

OPT-5000

Data sheet

Oxygen Permeability Tester

- Fast and precise testing of films and foils for oxygen permeation



Introduction to the OPT-5000

The OPT-5000 tester has been specifically developed to provide an easy and reliable test method. With a minimum of training anybody can perform a quality test. Just insert the sample, choose the test programme and press START - that's it! The user interface is based upon an easy to use touch screen display, which indicates the test cycle and the oxygen transmission rate as the testing progresses.

The OPT-5000 is the right choice for the testing of both low and high permeability foils. With its broad testing range, ease of operation and automatic humidity control, the OPT-5000 is extremely versatile in application and suitability, both for advanced research in the laboratory and quality control in production settings.

Fast, sensitive and accurate

The oxygen permeability tester features a sensitive and rapid response ceramic oxygen sensor, which measures the partial pressure concentration of oxygen in the carrier gas.

The test sample is affixed to a sample card, which when inserted into the tester, separates the upper and lower chamber. The upper chamber contains an atmosphere with a fixed and known concentration of oxygen, while the lower chamber contains an oxygen-free atmosphere.

The oxygen permeability is determined by the difference between the measured oxygen concentrations in the gas stream passing through the chamber and the gas stream bypassing the chamber.

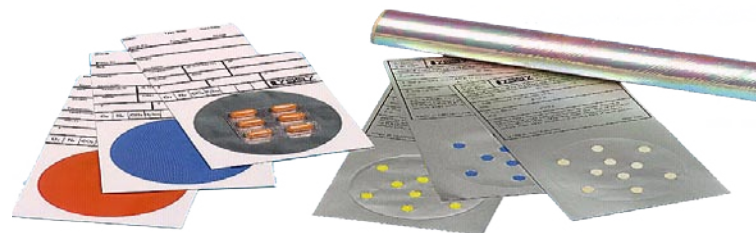
The result is expressed in $\text{mL/m}^2/24 \text{ hrs}$. The test is repeated until the results attain a user-determined level of reproducibility. The chamber temperature, the test gas and carrier gas humidity can be selected by the user. With optional software for the OPT-5000 it is possible to export the test results and get a graphical presentation.

Features

- Simplicity in operation due to the high degree of automation - the quality of tests performed is less operator dependent
- Extremely broad testing range, covering low and high permeability
- High repeatability of testing results
- Automatic equilibrium detection
- Automatic humidity control
- Automated test and carrier gas flow control
- Automatic temperature control (internal heater)
- Automatic sequenced selection of test programmes with predefined test parameters
- Easy set-up of test programmes and sample data
- Complete traceability in test documentation, data logging and error reports
- Easy to use test sample holders - no grease needed for sealing
- RS232 Interface for communication with PC
- Built-in printer
- Test results are expressed directly in $\text{ml/m}^2/24 \text{ hrs}$
- Test modes: Absolute (no test standard required) or Relative (test standard required)
- Automatic leaktest/individual zero on system

Thermostatic Cooling

In order to test at temperatures below ambient conditions, the measuring chamber can be cooled down to the required temperature via an external water cooling thermostat, which can be supplied as an optional accessory.



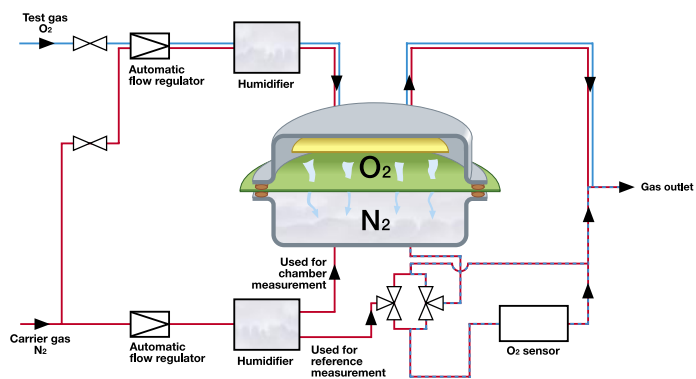
 **PBI Dansensor**

Lyssy Line of Permeability Testers

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Measuring principle of the OPT-5000



