

**C203H Oxygen Transmission Rate Test System** is based on Coulometric oxygen analysis sensor and equal pressure test method, and is conforming to ASTM D 3985 and other standards. It provides high-precision and high-efficiency oxygen permeability tests for high and medium gas barrier materials. It is suitable for testing the oxygen permeability of thin films, sheets and related materials in the fields of food, medicine, medical devices, daily chemical, photovoltaic, electronic and other fields.



## Product Features <sup>note1</sup>

### Coulometric Oxygen Sensor

- The instrument is equipped with ppb level Coulometric Oxygen Sensor of Labthink which can obtain lower test limit.
- Designed according to ASTM D3985 with absolute value and no need to calibrate.
- Super long service life, three times longer than traditional Coulometric oxygen sensor.
- Functions of over limit alarm and automatic protection.

### Accurate Data

- Using 360 ° air circulation constant temperature technology, the temperature stability is better.
- Equipped with high-precision temperature and humidity sensor, real-time monitoring and recording temperature and humidity changes.
- In the test process, the automatic control of flow, temperature and relative humidity is realized, and the accuracy is higher.
- Higher test repeatability of 0.01 cc / (m<sup>2</sup> · day) can be achieved.

### Effective Three-Cell

- Independent three sets of 50cm<sup>2</sup> standard test area cells, in line with the standard requirements for parallel sample detection.
- Three samples are tested at the same time under the same condition, and the data are independent.
- In the same test cycle, the number of samples completed increases from 2 to 3.
- Automatic clamping sample, saving time and labor, clamping force is consistent, better sealing.

### **Intelligent Operation**

- The 12 Inch Touch panel of windows system is used for more convenient operation.
- Automatic mode - after inputting the test temperature and humidity and clicking one key to start the test, the test proceeds automatically.
- New drawer type test cell, one key automatic in-and-out with sound and light reminder.

### **Safe and Reliable**

- Safe Running: the innovative Labthink's high-end industrial computer is embedded to eliminate the system failure caused by computer virus, and ensure the operation reliability and data storage security.
- Safe Operation: equipped with optical and other intelligent sensors as well as sound and light intelligent alarms to ensure the safety of operation.
- Safe Performance: the instrument uses global famous brand with stable and reliable performance.

### **Powerful Functions**

- Professional test mode provides flexible and rich control functions to meet the needs of scientific research.
- Provide oxygen permeability curve, oxygen transmission coefficient curve, temperature curve and humidity curve.
- Ultra wide test range, meet the barrier test (customized) of various materials.
- Ultra wide temperature range, meet the barrier test at different temperatures (customized).
- The gas purification device independently developed by Labthink can remove trace oxygen in nitrogen and provide oxygen free carrier gas (optional).

### **Testing Principle**

The sample is clamped between the test chambers, oxygen or air flows on one side of the film, and high-purity nitrogen flows on the other side of the film. Oxygen molecules diffuse through the film into the high-purity nitrogen in the other side. The flowing nitrogen is carried to the sensor. Through the analysis of the oxygen concentration measured by the sensor, the oxygen transmittance is calculated.

### **Reference Standards**

ASTM D3985, ASTM F1307, ASTM F1927 (optional), GB/T 19789, GB/T 31354, DIN 53380-3, JIS K7126-2-B, YBB 00082003-2015

## Test Applications

<b>Applications</b>	<b>Films</b>	The oxygen permeability tests of various plastic films, paper plastic composite films, co-extrusion films, aluminized films, aluminum foil composite films, glass fiber aluminum foil paper composite films and other film like materials.
	<b>Sheet</b>	The oxygen permeability tests of PP sheet, PVC sheet, PVDC sheet, metal foil, rubber sheet, silicon sheet and other sheet materials.

## Technical Parameters

Table 1: Test Parameters <sup>Notes2</sup>

Parameter / model		C203H
<b>Test Scope</b>	cc/(m <sup>2</sup> ·day) (standard area 50cm <sup>2</sup> )	0.01~200 0.005~200 (optional)
	cc/(m <sup>2</sup> ·day) (standard area 50cm <sup>2</sup> )	0.01~ 400000 (customized)
	cc/(m <sup>2</sup> ·day) (MASK area 5cm <sup>2</sup> )	0.1~ 2000 (optional)
	cc/(m <sup>2</sup> ·day) (MASK area 1cm <sup>2</sup> )	0.5~ 10000 (optional)
<b>Resolving Power</b>	cc/(m <sup>2</sup> ·day)	0.0001
<b>Repeatability</b>	cc/(m <sup>2</sup> ·day)	0.01 or 1%, whichever is greater
<b>Temperature Range</b>	°C	15~50
		5~ 60 (customized)
<b>Temperature Fluctuation</b>	°C	±0.05
<b>Humidity Range</b>	%Rh (within standard temperature range)	O <sub>2</sub> : 0%, 5~90%±1%
		Carrier Gas: 0%, 5~90%±2% (optional)
<b>Extended Functions</b>	<b>GP-01 Gas Purification Unit</b>	Optional
	<b>DataShield™ Data Shield</b> <sup>Note 3</sup>	Optional
	<b>GMP Computer System Requirements</b>	Optional
	<b>CFR21Part11</b>	Optional

Table 2: Technical Specifications

<b>Test Chamber</b>	3 sets
<b>Sample Size</b>	4.4" x 4.4" (11.2cm×11.2cm)
<b>Sample Thickness</b>	≤120 Mil (3mm)
<b>Standard Test Area</b>	50cm <sup>2</sup>
<b>Gas Specification</b>	99.999% nitrogen, 99.5% oxygen (gas source prepared by the buyer)
<b>Air Source Pressure</b>	≥ 40.6 PSI / 280 kPa
<b>Interface Size</b>	1 / 8 "metal tube
<b>Dimensions</b>	23.6" H x 19.6" W x 27.5" D (60cm× 50cm× 70cm)
<b>Power Supply</b>	120VAC ± 10% 60Hz / 220VAC ± 10% 50Hz (choose one from those two)
<b>Net weight</b>	220Lbs(100kg)

Table 3: Product Configuration

<b>Standard Configuration</b>	Mainframe, tablet computer, sampler, vacuum grease, polyurethane pipe with diameter of 6 mm
<b>Options</b>	Gp-01 Gas Purification Unit, air compressor, CFR21Part11, GMP computer system requirements DataShield™ Data Shield <sup>Note 3</sup>
<b>Remarks</b>	The compressed air inlet of the machine is Φ 6 mm polyurethane pipe (pressure ≥ 79.7 psi / 550 kPa); the air source is prepared by the buyer.

**Note: 1** All the product features are subject to detailed descriptions in the “Technical Parameters”.

**Note 2:** The parameters in the table are measured by professional operators in Labthink Laboratory according to the requirements and conditions of relevant laboratory environmental standards.

**Note 3:** DataShield™ Data Shield System provides safe and reliable data application support. The system can be shared by multiple Labthink products. Please purchase respectively according to the usage.