

Labthink[®]



SINCE
1989

OXYGEN TRANSMISSION RATE TEST SYSTEM



Oxygen Transmission Rate Test System

Oxygen Transmission Rate (OTR) Test System is designed and manufactured based on the coulometric sensor method (equal pressure method) and conforms to ASTM D3985, ISO 15105-2, ASTM F1307, ASTM F1927(option), DIN 53380-3 and JIS K7126-2-B.

Combo Model

C403H & C406H

- OTR & WVTR testing capacities
- Cost & space saving
- Higher ROI
- High intelligence

C403H



C406H



Premium Model C206H & C203H

- Labthink patented coulometric sensor
- User friendly operation
- Fully automatic
- High efficiency

C206H



C203H



Medium Model C203M & C230M/H

- Three-cell design
- Quick test for QC
- Wider testing range

C203M



C230M/H



Entry Model C201H & C201B

- One-cell design
- Space saving
- Affordable
- Wider application for both film & package test

C201H



C201B



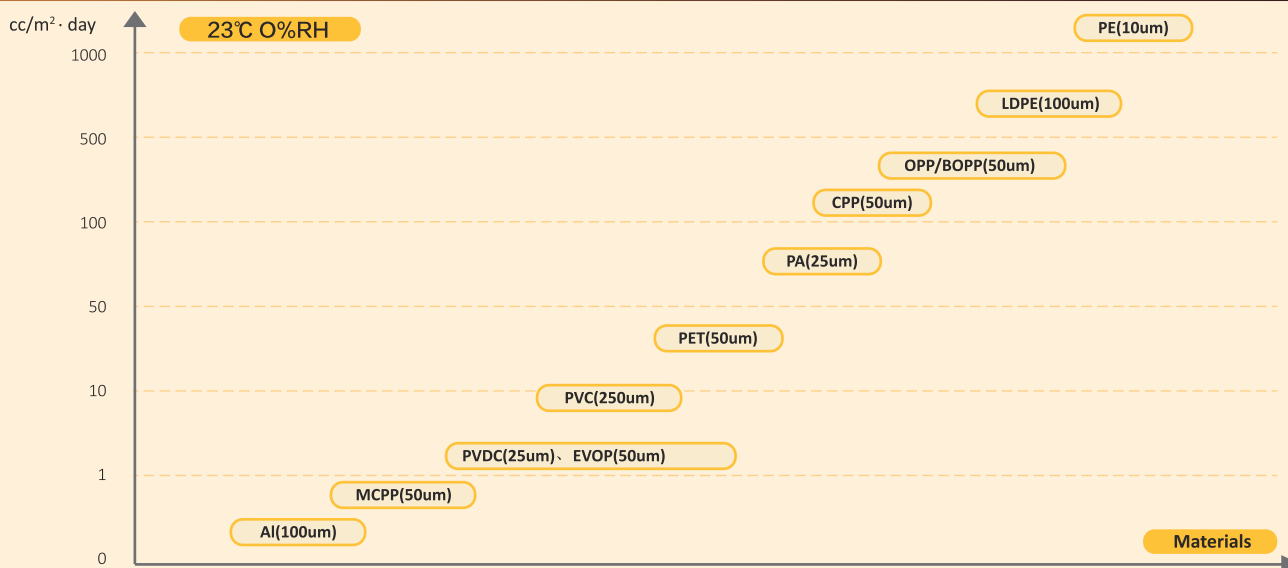
Comparison on all OTR models

OTR Tester (Coulometric Sensor Method / Equal Pressure Method)

