

Average Particle Size Analyzer

Application

Performance of many particulate products used in a number of industries such as filtration, mineral, chemical, cosmetic and chemical industries is determined primarily by the average particle diameter. For many applications quick estimation of the average particle diameter is required. The techniques that are used for particle diameter measurements are often involved and time consuming. The PMI's completely automated average particle size analyzer has the unique ability to measure average particle diameter of bulk samples in a few minutes. It is used in industry for production control, quality control, and performance evaluation.

Principle and Operation

The instrument accurately measures flow rate of gas through the sample as a function of differential pressure, calculates the envelope surface area, and uses these results to compute average fiber diameter.

The envelope surface area is the external particle surface area that sees flow of gas through the sample. The envelope surface area is obtained from the flow rate and pressure drop using the Carman-Kozeny relation (Gerard Kraus, J.W. Ross and L.A. Girifalco, Surface Area Analysis by Means of Gas Flow Methods. I. Steady State Flow in Porous Media, Phys. Chem., Vol. 57. 1953, pp. 330-333). The average fiber diameter is obtained from the envelope surface area using the following equation.

$$D = 6 / S \rho$$

where D is the average fiber diameter, S is the envelope surface area per unit mass of the powder, and ρ is the true density of the powder.



Features

- ◆ Fully automated
- ◆ Windows based software for operation, data acquisition, and reduction
- ◆ Only a few minutes per test
- ◆ Very little operator involvement
- ◆ Robust. Requires very little maintenance
- ◆ Cost effective
- ◆ Highly reproducible and reliable
- ◆ The technique works best when the sample porosity is not very high, the particles are smooth, and concentrations of blind pores, through pore, and closed pore, are small.

Other PMI Products

Porometers

Bubble Point Tester
Capillary Flow Porometer
Complete Filter Cartridge Analyzer
Clamp-On Porometer
Compression Porometer
Cyclic Compression Porometer
Envelope Surface Area Analyzer
Filtration Media Analyzer
In-Plane Porometer
Integrity Analyzer
Microflow Porometer
Multi-Chamber and Multi-Mode Porometer
OC Porometer

Permeameters

Diffusion Permeameter
Gas Permeameter
Liquid Permeameter
Vapor Permeameter
Water Vapor Transmission Analyzer
Average Particle Size Analyzer
Average Fiber Diameter Analyzer

Extrusion Porosimeters

Liquid Extrusion Porosimeter

Intrusion Porosimeters

Mercury/Nonmercury Intrusion Porosimeter
Water Intrusion Porosimeter (Aquapore)

BET/Sorptometers

BET Liquisorb
BET Sorptometer

Services

Testing services
Consulting services

Pycnometers

Gas Pycnometer
Mercury Pycnometer

Instruments

Sale
Rent
Lease



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