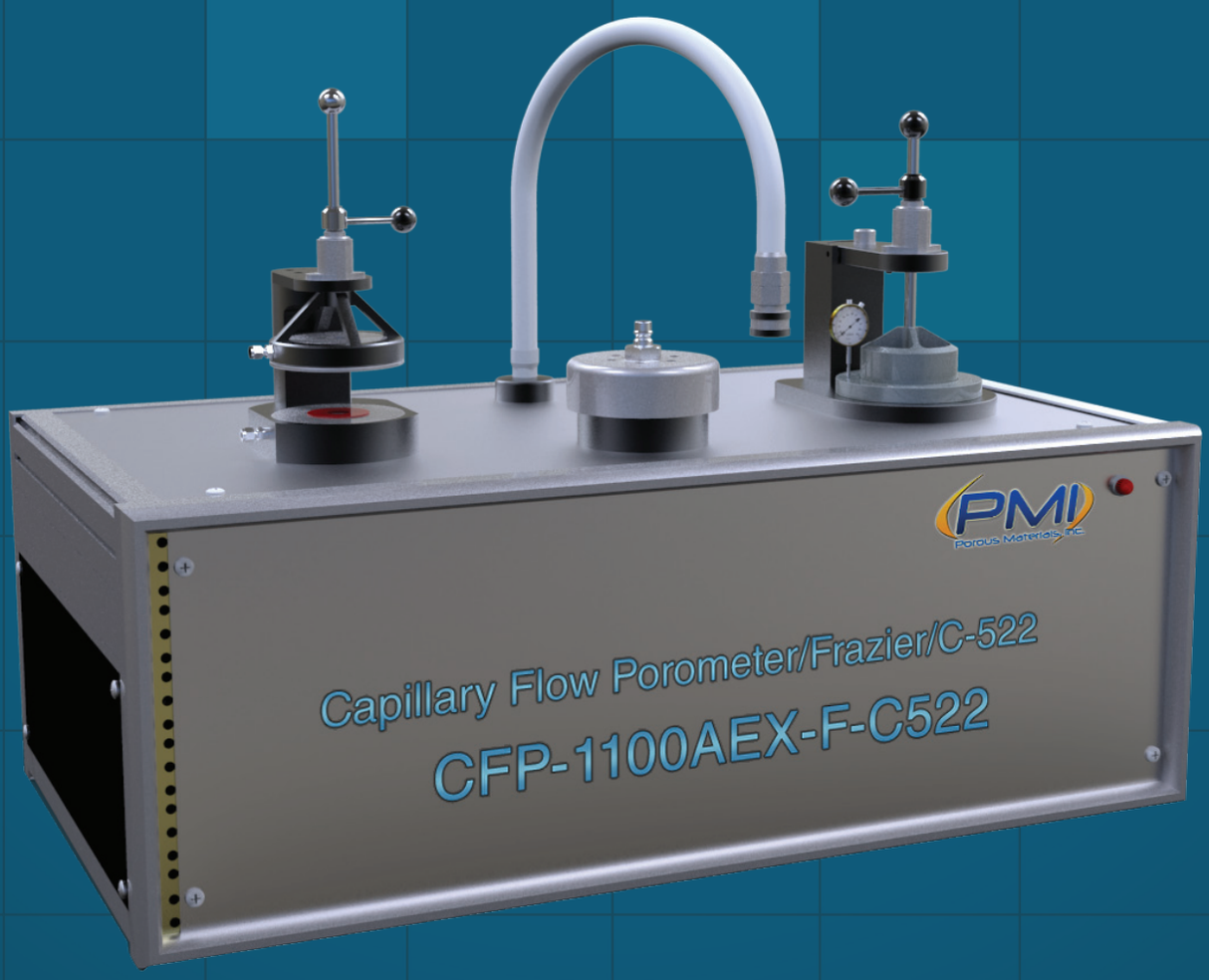
Porous Materials, Inc.

Capillary Flow Porometer/Frazier/C-522

CFP-1100AEX-F-C522

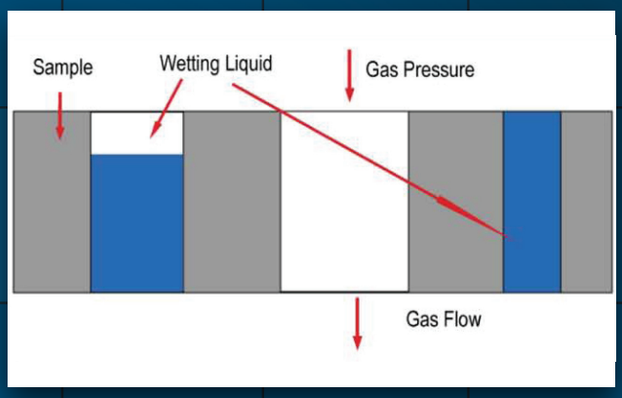


Not just products...solutions!

