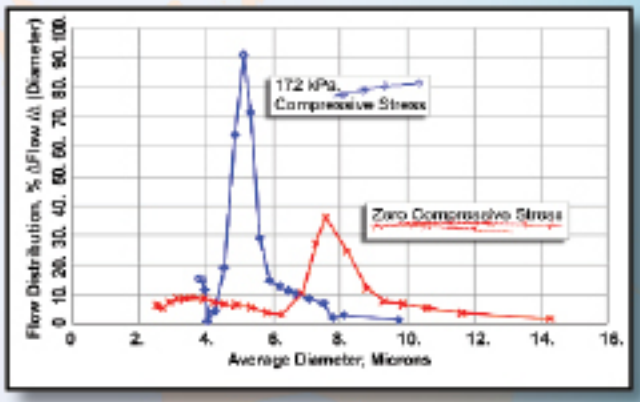
A fully wetted sample sandwiched between two porous and rigid plates is placed in the sample chamber. The plates are much more porous than the sample. Compressive stress is applied on the plates. Gas pressure behind the sample is increased. When the pressure is sufficiently high, the largest pore is emptied and gas starts to flow.With increase in pressure, smaller pores are emptied and the flow rate increases through the sample. The flow rate and pressure are measured using wet and dry samples. These data are used to calculate the effects of compressive stress on pore size and pore distribution. The pore size is obtained from differential pressure.

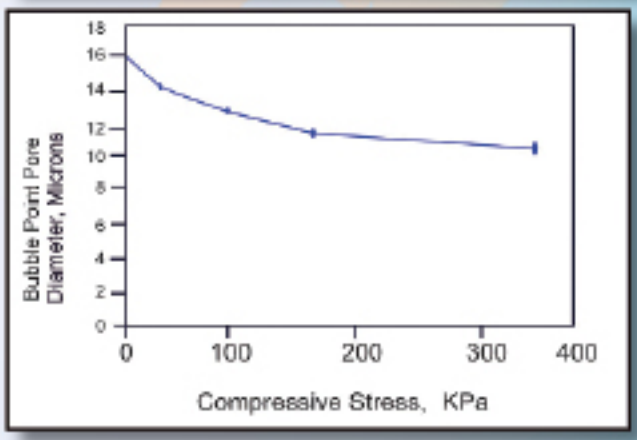
$D = 4\gamma \cos\theta / p$

D= pore diameter
γ= surface tension of liquid
θ= contact angle of liquid
p= differential gas pressure

The Compression Porometer ,thus, characterizes porous materials under conditions of their actual use.







Features

- Measures effects of compressive stress on the largest pore diameter (bubble point), the mean flow pore diameter, pore distribution, and perme ability.
- Fully Automated
- Windows based software for data aquisition, storage and reduction
- Compressive stress adjustable by the operator

Applications

The Automated Compression Porometer is designed to characterize the pore structure of a material under compression. Industries world-wide use the PMI Compression Porometer for R&D and quality control. Samples often tested include filter media, membranes, paper and battery separators. The instrument permits tests to be carried out under simulated true service conditions.

Industries: Automotive, Battery Separator, Filtration, Geotextiles, Textiles, Nonwovens, Paper, Fuel Cells

Specifications

Compressive Stress
0-1000 psi (0-7000 kPa)
Compressive Stress Accuracy
0.25% of full scale
Test Pressures
100, 200, and 500 psi instrument-versions
700, 1400, 3500 kPa instrument-versions
Pressure Accuracy
0.15 % of reading

Flow Rates
Up to 200 SPLM (standard liters per minute)
Pressure and Flow Resolution
1/20,000 of full scale (1 part in 20,000)
Sample Size
Standard: 0.25" to 2.5" diameter (up to 1.5" thick)
Standard: 5mm to 60mm diameter (up to 40 mm thick)
Others: Available

Other Products

Advanced Capillary Flow Porometer
Average Fiber Diameter Analyzer
Bubble Point Tester
Capillary Flow Porometer
Capillary Condensation Flow Porometer
Complete Filter Cartridge Analyzer
Clamp-On Porometer
Compression Porometer
Custom Porometer
Cyclic Compression Porometer
Envelope Surface Area Analyzer
Filtration Media Analyzer
High Flow Porometer
Integrity Analyzer
In-Plane Porometer
Microflow Porometer
Nanopore Flow Porometer
QC Porometer
Diffusion Permeameter
Gas Permeameter
Liquid Permeameter
Vapor Permeameter
Water Vapor Transmission Analyzer
Liquid Extrusion Porosimeter
Mercury/Nonmercury Intrusion Porosimeter
Vacuapore
Water Intrusion Porosimeter (Aquapore)
BET Liquisorb
BET Sorptometer
Gas Pycnometer
Mercury Pycnometer

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