**C306H Water Vapor Transmission Rate Test System** is designed and manufactured based on infrared sensor method and conforms to the requirements of ASTM F1249 and ISO 15106-2. This instrument can be used to measure the water vapor transmission rate of barrier materials with high and medium moisture barrier properties with a wide testing range and high testing efficiency. C306H is applicable to determination of water vapor permeability of plastic films, sheeting, paper, packages and other relative packaging materials in food, pharmaceutical, medical apparatus, consumer goods, photovoltaic and electronic industries, etc.

## Features [note1]

**Infrared sensor**

- Equipped with Labthink patented infrared sensor, features a wider test range.
- Designed conforming to ASTM F1249.
- Ultra-long service life, non-consumable type.
- Embedded with over-range warning and automatic protection function.

**Accurate data**

- Brand new dome design test chamber and 360° air circulation constant temperature technology ensures better temperature stability.
- The test chamber is equipped with a high-precision humidity sensor to monitor and record humidity changes in real time.
- The control of velocity, temperature and relative humidity is automated to realize higher accuracy.

**High Efficiency**

- Six independent test cells with a standard area of 50cm$^2$, 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.
- Within the same time duration, the number of tested specimens is increased from 2 to 6.
- 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 startup, 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 various intelligent 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 oxygen transmission rate curve, oxygen transmission coefficient curve, temperature curve, and humidity curve.
- Ultra-wide test range to meet the barrier test of various materials (customize).
- Ultra-wide temperature range to meet the barrier test under different extreme temperatures (optional).

## Test principle

The pre-conditioned specimen is clamped in the test cell, nitrogen with stable relative humidity flows on one side of the specimen while a stream of dry nitrogen flows on the other side. Due to the humidity difference, water vapor permeates through the specimen from the high humidity side into the low humidity side, and is carried to the infrared sensor by the

dry nitrogen flow. By analyzing the electrical signals generated by the water vapor, the sensor calculates the water vapor concentration and the water vapor transmission rate.

## Standards

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

## Applications

| | | |
|---|---|---|
| **Applications** | **Films** | Water vapor 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** | Water vapor 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** | | **C306H** |
|---|---|---|
| **Test range** | **g/(m² ·day) (Standard area 50cm²)** | 0.02～40 |
| | **g/(m² ·day) (MASK area 5cm²)** | 0.2～400（Optional） |
| | **g/(m² ·day) (MASK area 1cm²)** | 1～2000（Optional） |
| **Resolution** | **g/(m² ·day)** | 0.0001 |
| **Repeatability** | **g/(m² ·day)** | 0.02 or 2%，take the greater |
| **Test Temperature** | ℃ | 15～50<br>5～60（Optional） |
| **Temperature fluctuation** | ℃ | ±0.15 |
| **Test Humidity** | **%RH（Within standard temperature range）** | 100%，5～90%±2% |
| **Additional Functions** | **DataShield™ note3** | Optional |
| | **GMP computer system requirement** | Optional |
| | **CFR21Part11** | Optional |

Table 2: Technical specifications

| | |
|---|---|
| **Test Cell** | 6 Cells |
| **Specimen Size** | 4.6” x 4.6”（11.7cm×11.7cm） |
| **Specimen Thickness** | ≤120 Mil（3mm） |
| **Standard Test Area** | 50cm$^2$ |
| **Carrier Gas** | 99.999% High purity nitrogen (Outside of supply scope) |
| **Carrier Gas Pressure** | ≥40.6 PSI / 280 kPa |
| **Port Size** | 1/8”Metal tube |
| **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, sampler, vacuum grease, Φ6 mm PU tubing |
| **Optional Parts** | Air compressor, CFR21Part11, GMP Computer System Requirement, DataShield™ note3 |
| **Note** | The gas supply port of the instrument is Φ6 mm PU tubing（pressure≥79.7 PSI / 550 kPa）, customers need to prepare gas supply. |

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

**Note 2: The parameters in the table are measured in Labthink laboratory by professional operators according to the requirements and conditions stapulated 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, product technical specifications are subject to changes without further notification. Labthink reserves the right of modification and final interpretation.