Standard: ASTM D3985, ISO15105-2, DIN53380-3, ASTM F1307, ASTM F1927 option

	C201B	C201H	C230M(2019)	C230H	C203H & C403H	C206H & C406H
Test Range cc/(m ² ·day)	0.1~200	0.01~200	0.01~5000	0.01~200	0.01~200	0.02~200
Resolution cc/(m ² ·day)	0.1	0.0001	0.001	0.001	0.0001	0.0001
Repeatability cc/(m ² ·day)		0.01 or 1%, whichever is greater	0.01 or 2% whichever is greater	0.01 or 2% whichever is greater	0.01 or 1%, whichever is greater	0.02 or 1% whichever is greater
Temperature (°C)	15-50±0.5 (Optional)	15-50±0.2	10-55±0.2	10-55±0.2	15-50±0.05 5-60(Optional)	15-50±0.15 5-60(Optional)
Humidity (RH)	N/A	0%, 35~90%±2% 100%(Optional)	0%, 5%-90% ±1%, 100%	0%, 5%-90% ±1%, 100%	0%, 5~90%±1% (C203H) 0%, 5~90%±2% (C403H)	0%, 5~90%±2% (C206H) 0%, 5~90%±2%, 100% (C406H)
Test Chamber & Testing Result No.	1 chamber 1 result	1 chamber 1 result	3 chambers 3 independent results			6 chambers 6 independent results
Specimen Size	9.7x9.7cm	10.6cmx10.6cm	10.8x10.8cm		11.2cmx11.2cm	11.2x11.2cm (C206H) 11.7x11.7cm (C406H)
Specimen Thickness	≤3mm					
Standard Test Area	50cm ²					

OTR of Common Materials



The above values are for reference only

Introduction on C203H & C206H

C203H Features

- 360 ° air circulation constant temperature technology
- Long service life of sensors
- Automatic sample clamping for time and labor saving with consistent clamping force
- Three samples are tested at the same time under the same condition to obtain three independent results

Over-limit alarm to prevent overrange or damage to the sensor

Click the button to pop up or return the test cell

Automatic specimen clamping
Excellent sealing performance



One-key start testing
Real time display of data
Automatic control

Water Level sight glass to easily check water level

C206H Features

- Six-cell structure features ultra-high testing efficiency
- Multiple testing modes for different testing purposes
- Stable and automatic temperature & RH control
- Intelligent and easy to use

Mounting sample with pneumatic fixtures

Water tank and level indicator

Anti-pinch detector

Mutiple test modes



Top cover

Six-cell manifold

Top cover switch

Independent control system with touch screen

Accessories

Sample Holder

- Easy to use
- The specimen can be quickly clamped and easily removed
- It can quickly and accurately locate test specimen on the test chamber
- Avoid specimen contamination during specimen clamping



GP-01 Gas Purification Device



- Independently developed by Labthink
- Remove trace oxygen in carrier gas
- Long life without regeneration
- Maintenance free
- No need to use nitrogen with a small amount of hydrogen
- Reduced cost for carrier gas

Mask When 5cm² mask is used

	OTR instrument C203H
Standard test range	0.01-200cc/ (m ² · day)
Extended test range with mask	0.1-2000cc/ (m ² · day)



Package Testing Accessories

B2-110

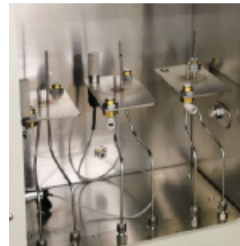


Package sample fixture



Wine bottle closure

PTC-01A



Software

Multiple testing modes to meet different customer needs

Test mode	Experience of materials and instrument	Application
Auto mode	No experience	For beginners
Efficient mode 8 hours	A little experience	For quick QC/QA testing to meet routine multi-batch product testing requirements
Efficient mode 24 hours	A little experience	For quick QC/QA testing to meet routine multi-batch product testing requirements
Expert mode	Rich experience	For materials R&D

