

## Modular systems for precision oxygen analysis of packaging film barriers



### Applications

Barrier Film    PET Bottles    Containers    Canisters    Flexible pouches    Bags

### Features & Benefits

- Analytical Systems Manufactured Traceable to NIST.
- System validation with certified gas or film for speed and convenience.
- Widest measuring range in the market providing research grade flexibility.
- Electronic flow, temperature and humidity control for ultimate responsiveness and repeatability.
- Coulometric oxygen sensor enhances analytical precision.
- Intuitive Windows based software.
- Fastest permeation results.
- 8001 e-net - the Remote Consultant™ guidance utility saves time and money.
- No archaic liquid coolants, catalysts or special gas mixtures required.

## Widest measuring range

All Systech 8000 Series analysers offer the widest measurement range in the market providing:

- Research grade flexibility.
- Research grade accuracy and repeatability.
- Quality Assurance orientated speed and agility.
- Measurement Range ranging from 0.005 cc/m<sup>2</sup>/day to 432,000 (8001e-net & 8001L). 0.008 cc/m<sup>2</sup>/day to 432,000 (8001/2 & 3).
- Up to five Expansion Modules available to increase testing throughput.

## Coulometric oxygen sensor

- Extremely fast purge down time.
- Accurate readings at the lowest levels enhancing analytical precision.
- The highest quality sensor in the market with the lowest replacement cost.
- Automatic Barometric Pressure Compensation.

## Precision control

The 8000 Series analysers offers precision electronic, temperature and humidification flow control providing ultimate responsiveness and repeatability.

- Test gas and carrier gas flow is controlled by premium electronic flow controllers.
- Widest sample temperature range available - 5°C to 50°C.
- Most measurable and controllable Relative Humidity range 20% to 90% RH.
- Fastest changeover from wet to dry sample runs.
- No need for archaic liquid coolants, catalysts or expensive gas mixtures - just simple Nitrogen and Oxygen.

## Software

The intuitive Windows based software offers:

- Easy input and recall of operating parameters and test protocols.
- User-friendly data tracking, searches, sorts, storage and output capabilities.
- Complete system diagnostics.

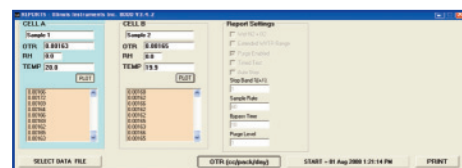
## Test Results

Customer	High Quality Barrier Package			
Date	16/07/2009			
Instrument	Model 8001			
	OTR	Test Conditions		
Sample	cc/pack/day	Temperature	RH Air	RH N <sub>2</sub>
Sample 1	0.00163	Room	Room	0%
Sample 2	0.00165	Room	Room	0%
Room temperature during the test: 23°C				
Air RH during the test: 35-45%				

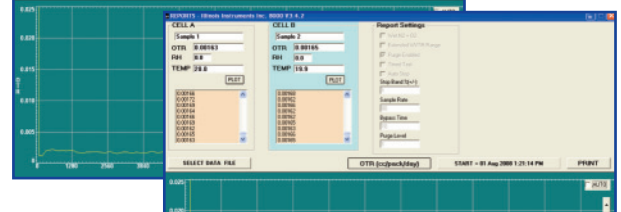
## Laboratory Testing Services

Our test laboratory will perform your Permeation Testing and Headspace Analysis. Whether you are developing innovative materials and packages or validating that your supplier is meeting specification. We can exceed your expectations with:

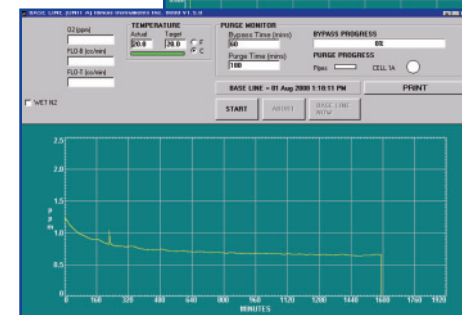
- Competitive Prices
- Fast Turnaround
- Independent non-biased results
- 25 Years Experience



Sample 1



Sample 2

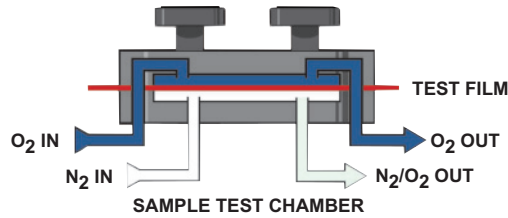


Baseline

## Principle of Operation

Utilising our proprietary coulometric sensor technology to detect oxygen transmission rates samples are clamped or attached to a diffusion chamber. Pure oxygen (99.9%) is then introduced into the upper half of the chamber while an oxygen-free carrier gas flows through the lower half.