Example of measuring cycle for OPT-5000

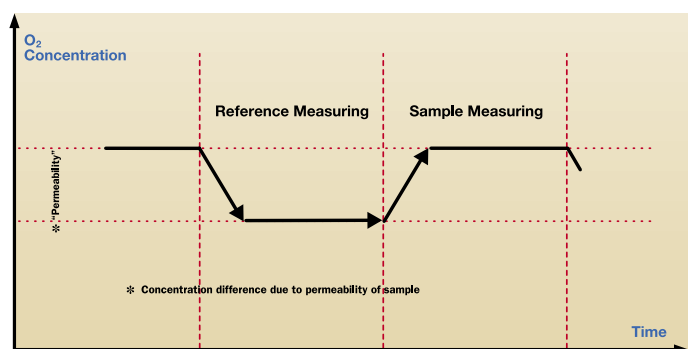
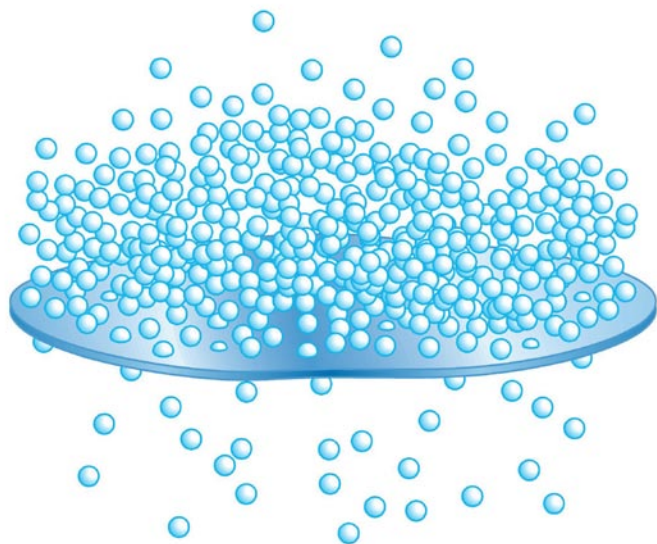


Illustration of molecular permeation through a barrier



The OPT-5000 ensures a fast and precise testing of films and foils for oxygen permeation.

Technical Specifications

General description	
Measuring range	0.1 - 10.000 mL/m ² /24 hrs as standard
Sensor type:	Ceramic solid-state oxide sensor
Carrier gas:	Nitrogen with low oxygen content (Examples: Nitrogen 5.0, UHP or White Spot Grade)
Test gas (Oxygen):	1-100% (100% or 20,9% recommended)
Sensor life	> 5 years operation under the conditions given
Cascade measuring	Automatic sequential run of multiple test programmes
Measure conditions	
Dry Measurements:	Temperature range: 5°C to 60°C (40°-140°F)
Humid Measurements:	20-90% RH symmetrically on both sides in the following temp. range: 20°C-40°C. Limited RH ranges at temperatures 10-20°C and 40-50°C
Accuracy	
Dry conditions:	± 2.5% of reading or ± 0.025mL/m ² /24 hrs*
At 50% RH:	± 2,.% of reading or ± 0.025mL/m ² /24 hrs*
At >75% RH:	± 5% of reading or ± 0.05mL/m ² /24 hrs* *Whichever is greater
Data logging	
Measurements:	256 results saved in memory 500 cycles saved in memory
Data transfer:	RS232 Serial output to PC or external printer
Printer:	Built-in 4" thermal printer
Weight & size	
Tester dimensions:	470x400x480 cm (HxBxD)
Weight:	Approx. 40 Kgs
User Interface	
Display:	Icon based touch screen
Testing programmes:	8 user-defined programmes specifying a predetermined set of test conditions (Temp., %RH, and number of runs)
Sample IDs:	8 user-defined sample IDs specifying the sample conditioning: (Leak/Individual zero, stabilisation time, reference/measuring time)
Stability settings:	Number of cycles in result window, deviation (minimum 2,5% or 0.025 mL/m ² /24 hrs)
Calibration:	Measure against the built-in calibration, or up to 8 user-defined calibrations
Operational Environment	
Ambient temperature:	15°C - 25°C (Must be maintained constant during measurement (± 2°C))
Ambient humidity:	20-90% RH (non-condensing), constant during measurement
Industrial protection level:	IP 23
EMC Protection level:	Conforming to: EN61000-6-1, EN61000-6-3 and EN61326
Sample requirements	
Measured area:	42 cm ²
Sample Thickness:	Up to 5 mm
Min. sample size:	10 cm x 10 cm (4" x 4")

PBI-DS-Deash-Perme-Opt-5000-1

Distributor:



Lyssy Line of Permeability Testers

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