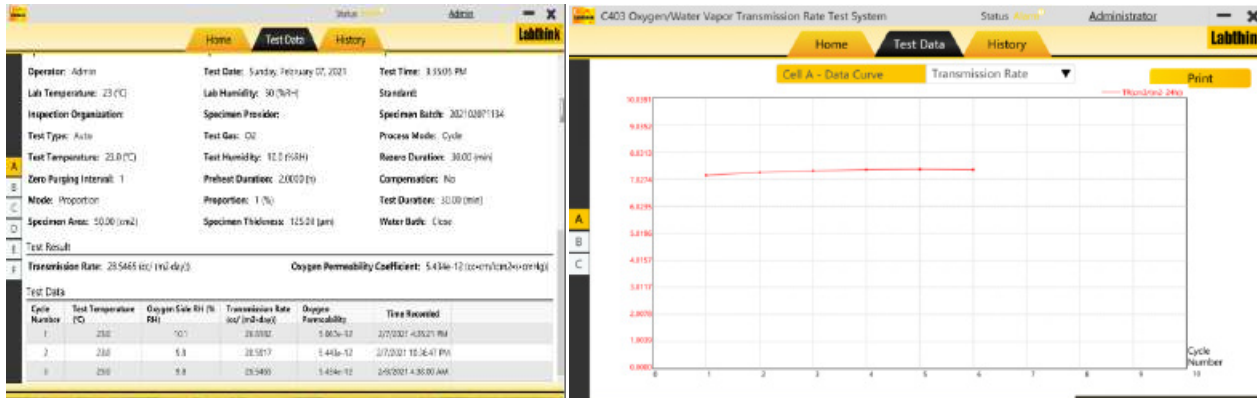
1 Home Interface

Easy parameter setting and a clear display of the current status of the six cells.



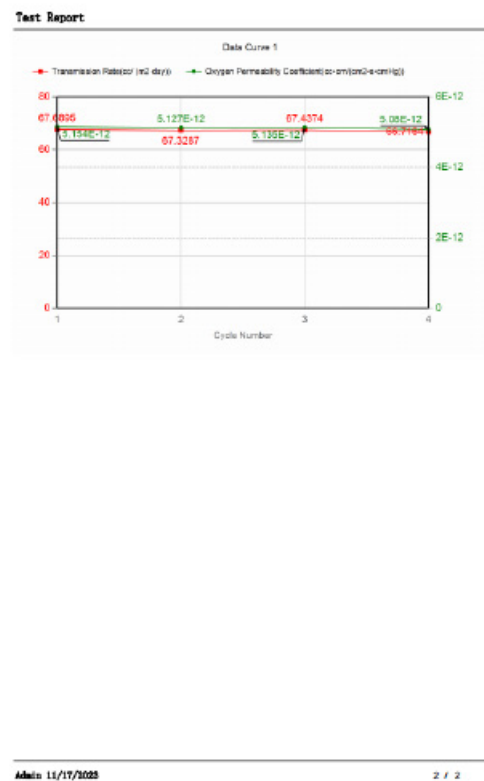
2 Real Time OTR, Temperature, Humidity

Real time viewing of test data curves, various testing conditions, preset parameters and test results.



3 Test Report

The test report can be exported in multiple formats, including Word, Excel, and PDF.



4 Query

Input query criteria to retrieve relevant test records from the historical tests. Simply click the "More Query" button to display all available query criteria.

The screenshot shows the 'History' tab in the Labthink software. At the top, there are search filters for 'Test Name', 'Specimen Name', 'Specimen ID', and 'Specimen Batch'. Below these is a 'More Query' button and a 'Double click to check test report' instruction. A row of action buttons includes 'Query', 'Reset', 'Report', 'Export', and 'Delete'. The main area contains a table with the following columns: Operation, Test ID, Test Gas, Cell, Transmission Rate, Test Name, Specimen ID, Specimen Name, Specimen Batch, and Specimen Material. The table lists 10 records with 'Export Tag' operations. At the bottom, there is a pagination bar showing '117 Item(s)' and navigation arrows.

Operation	Test ID	Test Gas	Cell	Transmission Rate	Test Name	Specimen ID	Specimen Name	Specimen Batch	Specimen Material
Export Tag	119	O2	F	0.5570				MASK-1	Ac
Export Tag	118	O2	E	0.5447				MASK-1	Ac
Export Tag	117	O2	D	0.2490				MASK-1	Ac
Export Tag	116	O2	C	36.0709				MASK-1	Ac
Export Tag	115	O2	B	1.3235				MASK-1	Ac
Export Tag	114	O2	A	6.8743				MASK-1	Ac
Export Tag	113	O2	C	0.1531				MASK-1	Ac
Export Tag	112	O2	B	0.1207				MASK-1	Ac
Export Tag	111	O2	A	0.1605				MASK-1	Ac
Export Tag	110	O2	C	0.5178				MASK-1	Ac

5 Role Management

Different roles can be authorized to ensure data security.

