



# The Frazier® Differential Pressure Air Permeability Measuring Instrument

The Frazier Precision Instrument Company manufactures a *Differential Pressure Air Permeability Instrument* in three models. The First model, The *Low Pressure Instrument* was developed by the National Institute of Standards and Technology for measuring the air permeability of textile type materials and is the acknowledged standard of the U.S. Government and the U.S. Textile Industry. Frazier, in conjunction with the U.S. Air Force developed a second model, the *High Pressure Instrument* on the same principle as the *Low Pressure Instrument*, but designed it with a much greater versatility of use through its higher attainable air flow and differential pressure. The third model is the **Frazier 2000™**. [Model Comparison Chart](#)

The Frazier 2000™ is the next generation of Frazier Differential Pressure Air Permeability Instruments. This new instrument builds on Frazier's well-known reputation and implements electronic pressure sensing as well as computerized logging and manipulation of the electronic measurements. The Frazier 2000™ brings a whole new era of reliability and productivity to the field of permeability testing and measurement. The Frazier 2000™ has all the same features of High Pressure Permeability Instrument in addition to those listed. [\(Additional Information about the Frazier 2000\)](#)

**The Frazier Differential Pressure Air Permeability measuring instrument is the only instrument of its type that has its calibration procedure based on the original US National Institute of Standards and Technology (NIST) developed procedure. Its calibration is traceable to NIST in order to meet ISO 9000 Certification.**

*The Frazier Air Permeability Tester is the only permeability tester that will measure Frazier Air Permeability.*



[Frazier 2000 Electronic High Pressure Air Permeability Instrument](#)



[High Pressure Air Permeability Instrument](#)



## Low Pressure Air Permeability Instrument

(All models can be removed from table for portability or installed in laboratory casework or production lines)

Both models are extremely accurate and reliable, very easy to operate, and almost maintenance free.

These instruments were originally developed for measuring the air permeability of textile materials and are, in fact, the standard air permeability testing instruments in the industry for quality control, research, development, performance and purchase specifications. It was quickly discovered that these instruments are equally adaptable in doing an outstanding job of measuring the air permeability of any material that can be fitted to the physical dimensions of the instrument. These materials include all fiber products such as paper, felt, nonwoven materials, filters, and even wire cloth.

Some representative uses and advantages of the *Frazier Differential Pressure Air Permeability Instrument* are as follows:

1. Tests materials for ability to pass air (permeability) in which their uses depend on the amount of air passed, for example, parachute fabric.
2. Evaluates Filter Materials.
3. Measures the retention of fillers, coatings or other additives.
4. Aids selecting materials for coolness or warmth
5. Aids in predicting the probable penetration of various coatings or other additives.
6. Aids in the measurement of water resistant properties.
7. Determines the effect on properties such as denseness and permeability after treatments such as filling, sizing and subsequent washing, wear, use, etc.
8. **Quality Control-** A quick, accurate, definitive measurement of differences arising during production when visual appraisal is not sufficient.
9. **Research-** Will indicate differences in physical properties accurately and easily and the test is non-destructive unlike most other test methods. No surface tension effects are produced as from wet methods.

10. Established as the industry standard in the textile industry for measuring permeability. Proven through use. Its universal use and acceptance allow accurate comparison by product producer, supplier and user.
11. Specified for measurement of air permeability of parachute fabrics.
12. No special preparation of samples is required. (Relative humidity, temperature, and atmospheric pressure are compensated for in the design and calibration of the machine.)

The *Frazier Air Permeability Instrument* complies with the conditions set forth in: ASTM D461, [D737](#), [D1117](#), [F778](#), [C522](#), [D3574](#) Test G; DART70.0, Federal Test Method Standard #191, Method 5450; and American Standards Association Standard ASA No. L154.51 - 1970; Tappi T251; IST 70.1-92, ISO 9237; JIS-L1096; DIN 53887, Edana 140.1-81, CAN/CGSB-4.2 No. 36-M89 - Textile Test Methods: Air Permeability, BS 5636 , AFNOR G 07-111 . For the most up to date listing of Standards see: [Air Perm Specs and Model Comparison](#).

There are many U.S. and worldwide standards that are based on the standards above - please call or email us if you have an air permeability standard that you need to use - we can let you know if our tester will perform the test.

Frazier Company also sells a full set of test plates to help the user meet ISO 10012-1.

The *Frazier Differential Pressure Air Permeability Instruments* are exclusively calibrated by two separate methods for accuracy and reliability to insure that all *Frazier Permeability Instruments* are as identical as possible in performance characteristics and accuracy. The calibrations include the procedures originally developed and recommended by the National Institute of Standards & Technology. In addition to the calibration, a test plate is provided to quickly and easily check individual machines and cross check between different instruments the accuracy and reliability of the Frazier Permeability Instruments. These test plates have been used successfully over 25 years by a Task Group of the ASTM Committee D - 13 as an inter laboratory comparison to verify the accuracy of the Air Permeability Instruments.

Experience over many years of production and quality control has shown that these instruments have not changed in their calibration values as long as there is no mechanical damage and the instruments are kept clean and in good operating condition.

These instruments are the most accurate available and work on the differential pressure principle as measured by manometers. Their accuracy, dependability, and simple operation are characteristics which resulted in their world-wide use in research, quality control development and testing for conformation with purchase and performance specifications.

[Air Permeability Calibration](#)

[\*The Differential-Pressure Air Permeability Test for use in the Non-woven, Filter, and Paper Industries\*](#) - Tappi Journal - Volume 76 Number 11 - November 1993

[Red Oil - 0.827 Specific Gravity - Material Safety Data Sheet](#)