

OX2/230 Oxygen Transmission Rate Test System

Professional, High Efficiency and Intelligent OTR Test System

Professional

This instrument can be used to measure oxygen transmission rate of film and package specimens. It has three test modes and is applicable to various materials with high, medium and low oxygen permeability. It is also embedded with high precision oxygen sensor, which provides a wide test range of 0.01 ~ 65,000 cm³/m²•d and durable service life.



- Wide range and high precision of temperature and humidity control, adding humidity to two sides of the specimen, to support various combinations of non-standard test conditions
- World leading pressure compensation technology ensures accurate and repeatable test results
- Standard, proportional and continuous testing modes facilitate to minimize errors caused by human factors during test process
- Equipped with catalyst deaerator to purify carrier gas and reduce system errors
- 2 types of carrier gases are available: High purity nitrogen gas or hydrogen-mixed nitrogen gas
- Convenient fast-access calibration port for temperature and humidity
- Reference film for accurate calibration

High Efficiency

OX2/230 system is based on the equal pressure method and adopts Labthink's latest exclusive patent design of three diffusion cells integrated in one instrument for individual or multiple tests, which improves test efficiency by 3 times. It can be easily connected with 9 satellite bases together to accomplish up to 30 tests at the same time.

- 3 diffusion cells are integrated in one instrument with lower space occupancy rate and higher test efficiency
- 3 distinct or equivalent specimens can be tested individually with independent test results at one operation
- The system can be easily connected with a maximum of 10 instruments to accomplish up to 30 tests at the same time
- Oxygen transmission rate and water vapor transmission rate can be obtained at one operation by working with Labthink's water vapor transmission rate test system together under the control of one computer

Intelligent

The instrument utilizes Labthink's latest operating software with user-friendly operating interface and intelligent data management. It also supports Lystem™ Lab Data Sharing System, which ensures uniform management of test results and test reports.

- Based on the user-friendly Windows operating interface for easy operation
- Saves test data in different formats for convenient data transfer
- Intelligent historical data searching, comparison, analysis and printing functions
- Supports Lystem™ Lab Data Sharing System for uniform management of test results and test reports

Test Principle

The pre-conditioned specimen is mounted between the upper and lower chambers at ambient atmospheric pressure. One chamber contains oxygen or air and the other chamber is slowly purged by a stream of nitrogen. Due to the concentration difference between the two chambers, oxygen molecules permeate through the specimen into the nitrogen side and are taken to the coulometric sensor where proportional electrical signals are generated. The oxygen transmission rate is then obtained by analyzing and calculating the signals. For package samples, high purity nitrogen flows inside the package, and oxygen or air flows outside.

This test instrument conforms to the following standards:

ISO 15105-2, GB/T 19789, ASTM D3985, ASTM F2622, ASTM F1307, ASTM F1927, JIS K7126-2, YBB 00082003

Applications

This instrument is applicable to the determination of oxygen transmission rate of:

Basic Applications	Films	Including plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum foil composite films and many others
	Sheeting	Including various sorts of engineering plastics, rubber and building materials, e.g. PP, PVC and PVDC
	Packages	Including plastic, rubber, paper, paper-plastic composite, glass and metal packages, e.g. Coke bottles, peanut oil packages, Tetra Pak materials, vacuum bags, metal three-piece cans, plastic packages for cosmetic, soft tubes for toothpaste, jelly and yogurt cups
Extended Applications	Package Caps	Test seal performance of different package caps
	Solar Back-Sheets	Including solar back-sheets
	Plastic Pipes	Including various sorts of pipes, e.g. PPR
	Blister Packs	Test oxygen transmission rate of the whole blister packs
	Fuel Tanks of Cars	Plastic fuel tanks are widely used in cars for its light weight, buffering vibration and easy molding characters. But its fuel permeability is the most essential factor, this instrument can be used to test permeability of plastic fuel tanks
	Battery Plastic Shell	Battery electrolyte is protected by the plastic shell from outside environment. Battery service life is directly dependent on its oxygen permeability. This instrument can be used to test oxygen transmission rate of battery plastic shell
	Red Wine Bottles	Test oxygen transmission rate of red wine bottles

Technical Specifications

Specifications	Film Test	Package Test (customization available)
Test Range	0.01 ~6500 cm ³ /(m ² ·d) (standard)	0.0001 ~ 60 cm ³ /(pkg·d)
	0.07 ~65,000 cm ³ /(m ² ·d) (optional)	

Number of Specimens	1~3 with independent test results	
Resolution	0.001cm ³ /(m ² ·d)	0.00001 cm ³ /(pkg·d)
Temperature Range	15°C ~ 55°C (standard)	
Temperature Accuracy	±0.1°C (standard)	
Humidity Range	0%RH, 35%RH ~ 90%RH	
Humidity Accuracy	±1%RH	
Test Gas	Oxygen and air (outside of supply scope)	
Specimen Thickness	≤ 3 mm (customization is available for other thickness)	—
Test Area	50 cm ²	—
Specimen Size	108 mm × 108 mm	<p>One package with temperature control device: specimen should be smaller than Φ150 mm and lower than 380 mm</p> <p>Three packages with temperature control device: specimens should be smaller than Φ100 mm , and lower than 380 mm</p> <p>No size limitation for tests without temperature control device</p>
Carrier Gas	99.999% high purity nitrogen or nitrogen with 2% hydrogen (outside of supply scope)	
Carrier Gas Pressure	≥0.28 MPa	
Port Size	1/8 inch copper tubing	
Instrument Dimension	690 mm (L) × 350 mm (W) × 360 mm (H)	
Power Supply	AC (85 ~ 264)V (47 ~ 63)Hz	
Net Weight	70 kg	

Configurations

Standard Configurations	Mainframe, Professional Software, Communication Cable, Vacuum Grease, Diamond Sample Template, and Valve Sets
Optional Parts	Satellite Base, Accessories for Package Test, Temperature Control Device for Package Test, Reference Film, Sample Cutter, and Vacuum Grease
Note	<ol style="list-style-type: none"> 1. The gas supply port of the instrument is 1/8 inch copper tubing; 2. Customers will need to prepare for gas supply.