The screenshot shows the 'System Settings' dialog box with the 'Role Mgmt' tab selected. It displays a table of existing roles. To the right, the 'Add Role' dialog is open, showing a list of permissions to be assigned to a new role.

NO.	Role Name	Operation
3	Technician	Modify Delete
2	Engineer	Modify Delete
1	Admin	Modify Delete

Add Role Dialog:

- Param
 - Param Set
 - Param Reset
- Param Scheme
 - Maintain Param Scheme
 - Delete Param Scheme
 - Set Default Param Program
 - Load Param Scheme
- Calibration
 - Sensor Calibration
 - Film Calibration
- System
 - System Settings
 - Security Settings
 - Storage Settings

Labthink New Generation Coulometric Oxygen Sensor

- Designed in conformity with ASTM D3985, the Labthink Coulometric Oxygen Sensor ensures longer service life and lower maintenance cost.
- Sensor over-range warning and automatic protection features also provide added safety and reliability.
- Compared to other coulometric oxygen sensors, the new Labthink Coulometric Oxygen Sensor offers significant advantages in terms of annual attenuation rate, lifetime, and maintenance costs.

The Difference in Terms of Absorption Process

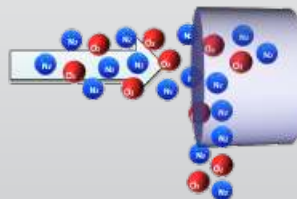
Coulometric Oxygen Sensor

All permeated oxygen molecules transported by nitrogen carrier gas, enter the Coulometric oxygen sensor, and then react completely to generate electrical current.



Partial Absorption Oxygen Sensor

The permeated oxygen molecules carried by nitrogen gas hit the surface of Partial Absorption Oxygen Sensor, but not all of them shall enter the sensor. Only a small portion permeates through the external surface of the oxygen sensor and reacts to generate electrical current.

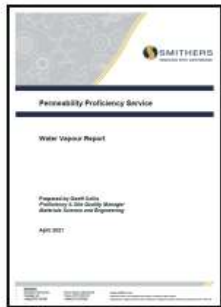
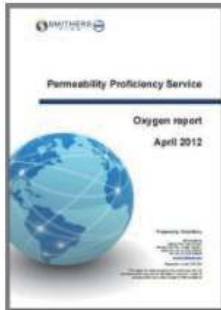


The Difference in Terms of Purposes

Test mode	Coulometric Oxygen Sensor	Partial Absorption Oxygen Sensor
Detection Limit	PPB Level, 10^{-9} Oxygen concentration	PPM Level, 10^{-6} Oxygen concentration
Accuracy of Trace Oxygen	High	Low
Overload at High Oxygen Concentration	Yes	No
Applicable Materials	Low, medium, high and ultra high barrier	Low, medium, and high barrier
Service Life	More than 5 years	2-3 years

PIRA Data Comparison Program

PIRA Lab Data Comparison



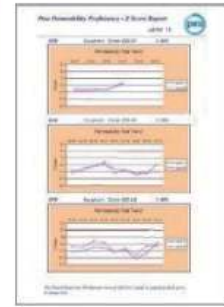
Since 2008, Labthink has been participating in the PIRA global barrier property test data comparison twice a year.

Note: PIRA, founded in 1930, is an international packaging research institute. It regularly organizes inter laboratory testing programs that have become the most important activity in packaging testing field.

Participant	Lab No.	Value	Reference	Measurement Error	Score
Labthink	101	0.0001	0.0001	0.0000	100
Labthink	102	0.0001	0.0001	0.0000	100
Labthink	103	0.0001	0.0001	0.0000	100
Labthink	104	0.0001	0.0001	0.0000	100
Labthink	105	0.0001	0.0001	0.0000	100
Labthink	106	0.0001	0.0001	0.0000	100
Labthink	107	0.0001	0.0001	0.0000	100
Labthink	108	0.0001	0.0001	0.0000	100
Labthink	109	0.0001	0.0001	0.0000	100
Labthink	110	0.0001	0.0001	0.0000	100
Labthink	111	0.0001	0.0001	0.0000	100
Labthink	112	0.0001	0.0001	0.0000	100
Labthink	113	0.0001	0.0001	0.0000	100
Labthink	114	0.0001	0.0001	0.0000	100
Labthink	115	0.0001	0.0001	0.0000	100
Labthink	116	0.0001	0.0001	0.0000	100
Labthink	117	0.0001	0.0001	0.0000	100
Labthink	118	0.0001	0.0001	0.0000	100
Labthink	119	0.0001	0.0001	0.0000	100
Labthink	120	0.0001	0.0001	0.0000	100

