

PERME[®] G2/131 Gas Permeability Tester

G2/131 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 aluminum foils at different temperatures. The system is equipped with three diffusion cells, which could test specimens simultaneously with individual test results. The testing process conforms to GB, ISO, ASTM and other international standards.



Professional

- System provides proportional and standard test modes with convenient parameter settings
- The gas transmission rate as well as the coefficients of permeability, solubility and diffusion can be obtained at one operation
- 3 distinct or identical specimens can be tested simultaneously with the individual test results
- Wide test range for different materials with high, medium and low barrier properties
- Various types of gases are testable: sole gas, mixed gases, poisonous gases, explosive gases and other dangerous gases (customization is required)
- World exclusive data fitting function that could easily calculate gas permeability and other parameters at different temperatures
- Top quality parts and components made by world famous brands are used to ensure reliable overall product performance
- Reference film for fast calibration ensures accurate and universal test data

High-end

G2/131 utilizes Labthink's latest embedded computer control system that provides a better performance than traditional single chip system.

- Patented integrated design of three test cells improves the test efficiency and reduces the space occupancy of the instrument
- Embedded computer control system provides safer and more reliable data management as well as test operation
- The instrument can be easily operated with a mouse, a keyboard, and a monitor, without requiring a PC
- The system is equipped with four USB ports and dual Internet ports for convenient data transmission

Intelligent

The instrument is equipped with Labthink's latest intelligent operating software, with user-friendly operating interface and intelligent data management. It also supports Lystem[™] Lab Data Sharing System, which ensures uniform management of test results and test reports.

- Status monitoring and intelligent reminding of sensor calibration ensure instrument in the best working condition
- The system automatically calculates the statistical information of instrument utilization rate and test times
- Embedded help document for user viewing at any time
- Multi-level account control for better data management and protection
- The system utilizes embedded data saving technology to save detailed information and provide convenient and various searching and viewing functions
- One time value input and the system automatically gives data comparison after each test
- Supports Lystem™ Lab Data Sharing System for uniform and systematic data management

Test Principle

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 side. The gas permeability and other barrier properties of the specimen can be obtained by monitoring the pressure changes in the lower chamber.

This test instrument conforms to the following standards:

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

Applications

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
	Various Gases	Test the permeability of various types of gases, e.g. O ₂ , CO ₂ , N ₂ , Air and He
Extended Applications	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	Including glass fiber cloth and paper materials, e.g. Teflon paint cloth,

Paper	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

Specifications	Film Test
Test Range	0.05 ~ 50,000 cm ³ /m ² ·24h·0.1MPa
Temperature Range	15°C~ 55°C (room temperature 23°C)
Temperature Accuracy	±0.1°C (standard)
Humidity Range	0%RH, 2% ~ 98.5%RH, 100%RH (humidity generator is optional)
Humidity Accuracy	±1%RH
Vacuum Resolution	0.1 Pa
Vacuum Degree of Test Chamber	< 20 Pa
Number of Specimens	3 with independent test results
Specimen Size	Φ97 mm
Test Area	38.48 cm ²
Test Gas	O ₂ , N ₂ , and CO ₂ (outside of supply scope)
Test Pressure	-0.1 MPa ~ +0.1 MPa
Gas Supply Pressure	0.4 MPa ~ 0.6 MPa
Port Size	Φ6 mm PU Tubing
Instrument Dimension	690 mm (L) x 350 mm (W) x 360 mm (H)
Power Supply	220VAC 50Hz / 120VAC 60Hz
Net Weight	71 kg

Configurations

Standard Configurations	Instrument, Professional Software, LCD Monitor, Keyboard, Mouse, Round Sample Cutter, Vacuum Grease, Fast Quantitative Filter Paper and Vacuum Pump
Optional Parts	Blades for Sample Cutter, Vacuum Grease, Vacuum Pump Oil, Fast Quantitative Filter Paper, Humidity Generator, Lystem™ Lab Data Sharing System and Printer (compatible with PCL3)
Note	1. The gas supply port of the instrument is Φ6 mm PU tubing; 2. Customers will need to prepare for gas supply.