C130H Gas Permeability Tester 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 testing process conforms to GB, ISO, ASTM and other international standards.

Product Features[Note1]

Innovative structure design & upgraded automatic operation

- Test cells with brand new pop-up drawer type design
- Automatic specimen clamping with uniform force
- Components are supplied by global well-known manufacturers, which are reliable and stable in performance
- Intelligent test mode, one-button test operation (test temperature should be set in advance) and automatic stop
- Scientific research mode provides more flexible parameter and function settings for analysis of gas transmission rate, solubility coefficient, diffusion coefficient and permeability coefficient

Upgraded testing accuracy and efficiency

- Imported high precision vacuum sensor for tests of ultra-high barrier property (0.01 ~ 0.09 cm^3/ m^2•24h•0.1MPa) materials with high accuracy and repeatability
- Imported pneumatic control system with ultra-low failure rate and extremely long service life, which guarantees the seal performance of the whole system
- Imported high precision vacuum pump improves the evacuation efficiency and generates vacuum up to 0.2Pa
- The vacuum pump is turned on/off automatically
- For low and medium barrier property materials, test time is less than 4 hours (including evacuation time)
- For high barrier property materials, test time is less than 8 hours (including evacuation time)
- Three independent test cells provide individual test results, specimens can be replaced as desired

Excellent temperature and pressure control technique

- 360° circulation constant temperature technology is applied in the instrument to remain the test temperature fluctuation below 0.05℃
- Labthink's unique pressure compensation technique is used to maintain the stable differential pressure (pressure change is less than 0.2KPa)
- The pressure of high pressure chamber can be adjusted from 10KPa to 210KPa and maintained precisely

Versatile functions based on standards, customization available

- Various types of gases are testable: sole gas, mixed gases, poisonous gases, explosive gases and other dangerous gases (customization is required)

- The humidity of test gas can be adjusted and controlled automatically by the system, without requiring human intervention (customization is required for humidifying device)
- Labthink's unique data fitting function can provide the test results of gas transmission rate, permeability coefficient, solubility coefficient and diffusion coefficient at extreme temperatures
- Reference film for fast calibration ensures accurate and universal test data
- Calibration port for verifying test temperature and pressure
- Conform to the test standards of differential pressure method

High end, secure and easy-to-use embedded computer controlled system

- Integrated design of instrument and software minimizes the malfunctions caused by computer virus or faulty operations and ensures the performance of the instrument and data security
- The instrument can be easily operated with a mouse, a keyboard and a monitor. Windows operation interface for testing operations and displaying data
- The system is equipped with four USB ports and dual Internet ports for convenient data transmission
- The instrument meets the requirements of China GMP of pharmaceutical industry (optional)
- Labthink's unique DataShield™ system for data management and connecting information management system (optional)

Test Principle

C130H is designed in accordance with differential pressure method. The pre-conditioned specimen is mounted in the gas diffusion cell as to form a sealed barrier between two chambers. The lower-pressure 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 and a constant pressure 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 monitoring the pressure changes in the lower chamber.

Test Standard[Note1]

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

Applications[Note1]

This instrument is applicable to the determination of gas permeability 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 engineering plastics, rubber and building materials, e.g. PP, PVC and PVDC
Extended Applications	Various Gases	Test the permeability of various types of gases, e.g. O_2, CO_2, N_2, Air and He
	Inflammable, Explosive and Poisonous Gases	Test the permeability of inflammable, explosive and poisonous gases

Biodegradable Films	Test gas permeability of various sorts of biodegradable films, e.g. starch-based biodegradable bags
Materials for Aerospace Usage	This instrument can test the Helium permeability of airship gas bags
Paper and Paper Board	Test gas permeability of paper and paper-plastic composite materials, e.g. aluminized paper for cigarette packages, Tetra Pak sheeting, paper bowls for instant noodles and disposable paper cups
Paint Films	Test gas permeability of substrates coated paint films
Glass Fiber Cloth and Paper	Including glass fiber cloth and paper materials, e.g. Teflon paint cloth, Teflon welding cloth and Teflon silicon rubber cloth
Soft Tube Materials for Cosmetics	Including various types of cosmetic tubes, aluminum-plastic tubes and toothpaste tubes
Rubber Sheeting	Including various sorts of rubber sheeting, e.g. car tires

Technical Specifications[Note2]

Specifications	Film Test
Test Range	0.01 ~ 50,000 cm^3/m^2·24h·0.1MPa
Resolution	0.001 cm^3/ m^2•24h•0.1MPa
Temperature Range	10°C~ 50°C (room temperature 23°C)
Resolution	0.01℃
Temperature Fluctuation	±0.05℃
Temperature Accuracy	±0.3°C (calibration port)
Vacuum Resolution	0.01Pa
Vacuum Accuracy	Displayed Value ±0.2°C (1%~100% of sensor range)
Vacuum Degree of Test Chamber	< 10 Pa
Number of Specimens	3 with independent test results Customization available for other number of specimens
Specimen Size	Φ97 mm
Test Area	38.48 cm^2
Test Gas	O_2, N_2, and CO_2 (outside of supply scope) Humidifying of Test Gas (customization available)
Test Pressure	10KPa ~ 210KPa
Gas Supply Pressure	0.5 Mpa ~ 0.6 Mpa (73psi ~ 87psi)
Port Size	Φ6 mm PU Tubing
Instrument Dimension	710 mm (L) × 350 mm (W) × 630 mm (H)
Power Supply	220VAC±10% 50Hz / 120VAC±10% 60Hz
Net Weight	100 kg

Configurations

Standard Configurations	Instrument, Monitor, Keyboard, Mouse, Round Sample Cutter, Vacuum Grease, Fast Quantitative Filter Paper and Vacuum Pump, Φ6 mm PU tubing (3m)
Optional Parts	GMP Computer System, DataShield™ Note3, Air Compressor
Note	1. The gas supply port of the instrument is Φ6 mm PU tubing; 2. Customers need to prepare gas supply.

Note 1: The described test standard, applications and product features should be in line with Technical Specifications.

Note 2: The parameters in the table are measured by professional operators in Labthink laboratory under strictly controlled laboratory conditions.

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.

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. Please visit our website at www.labthink.com for the latest updates. Labthink reserves the rights of final interpretation and revision.