Principle (CFP)

A wetting liquid is allowed to spontaneously fill the pores in the sample and a nonreacting gas is allowed to displace liquid from the pores. The gas pressure and flow rates through wet and dry samples are accurately measured. The gas pressure required to remove liquid from the pores and cause gas to flow is given by:

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



where,
D is the pore diameter,
γ is the surface tension of liquid,
θ is the contact angle of liquid, and
p is the differential gas pressure.
From measured gas pressure and flow rates, the pore throat diameters, pore size distribution, and gas permeability are calculated.

Description (GP-C522)

The PMI GP-C522 follows the specifications of ASTM C522-03 and provides quick and accurate resistivity values in Rayls. Air is forced through the material at required velocity or flow rate and corresponding pressure drop is measured to provide the resistivity valves.

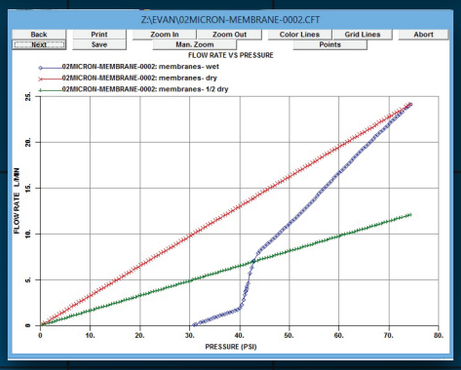
The PMI GP-C522 provides direct Rayl values to be used by QC and R&D engineers working on acoustic damping materials for various applications. Specific Airflow Resistance is defined as the product of the airflow resistance of a specimen and its area. This is equivalent to the quotient of the air pressure difference across the specimen divided by the linear velocity, measured outside the specimen, of airflow through the specimen.

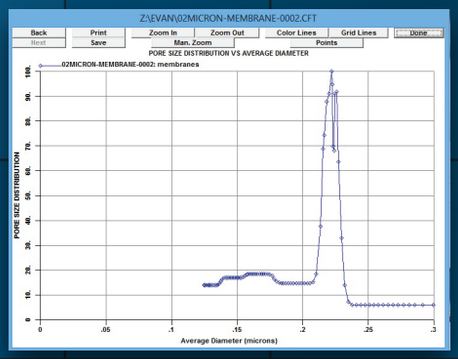
Description (Frazier)

Our Advanced Frazier Permeability Tester is used to determine the permeability of porous solids. A gas such as air is forced to flow through the test sample. easurements of the steady-state flow rate and the corresponding pressure drops provide the necessary data for calculation of the Permeability using darcy, Liters per minute, Frazier and other units.

Features (CFP)

- Testing of small samples as well as complete parts
- Any nonwetting liquid
- Real time graphic display
- Straight flow path avoiding turbulence
- Versatile sample chamber for a variety of samples and test modes
- Tests in QC, research, or any number of user defined modes
- See-through sample chamber for visual observation of test available
- Any sample geometry (Example: sheets, rods, tubes, hollow fibers, cartridges, & powders)
- Window based software for all control, measurement, data collection, data reduction, and report preparation
- Adjustable pressure on O-rings through pneumatically controlled piston-cylinder device
- Measurement of pressure close to the sample to minimize pressure drop correction





Features (GP-C522)

- Compatible with Windows 97 or higher
- Non-destructive testing
- Length of test approximately 10 minutes
- Minimal maintenance required
- Multiple sample chambers available
- Real-time graphical test display depicts testing status and results throughout operation
- Windows-based software handles all control, measurement, data collection, and report generation; complete manual control also possible

Features (Frazier)

- Fully automatic
- Non-destructive testing
- Length of test approximately 1 minute
- Wide range of acceptable sample types and sizes
- Multiple sample chambers available
- Minimal maintenance required
- Units in Frazier, Darcy, Coresta, Rayl
- Automatic, pneumatic sample clamping
- Interchangeable test head and adapter plates
- Permeability measurement according to ISO: 4003 & ASTM D 3574 standard
- Windows-based software handles all control, measurement, data collection, and report generation; complete manual control also possible
- Comes with a PC computer equipped with real-time graphical LCD test display that depicts testing status and results throughout operation