Achievements:

Labthink has got good accuracy in inter laboratory testing data comparison for barrier property. Smither Pira purchased Labthink C230M & C390H in 2021 and very satisfied with their performance.

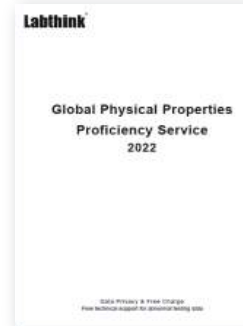


Testing Service (Lab Certification-CNAS/ILAC)

Labthink Global Proficiency Service

Since 2014, Labthink globally organized our own test data comparison annually.

Test Parameters: OTR & WVTR

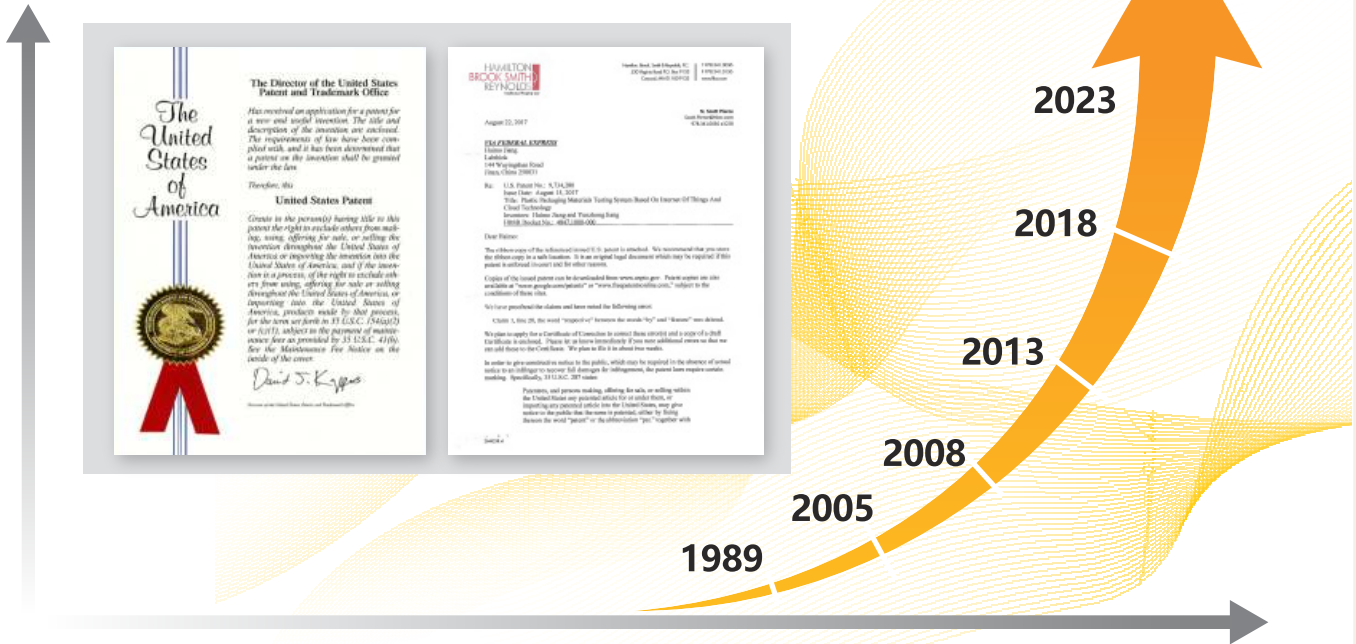


Lab No.	Participant	Value	Reference	Measurement Error	Score
101	Labthink	0.0001	0.0001	0.0000	100
102	Labthink	0.0001	0.0001	0.0000	100
103	Labthink	0.0001	0.0001	0.0000	100
104	Labthink	0.0001	0.0001	0.0000	100
105	Labthink	0.0001	0.0001	0.0000	100
106	Labthink	0.0001	0.0001	0.0000	100
107	Labthink	0.0001	0.0001	0.0000	100
108	Labthink	0.0001	0.0001	0.0000	100
109	Labthink	0.0001	0.0001	0.0000	100
110	Labthink	0.0001	0.0001	0.0000	100
