



### Introduction:-

- The Permeability/Fluidisation Apparatus enables permeability, fluidisation and attrition testing to be demonstrated using tap water, and suitable porous granular media.
- Students can measure and understand the characteristics of flow through a bed of particles and test various media that may be contemplated for use in deep bed filters
- A bed of granular medium (usually Ballotini, but other materials can be used, such as sand or anthracite) is placed in a readily demountable tube through which water can be made to flow in either downward through the column to demonstrate permeability or upwards to demonstrate attrition and fluidisation. At the base of the column is a sieve mesh to retain granular material.
- Differential pressure sensor enables measurement of pressure drop across the bed. The test section tube and all tubing connections are transparent to allow entire process to be observed and the presence of air bubbles easily detected

### Features :

- Metal framework with transparent test section for observation
- Control and data logging via PC
- Flowmeter to measure the flowrate
- Solenoid valves for automatic selection of process
- Operational manual with teaching exercises
- Universal single-wire interface
- Electronic pressure sensor

### Software:

- Our own customized Asoftware enables the operator to select the appropriate stage of the process and a mimic diagram with measured variables is displayed. The speed of the pump can be varied to meet the required flow rate.
- Results are saved in a log, which can be viewed and manipulated with the results viewer. Results can be printed or exported in a spreadsheet format, which can be opened in a wide range of packages for further analysis.

### Scope of learning:

- Pressure-drop measurements and correlations for flow through packed beds
- Verification of Kozeny's equation

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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IT-2013, Ramchandrapura Industrial Area,  
Sitapura Extension, Jaipur-302022, India.



info@tesca.in  
www.tescaglobal.com

- Characteristics of a liquid fluidised bed
- Measurement of permeability of selected solids
- Attrition tests

**Technical Specifications :**

- Sample tube I/D : 0.038m
- Sample tube length : 0.507m
- Pump : 24 L/hr
- Flow meter range : 0-3 L/min
- Glass funnel : 1.5L
- Solenoid valves : 2
- Pressure range : 0-5 ps

**Utility Required :**

- Electrical supply: supplied with a universal mains adaptor suitable for 100-240V / 1ph / 50-60Hz
- Software requires a computer running Windows XP or above with a USB port (computer not supplied)
- Alternative bed materials such as sand, anthracite (not supplied)

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