Specification

- ***Pressure Accuracy:*** 0.15% of reading
- ***Test Pressure:*** 100, 200, and 500 psi instrument versions (700, 1400, 3500 kPa nstrument versions)
- ***Pressure & Flow Resolution:*** 1/60,000 of full scale (1 part in 60,000)
- ***Maximum Pore Size Detectable:*** 500 mm
- ***Minimum Pore Size Detectable:*** Varies with intrusion liquid
- ***Flow Rates:*** Up to 200 SLPM (liters per minute)
- ***Sample Geometry:*** Sheets, Rods, Tubes, Hollow Fibers, Cartridges, Powders
- ***Sample Sizes:*** Standard: 0.25" - 2.5" diameter (up to 1.5" thick)
  Standard: 5 mm - 60 mm diameter (up to 40 mm thick)
  *Others available

C-522 Permeability:

- ***Permeability Range:*** 100 - 10,000 Mks Rayls
- ***Pressurizing Gas:*** Clean, dry or compressed air (or any other non-flammable and non corrosive gas)
- ***Pressure Transducer Range:*** 0 - 500 PA
- ***Resolution:*** 1-60,000
- ***Accuracy:*** 0.15% of reading
- ***Mass Flow Transducer Range:*** 10cm³/min-50,000 cm³/min

Frazier Permeability:

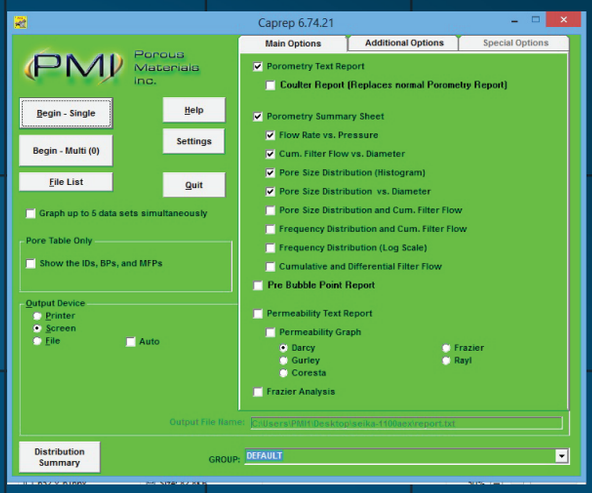
- ***Permeability measurement according to ISO: 4003 & ASTM D 3574 standard***
- ***Sample Size:*** 5 cm³ to 100 cm³ test area
- ***Pneumatic Clamping:*** (180±30)N
- ***Pressure Range:*** Up to 138 inches of water column
- ***Pressure controller:*** 0.5 ± 0.1 inches of water
- ***Accuracy:*** 0.15% of reading
- ***Mass Flow Transducer Range:*** upto 500 liters per minute
- ***Pressurizing Gas:*** Clean, dry or compressed air (Or any other nonflammable and noncorrosive gas)

