C303H Water Vapor Transmission Rate Test System is based on the testing principle of infrared water vapor sensor, it is designed and manufactured according to ASTM F1249, ISO 15106-2 and other standards to provide high precision and high efficiency water vapor transmission test for high and medium gas barrier materials. It is suitable for testing the water vapor transmission performance of films, sheets and related materials in the fields of food, medicine, medical devices, daily chemical, photovoltaic, electronic and other fields.



Product Features [Note1]

Infrared Moisture Sensor

- The Labthink patented technology infrared moisture sensor can obtain lower test limit.
- Designed according to ASTM F1249.
- Long service life, non-consumable.
- It has the 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 for 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.
- It can achieve higher test repeatability of 0.005 g / (m^2 · day).

High Efficient Six-chamber

- Independent three sets of 50cm^2 standard area test chamber, in line with the standard requirements of parallel sample detection.
- Three samples are tested at the same time under the same condition, and the data are independent of each other.
- In the same test cycle, the testing number of samples completed increased from 2 to 3.
- Automatic sample clamping, saving time and effort, realizing consistent clamping force and better sealing.

Intelligent Control

- The 12 Inch Touch panel of Windows system is used to control, which is more convenient.
- Automatic mode: input the test temperature and humidity, click one key to start the automatic test.
- New drawer type test chamber, one key automatic in and out, sound and light reminder.

Safe and Reliable

- Safe running: the unique high-end industrial computer of Labthink 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, sound and light alarm and other intelligent alarms to ensure the safety of operation.
- Safe Performance: the instruments are made of world famous brand components, stable and reliable.

Powerful Functions

- Professional test mode provides flexible and rich control functions to meet the needs for scientific research.
- Provide water vapor transmission curve, water vapor transmission coefficient curve, temperature curve, humidity curve.
- Ultra wide test range, meet the barrier test of various materials. (Customized)
- Ultra wide temperature range to meet the permeability tests at different temperatures. (Customized)

Testing Principle

The pre-treated sample is clamped between the test chambers, the nitrogen with stable relative humidity flows on one side of the film, and the dry nitrogen flows on the other side of the film; due to the existence of humidity difference, water vapor will diffuse from the high humidity side through the film to the low humidity side; on the low humidity side, the water vapor is carried to the infrared water sensor by the flowing dry nitrogen, and different water vapor is generated. The concentration produces different light signals, and the concentration value is obtained through analysis and calculation, and then the water vapor transmission rate of the sample is calculated.

Reference Standard

ASTM F1249, ISO 15106-2, GB/T 26253, JIS K7129, YBB00092003-2015

Test Applications

Basic Applications	**Films**	The water vapor transmission rate tests of various plastic film, paper plastic composite film, co-extrusion film, aluminum plating film, aluminum foil composite film, glass fiber aluminum foil paper composite film and other film materials.
	Sheet	The water vapor transmission rate tests of PP sheet, PVC sheet, PVDC sheet, metal foil, rubber sheet, silicon sheet and other sheet materials.
Extended Applications	**Package**	Water vapor transmission rate testing for bottles, bags, cans, boxes, and drums made of plastic, rubber, paper-plastic composites, glass, or metal—including pharmaceutical packaging, liquor bottles, cola bottles, peanut oil drums, Tetra Pak cartons, vacuum packaging bags, three-piece cans, cosmetic packaging, toothpaste tubes, jelly cups, and yogurt cups.

Technical Parameters

Table 1: Test Parameters [Notes 2]

	Parameter / Model	**C303H**
Test scope	**g/(m^2·day) (standard area 50cm^2)**	0.005～40 (standard) 0.005～100 (optional)
	g/(pkg·day (Package)	0.00002～0.2 (optional)
	g/(m2·day) (MASK area 5cm2)	0.2～400 (optional)
Resolution	**g/(m^2·day)**	0.0001
Repeatability	**g/(m^2·day)**	0.005 or 2%, whichever is greater
Temperature Range	℃	15～50 5~ 60 (customized)
Temperature Fluctuation	℃	±0.05
Humidity Range	**%Rh (within standard temperature range)**	5～90%±1%
Extended Functions	**DataShield™ Data Shield [Note 3]**	Optional
	Package Test Chamber[Note4]	Optional
	GMP computer system requirements	Optional
	CFR21Part11	Optional

Table 2: Technical Specifications

Test Chamber	3 Sets
Sample Size	4.4" x 4.4"（11.2cm×11.2cm）
Sample Thickness	≤120 Mil（3mm）
Standard Test Area	50cm^2
Carrier Gas Specification	99.999% high purity nitrogen (gas source is prepared by the user)
Air Source Pressure	≥ 40.6 PSI / 280 kPa
Interface Size	1 / 8 "metal tube
Dimensions	23.6" H x 19.6" W x 27.5" D (60cm× 50cm× 70cm)
Power Supply	120VAC ± 10% 60Hz / 220VAC ± 10% 50Hz
Net Weight	220Lbs（100kg）

Table 3: Product Configuration

Standard configuration	Mainframe, tablet computer, sampler, vacuum grease, polyurethane pipe with diameter of 6 mm
Options	Package Test Chamber, Air compressor, CFR21Part11, GMP computer system requirements, DataShield™ Data Shield Notes4
Note	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 user.

Note 1: the product features are subject to the specific notes in the "Technical Parameters" table.

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.

Note3：Package fixtures can be customized to sample size.

Note 4: DataShield™ Data Shield system provides safe and reliable data application support. The system can be shared by multiple Labthink products. Please purchase it separately according to the usage.

✧ Labthink is committed to the innovation and improvement of product performance and function. For this reason, the product technical specifications will be changed accordingly. The above information is subject to notice. The company reserves the right of modification and final interpretation.