

C106H Gas Permeability Test System

C106H Gas Permeability Test System is based on the differential pressure method, and is professionally applicable to the determination of gas transmission rate, solubility coefficient, diffusion coefficient and permeability coefficient of plastic films, composite films, high barrier materials, sheets, and metal foils at different temperatures. The test system conforms to GB, ISO, ASTM and other international standards.



Features ^{note1}

Accurate Data

- Brand new dome design test chamber and 360° air circulation constant temperature technology ensures better temperature stability.
- Imported high-precision vacuum sensor can accurately test ultra-high barrier materials with 0.01~0.09cm³/m²•24h•0.1MPa test range.
- Imported pneumatic control system has a low failure rate and an ultra-long service life, ensuring good overall system air tightness and high test accuracy.
- Imported vacuum pump can reach 0.2Pa extreme pressure with increased vacuum rate.
- The vacuum pump is controlled automatically by the system without manual opening and closing, increases efficiency and saves labor.
- Labthink's unique high-precision automatic pressure compensation technology in the test process realizes a constant pressure difference in the high-pressure chamber, and the pressure fluctuation is less than 0.2 kPa.
- The pressure in high-pressure chamber can be set within the range of 10kPa~210kPa, the pressure can be maintained accurately and stably by the system.

High Efficiency

- Six independent test cells with standard area, three times the number of test cells in traditional oxygen permeability testing instruments.
- Six specimens can be tested simultaneously under the same testing condition, delivering independent test result.
- Medium and low barrier materials, test time <4 hours (including vacuumize time).
- High barrier materials, test time <4 hours (including vacuumize time).

- Automatic specimen clamping saves time and effort. The clamping force is consistent, resulting in better air tightness.

Intelligent control

- 12” touch-screen tablet powered by Windows™ 10 operating system makes the operation simpler and more convenient.
- Automatic test mode requires only inputting temperature and humidity, one click start, the test is fully automated.
- Intelligent test chamber hood automatically opens and closes with sound and light alert

Safe and reliable

- System security -- Built-in Labthink's unique high-end industrial computer prevents system failures caused by computer viruses, ensures operational reliability and data storage security.
- Operation safety-- Equipped with intelligent optics sensors which give sound and light alert to ensure safe operation.
- Performance reliability—the instrument adopts components of global renowned brands, to ensure stable and reliable performance.

Space saving

- The width of the instrument is only 1/3 of the traditional six-cell instrument, saving space for a laboratory.

Powerful functions

- Professional test mode provides flexible and diverse control options to meet various needs of scientific research.
- The system provides gas transmission rate curve, gas transmission coefficient curve, and temperature curve.
- Ultra-wide test temperature range to enable the barrier tests under various extreme temperature (Optional).
- Ultra-wide test range to meet the barrier test of various materials (customize).
- Tests of hazardous gases such as H₂, CH₄ are applicable (Customize).

Test principle

The pre-conditioned specimen is mounted in the test cell as to form a sealed barrier between two chambers. The lower-pressure chamber (lower chamber) is firstly evacuated, followed by the evacuation of the entire cell. A flow of gas is thereafter introduced into the evacuated higher-pressure chamber (upper chamber) and a constant pressure

(adjustable) difference is generated between the two chambers. The gas permeates through the specimen from higher pressure side into the lower pressure side. The gas permeability and other barrier properties of the specimen can be obtained by analyzing the pressure changes in the lower chamber.

Standards

ISO 15105-1、ISO 2556、GB/T 1038-2000、ASTM D1434、JIS K7126-1、YBB 00082003

Applications

Applications	Films	Gas transmission rate test of various plastic films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils, aluminum foil composite films, glass fiber aluminum foil composite films and many others
	Sheets	Gas transmission rate test of PP, PVC and PVDC sheets, metal foils, rubber pads, silicon wafers and other sheet materials

Technical specifications

Table 1: Test parameters^{note2}

Parameters/Model		C106H
Test range	cm³/ m²•24h•0.1MPa	0.01~50,000
Resolution	cm³/ m²•24h•0.1MPa	0.001
Test temperature	℃	15~50 5~60 (Optional)
Temperature resolution	℃	0.01
Temperature fluctuation	℃	±0.15
Test humidity	%RH (Within standard test temperature range)	0%, 5~90% ±2% (Customize)
Vacuum Resolution	Pa	0.01
Vacuum Accuracy	Pa	±0.2% (1%-100% of Full Scale)
Vacuum Degree of Test Chamber	Pa	≤ 10
Additional Functions	DataShield™ ^{note3}	Optional
	GMP Computer System requirement	Optional

Table 2: Technical specifications

Test Cell	Cells
Specimen Size	4.6" x 4.6" (11.7cm×11.7cm)
Specimen Thickness	≤120 Mil (3mm)
Standard test area	38.48cm ²
Test Gas	O ₂ 、N ₂ 、CO ₂ etc. (Outside supply scope)
Test Pressure	10 kPa~210 kPa (Can be set between)
Pressure Fluctuation	0.2 kPa
Gas Pressure	79.7 PSI/550 kPa
Port Size	Φ6 mm PU tubing
Instrument Dimension	23.6" H x 19.2" W x 25.9" D (60cm×49cm×66cm)
Power Supply	120VAC±10% 60Hz/220VAC±10% 50Hz (one of two)
Net Weight	220Lbs (100kg)

Table 3: Product Configuration

Standard Configuration	Instrument mainframe, tablet, vacuum pump (UK), sampler, vacuum grease, Φ6 mm PU tubing
Optional Parts	Air compressor, CFR21Part11, GMP Computer System requirement, DataShield™ ^{note3}
Note	The gas compressor port of the instrument is Φ6 mm PU tubing (pressure≥79.7 PSI/550kPa) , customers need to prepare gas supply.

Note 1: The described product functions are subject to the specification in "Technical Parameters" "Table 1: Test Parameters".

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

Note 3: DataShield™ provides safe and reliable data application support. Multiple Labthink instruments can share one single DataShield™ system which can be configured as required.

◇ Labthink is always committed to the innovation and improvement of product performance and functions. For this reason,

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product technical specifications are subject to changes without further notification. Labthink reserves the right of modification and final interpretation.