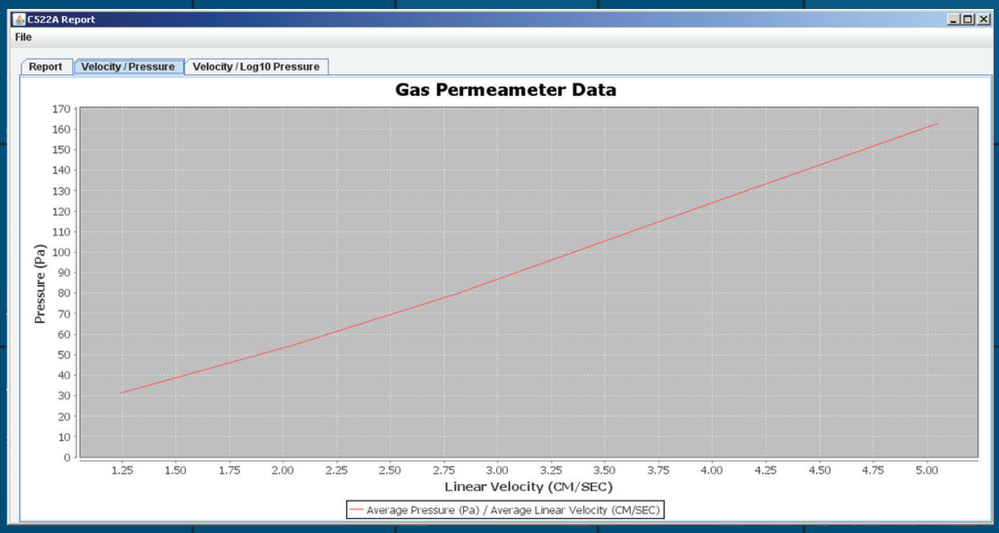
Parameters	CFP 1100A	CFP 1200A	CFP 1300A	CFP 1500A
Standards	ASTM F3t6, others on request	ASTM F3t6, others on request	ASTM F3t6, others on request	ASTM F3t6, others on request
Measuring principle	Flow	Flow	Flow	Flow
Pore size min	0.1 microns	0.05 microns	0.02 microns	0.01 microns
Max	500 microns	500 microns	500 microns	500 microns
Pressure range	100 psi	200 psi	300 psi	500 psi
Sample size standard (1.5"/ 40mm thick)	0.25"-2.5" dia	0.25"-2.5" dia	0.25"-2.5" dia	0.25"-2.5" dia
	5 mm to 60 dia	5 mm to 60 dia	5 mm to 60 dia	5 mm to 60 dia
Unique Sample Chamber	On request	On request	On request	On request
Sample geometries, (optional)	Sheets, rods, tubes hollow fiber, cartridge powder etc	Sheets, rods, tubes hollow fiber, cartridge powder etc	Sheets, rods, tubes hollow fiber, cartridge powder etc	Sheets, rods, tubes hollow fiber, cartridge powder etc
Flow rate	200 SLPM, others available on request	200 SLPM, others available on request	200 SLPM, others available on request	200 SLPM, others available on request
Flow resolution	1 in 60,000	1 in 60,000	1 in 60,000	1 in 60,000
Pressure controller	Up to 4, each controller to be selected based upon application	Up to 4, each controller to be selected based upon application	Up to 4, each controller to be selected based upon application	Up to 4, each controller to be selected based upon application
Pressure sensors	Up to 4	Up to 4	Up to 4	Up to 4
Pressure regulator switch	Auto	Auto	Auto	Auto

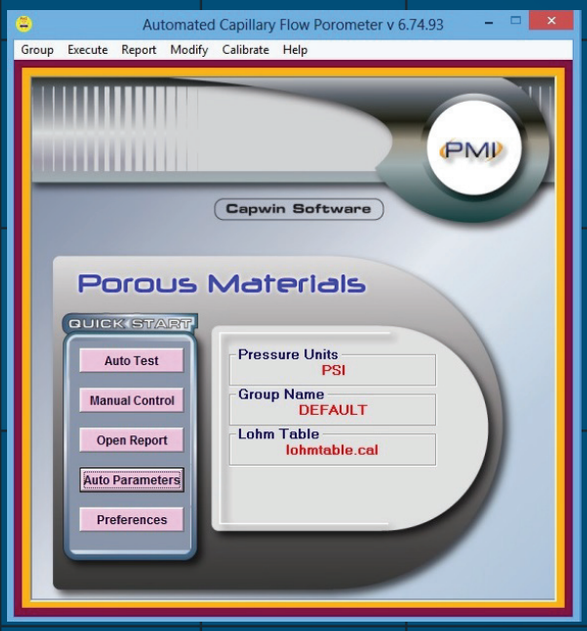
PMI Software

We work closely with our customers to provide the most user friendly software for porometery. PMI Capwin software is updated to meet customer needs & requirements. The comprehensive software can be used for all PMI porometers. The software is customized to offer convenient operation with default setting tor beginners & full access to ail relevant measuring parameters for advanced researchers:

- Capwin manages manual instrument control, automated measuring routines ("jobs") and report print out or graph
- Capwin Data manager for interactive evaluation of measured data as well as providing sophisticated tools forcreating reports & generating templates for graphs, tables & screen views
- Capwin user manager for comprehensive user management regarding useraccess, control & assignment of specific jobs
- On line diagnostic from anywhere in the world
- User defined definitions of paths & sub directories for data filling







Sales & Services

Our sales team is dedicated to helping our customers find which machine is right for their situation. We also offer custom machines for customers with unique needs. To find out what we can do for you, contact us. We are committed to customer support including specific service products, short response times & customer specific solutions. To quickly & flexibly meet our customer's requirement, we offer a comprehensive range of services.

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Disclaimer : *Other specifications of this product are also available.
*Design subject to change without notice.

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