

Automatic Open And Closed Cell Content Analyzer True Density And Porosity Tester

Item Number: DS13



Introduction

Engineered for advanced materials research, this automated gas displacement analyzer delivers precise open and closed cell content, true density, and porosity measurements across rigid foams, geological cores, and sintered metals with exceptional accuracy and full standard compliance.

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Application	Description	Key Benefit
Rigid Polyurethane & Phenolic Foams	Evaluates open/closed cell volume ratios and cut-surface corrections according to ASTM D6226 and ISO 4590.	Ensures structural insulation ratings, moisture impermeability, and thermal barrier efficiency.
Acoustic Absorption Materials	Measures interconnecting void fractions and open cell percentages in porous acoustic baffles and sound deadening panels.	Correlates air-flow resistivity and sound transmission loss with microstructural open porosity.
Petroleum Geological Core Analysis	Analyzes effective porosity, skeletal matrix volume, and grain density on cut rock cores and drill cuttings.	Yields high-precision formation reservoir volume data without fluid-induced swelling or sample destruction.
Powder Metallurgy & Sintered Metals	Determines closed pore fractions, interconnecting porosity, and true density of sintered structural components.	Verifies sintering densification rates and mechanical structural integrity for safety-critical components.
Advanced Technical Ceramics	Characterizes skeletal volume and true density of green bodies, calcined ceramics, and refractory oxides.	Accurately tracks sintering shrinkage, structural phase transformation, and internal void closure.
Battery Electrode & Separator Research	Quantifies skeletal density and void volume of porous battery membranes, calendared electrodes, and active material powders.	Provides essential volume fractions required to optimize electrolyte wetting, transport kinetics, and energy density.

Specification Parameter	Value / Feature Detail (DS13)
Product Item Number	DS13
Measurement Capabilities	Open cell ratio, closed cell ratio, cut-surface corrected cell percentage, true density, skeletal volume, total porosity
Supported Sample Types	Rigid foams, porous blocks, geological cores, metal components, non-volatile liquids, slurries, powders, granules
Measurement Principle	Gas expansion displacement method (Archimedes principle / Boyle-Mariotte Law)
Accuracy Error	$\leq \pm 0.03\%$ (verified with certified reference standards)
Repeatability Error	$\leq \pm 0.03\%$
Display Resolution	0.01%
Analysis Cycle Time	3 to 5 minutes per sample (excluding initial flush and degassing)
Pressure Range	0 kPa to 100 kPa (user-programmable to prevent foam cell wall deformation)
Pressure Sensor Technology	Silicon diaphragm capacitive pressure sensor
Pressure Sensor Accuracy	0.1% of actual reading (surpassing 0.1% Full Scale standards)
Standard Sample Tube Size	27 mm × 27 mm × 51 mm (designed for standard 25 mm × 25 mm × 50 mm specimens per GB/T 10799)

Specification Parameter	Value / Feature Detail (DS13)
Optional Sample Cell Sizes	Cylindrical 25 mm core tubes and custom customer-specified dimensions available
Working Analysis Gas	High-purity Helium ($\geq 99.999\%$ purity, 40 L cylinder connection); Nitrogen optional
Dual-Gas Operation Mode	Optional configuration: High-purity Helium as analysis gas, High-purity Nitrogen as pneumatic drive gas
Valve Configuration	Heat-free pneumatic control valves with integrated manifold mounting
Compliance Standards	GB/T 40401, GB/T 10799, GB/T 29046, GB/T 29047, GB/T 3139, ASTM D1622, ASTM D2856, ASTM D6226, ISO 4590, Q/CR 549.8, D45 1355, T/CECS 717
Control System	Dual control architecture: Built-in Windows industrial PC and external PC serial interface
Enclosure Dimensions	380 mm (L) × 380 mm (W) × 480 mm (H)
Net Weight	25 kg