Molecules of oxygen diffusing through the sample into the lower chamber are conveyed to the sensor by the carrier gas.



This allows a direct measurement of the oxygen without using complex extrapolations. Oxygen transmission rate of the test sample is displayed as either  $\text{cc}/\text{m}^2/\text{day}$  or  $\text{cc}/100\text{in}^2/\text{day}$ .

## New to the 8000 Oxygen Permeation Range

### 8001 e-net

Combines the outstanding quality of the model 8001 with an integrated computer.

- The exceptional e-net facility has a dual purpose for the user; for remote access to the analyser or to utilise Systech's Remote Consultant™ for guidance.
- Integrated computer saves valuable laboratory space.
- New coulometric oxygen sensor enhances analytical precision.



- Widest measuring range in the market providing research grade flexibility.

### 8001L

Incorporates the benefits of the new 'L' coulometric oxygen sensor.

- New oxygen sensor enhances analytical precision.

- Widest measuring range in the market providing research grade flexibility.
- Up to five Expansion Modules available to increase testing throughput.

## 8700 Versatile Analysis

The ultimate solution for fast and reliable oxygen permeation testing for multiple bottles, packages or films.

- Avoid production scrap and expensive re-work costs
- Measurement of 11 samples simultaneously - individually started, stopped or delayed.
- Expandable to 66 measurement chambers when higher throughput is required.
- Ultra fast testing within 3 - 12 hours - Systech's Turbopurge technology ensures the fastest stabilisation time possible.
- Modular adaptors can be installed in seconds, making this the most versatile package analyser available.



- High level of stability and performance with a measuring range of 0.00004 - 1000cc/pack/day.
- Simple Windows based software control with an intuitive menu structure, allows each chamber to operate independently.

## Systech 8000 Series - Oxygen Permeation Analysers

Systech's range meets the requirement for the testing of any application.



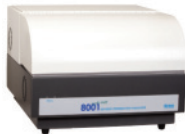
### 8001

2 stations for films or packages, precise humidity control, can switch between wet or dry samples within minutes.



### 8003

As 8001, but tests dry only.



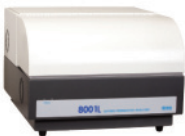
### 8001 e-net

As 8001, with new coulometric oxygen sensor and an integrated computer.



### 8200

2 station for films or packages.



### 8001L

As 8001, with new coulometric oxygen sensor.



### 8501

Reduced specification single station for film or package, dry test only



### 8002

As 8001, but tests only dry or wet (assumed 100% RH).



### 8700

11 stations for films or packages.

## Technical Specifications

8001 8001 e-net 8001L 8002 8003 8200 8501 8700

	8001	8001 e-net	8001L	8002	8003	8200	8501	8700
<b>OTR Test Range</b>								
<b>Films</b>								
0.005 - 432,000 cc/m <sup>2</sup> /day (0.0003 - 28,000 cc/100in <sup>2</sup> /day) No masking required		✓	✓					
0.008 - 432,000 cc/m <sup>2</sup> /day (0.0005 - 28,000 cc/100in <sup>2</sup> /day) No masking required	✓			✓	✓			
0.04 - 100,000 cc/m <sup>2</sup> /day (0.0001 - 5,000 cc/100in <sup>2</sup> /day) No masking required						✓		✓
1 - 99,999 cc/m <sup>2</sup> /day (0.07 - 68,000 cc/100in <sup>2</sup> /day) No masking required							✓	
<b>Package</b>								
0.00004 - 1,000 cc/pack/day	✓	✓	✓	✓	✓	✓		✓
<b>Test Temperature Range</b>								
5°C to 50°C (41°F to 122°F) 15°C to 40°C (59°F to 104°F)	✓	✓	✓	✓	✓	ambient		ambient
<b>Controlled RH Testing</b>								
Dry and 20% to 90% RH	✓	✓	✓					✓
Dry and Unknown Wet RH (Assumed saturated or 100% RH)				✓				✓
Dry only					✓	✓	✓	
<b>Expansion</b>								
Expandable up to 5 Modules (Total 12 test cells)	✓	✓	✓	✓	✓	✓		
Expandable up to 5 Modules (Total 66 test cells)								✓
<b>Test Sample Size</b>								
Films 50cm <sup>2</sup>	✓	✓	✓	✓	✓			✓
Films 100cm <sup>2</sup>							✓	
Packages	✓	✓	✓	✓	✓	✓		
<b>Calibration</b>								
Films or NIST gas	✓	✓	✓	✓	✓	✓	✓	✓
<b>Automatic Temperature Control</b>								
	✓	✓	✓	✓	✓	ambient	✓	ambient

Systech Instruments have over 25 years experience of providing analysis solutions for a wide range of industries. From our manufacturing plant in the UK we produce gas analysers for industrial process industries, headspace analysers for monitoring gas flushing of food products, and our range of permeation analysers.



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