111	Labthink	0.0001	0.0001	0.0000	100
112	Labthink	0.0001	0.0001	0.0000	100
113	Labthink	0.0001	0.0001	0.0000	100
114	Labthink	0.0001	0.0001	0.0000	100
115	Labthink	0.0001	0.0001	0.0000	100
116	Labthink	0.0001	0.0001	0.0000	100
117	Labthink	0.0001	0.0001	0.0000	100
118	Labthink	0.0001	0.0001	0.0000	100
119	Labthink	0.0001	0.0001	0.0000	100
120	Labthink	0.0001	0.0001	0.0000	100



Patents

Patents Registered

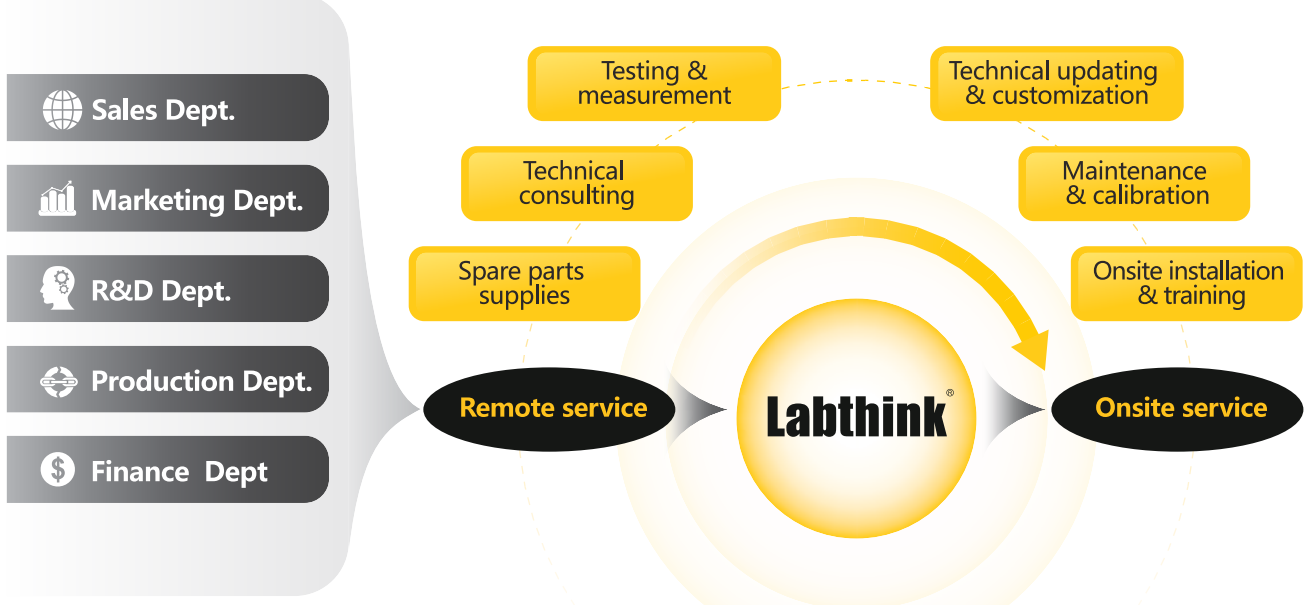


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Labthink[®]

GLOBAL
MANUFACTURER OF
PERMEABILITY TESTING
INSTRUMENTS

The 1st Corporate Partner of WPO
(World Packaging Organization)

Labthink is a multinational technology company since 1989. We are dedicated to providing packaging permeability and reliability testing instruments and testing services to help customers achieve safety control and innovation in materials development and quality control.

