

C230 Oxygen Transmission Rate Test System is a professional, high efficiency and intelligent oxygen transmission rate test system which can be used to measure the oxygen transmission rate of plastic films, sheeting, paper, container and other packaging materials, etc.



Features^{Note2}

Professional

The instrument uses high precision trace oxygen transmitter with Labthink's exclusive core control technology which can insulate external interference and reduce signal attenuation so that the instrument can test oxygen in a wide test range with high resolution and sensitivity. The instrument supports multiple test modes, which can be used to test materials with high, medium and low barrier properties.

- Wide range and high performance humidity control device guarantee precise test humidity ^{Note 2}
- Complete and comprehensive test parameter settings make professional testing procedures
- The core of trace oxygen transmitter is featured with magnetic protection so that the trace signal can be obtained more precisely
- The core of trace oxygen transmitter is featured with self-maintenance function, which can lower the core attenuation rate, extend the maintenance interval and save the usage cost

High Efficiency

The instrument is based on the equal pressure method and adopts Labthink's second generation patent design of three diffusion cells integrated in one instrument, which improves the test resolution, repeatability and performance in temperature and humidity control.

- Labthink's exclusive design of three diffusion cells integrated in one instrument ensures that all tests are performed in same test conditions
- Tests can be performed in three test cells with three same or different specimens independently which provides test efficiency and flexibility
- Standard, proportional and continuous test modes facilitate the common users with various simplified test methods
- Multiple satellite bases (optional) ^{Note3} can be connected to the instrument so that more specimen tests can be performed simultaneously
- Reference films (optional) are available for system calibration, which guarantees the accuracy and universality of test data

Intelligent

The instrument is embedded with Labthink's latest operating software, which is featured with user-friendly interface, intelligent data processing, strict user management and secure data storage. It also supports Labthink exclusive DataShieldTM ^{Note4} (Optional) which provides the users with safe and reliable management of test data

and test reports.

- Test data can be displayed in various forms including curves and data list
- Test data will be saved and encrypted in a unique way so that all the test information will be saved securely and reliably and protected from being tampered
- Various forms of test data can be searched, exported and printed out
- The instrument meet the requirements of China's Good Manufacturing Practice (GMP) for computer system, which can be used in medical industry (optional configuration)
- The user privilege can be self-defined so that the operation of users with different privileges can be controlled (Optional configuration)
- Multiple password authentication protection mechanism facilitates the users with a safer operating environment (Optional configuration)
- Key operations will be automatically recorded and the records can be searched in various ways, which provide reliable evidence for audit trials (Optional configuration)

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.

Test Standards ^{Note2}

ISO 15105-2, ASTM D3985, ASTM F2622, ASTM F1307, ASTM F1927, GB/T 19789, GB/T 31354, JIS K7126-B, YBB 00082003-2015

Applications ^{Note2}

Basic Applications	Films	Plastic films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum foil composite films and many others
	Sheeting	Various sorts of engineering plastics, rubber and building materials, e.g. PP, PVC and PVDC
	Packages	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
	Contact Lens	Test oxygen transmission rate of contact lens under service condition

Fuel Tanks of Cars	This instrument can be used to test permeability of plastic fuel tanks
Battery Plastic Shell	This instrument can be used to test oxygen transmission rate of battery plastic shell

Technical Specifications

Table 1: Test Parameters^{Note1}

Parameter \ Model		230B	230M	230H
Test Range	cm ³ /(m ² ·d) (50cm ²)	0.5 ~ 6500	0.3 ~ 5000	0.1 ~ 5000
	cm ³ /(m ² ·d) (7cm ²)	3.5 ~ 45000	2.1 ~ 35000	0.7 ~ 35000
	cm ³ /(pkg·d) (Package)	N/A	N/A	0.0005 ~ 25
Resolution	cm ³ /(m ² ·d)	0.01	0.01	0.01
Repeatability	cm ³ /(m ² ·d)	Bigger one of ±0.5 and 5%	Bigger one of ±0.3 and 3%	Bigger one of ±0.1 and 2%
Test Temperature	°C	15 ~ 45	15 ~ 45	10 ~ 55
Accuracy	°C	±0.5	±0.5	±0.2
Test Humidity	RH	N/A	N/A	0% ~ 90%
Accuracy	RH	N/A	N/A	±2%
Additional Functions	Humidity Control Device	N/A	N/A	Standard
	Package Test (3L Max.)	N/A	N/A	Optional
	DataShield™ ^{Note4}	N/A	Optional	Optional
	Computer System Required by GMP	N/A	Optional	Optional

Table 2: Technical Specifications

Test Chamber	3 test chambers with independent pipe system, which supports tests with different test parameters and provides independent test data
Specimen Size	108 mm × 108 mm
Specimen Thickness	≤3 mm
Standard Test Area	50 cm ²
Carrier Gas	99.999% High-purity Nitrogen (outside of supply scope)

Carrier Gas Pressure	≥ 0.28 MPa/40.6psi
Port Size	1/8 inch metal tubing

Configurations ^{Note2}

Standard Configurations	Instrument, Computer, Professional Software, Communication Cable, Vacuum Grease, Diamond Sample Template, Hole Puncher, Sample Cutter, Valve Sets
Optional Configuration	Satellite Base, Accessories for Package Test, Temperature Control Device for Package Test, Humidity Control Device, Test Accessories for Contact Lens, Reference Film, DataShield TM ^{Note4}

Note 1: The parameters in the table are measured by professional operator in Labthink laboratory according to relative requirements for laboratory standard conditions.

Note 2: The described product features, test standards and configurations should be in line with Table 1: Test Parameters.

Note 3: The instrument has such software function but the satellite base shall be purchased separately.

Note 4: DataShieldTM provides safe and reliable data application support. Multiple Labthink instruments can share one single DataShieldTM system which can be purchase as required.

Please Note: Labthink is always dedicated to the innovation and improvement of product performance and function. Therefore, technical specifications are subject to change without further notice. Labthink reserves the rights of final interpretation and revision.