PERMEABILITY TESTING MACHINE (Automatic)

Code : T551



- Fully automated flexible-wall permeameter for determining the hydraulic conductivity (k) of fine-grained and granular soils using constant head, falling head, and constant rate of flow (CRF) methods with closed-loop pressure/flow control.
- Dual high-precision pressure/volume controllers maintain cell pressure, back pressure, and inlet/outlet heads; automatic switching of valves enables head reversal and bidirectional flow tests without manual intervention.
- Electronic volume change device measures inflow/outflow to 0.001 mL (model-dependent) and reconciles with differential pressure/meniscus head sensors for robust k evaluation over several orders of magnitude.
- Temperature-aware testing with built-in Pt100/thermistor input and automatic viscosity correction to 20 °C; optional circulating bath for constant-temperature operation.
-

- Corrosion-resistant plumbing with quick-connects, bubble traps, fine inline filters, and vacuum de-airing stand for reliable saturation of low-permeability clays.

STANDARDS

ASTM D5084 • ASTM D2434 • ASTM D5856 • EN ISO 17892-11 • BS 1377-5 • AASHTO T 215

TECHNICAL SPECIFICATIONS

- Specimen format: flexible-wall cylinders, typical Ø50 / Ø70 / Ø100 mm; height 20–150 mm (H/D ≈ 1–2)
- Pressure/volume controllers: 0–1 MPa range (model-dependent), resolution ≤ 1 kPa; volume resolution ≤ 0.001 mL
- Cell pressure (σ3): up to 1 MPa; stability ≤ ±0.5 kPa
- Back pressure: up to 1 MPa; programmable ramps/holds; B-value check supported
- Head/gradient control: constant head (Δh) or constant Δp across specimen; automatic falling-head with electronic level tracking; CRF with closed-loop flow
- Flow/volume measurement: electronic volume change device and/or bidirectional flowmeters; leakage check and line compliance compensation
- Permeability range: approx. 10^{-9} to 10^{-2} m/s (specimen/kit dependent)
- Displacement/strain: vertical LVDT (optional) for consolidation settlement during σ′3 stage
- Transducers: pore pressure at top/bottom, cell pressure, differential pressure (optional)
- Data acquisition: ≥ 24-bit A/D; typical logging 1–10 Hz; event-based averaging and stability criteria
- Automation: valve sequencing, head reversal, stepwise gradient, termination on steady-state flow, stability of k, or time limit
- Safety: overpressure relief, leak/air ingress detection, low-fluid level alarm, emergency stop
- Optional ALFA Cloud integration for secure, real-time data upload, centralized storage, and web access to results.

EQUIPPED WITH

- Triaxial-type permeability cell with specimen pedestals/end caps, porous stones, and drain lines
- Dual pressure/volume controllers (cell & back pressure) with automatic valve block
- Electronic volume change device with high-resolution encoder
- De-airing/vacuum stand, bubble traps, fine inline filters, and flexible tubing set
- Temperature input channel and software-based viscosity correction
- Control and reporting software with templates for constant head, falling head, and CRF

SUPPLIED WITH

- Split molds (Ø50/70/100 mm), membranes, O-rings, membrane stretcher
- Porous stones and filter papers (assorted grades)
- Calibration certificates (pressure, volume, temperature)
- Starter consumables kit and maintenance tools
- Operating manual with preset test sequences and report formats

ORDERING INFORMATION

To be added soon ...