

VAC-V3 is based on the differential pressure method, and is professionally applicable to the determination of gas transmission rate as well as solubility coefficient, diffusion coefficient, and permeability coefficient of plastic films, composite films, high barrier materials, sheeting and aluminum foils.



### Professional Technology

- Gas transmission rate, solubility coefficient, diffusion coefficient, and permeability coefficient of the specimen could be obtained at one operation
- 6 distinct or equivalent specimens could be tested simultaneously with individual test results, which is the most efficient instrument so far in the market
- 6 test cells are divided into two groups with distinct resolution to meet different test requirements, and resolution of group B is as good as 0.01Pa
- Wide range and high precision temperature control to meet various test conditions
- The instrument comes with two test modes: proportional mode and standard mode
- Test range could be extended based on customer requirements to test materials with high permeability
- Test results could be easily obtained even at extreme conditions by data fitting function, which could work at any temperature
- The instrument could be used to test poisonous, inflammable, and explosive gases (customization required)
- The instrument is controlled by computer and test process is automatic
- Reference film for fast calibration to ensure accurate and universal test data
- Equipped with RS2323 port for convenient data transfer

### 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 two chambers. The gas permeates through the specimen from the 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:

ISO15105-1, ISO 2556, GB/T 1038-2000, ASTM D1434, JIS K7126-1, YBB 00082003

### Applications

This test instrument is applicable to the determination of gas permeability of:

<b>Basic Applications</b>	Films	Including plastic films, plastic composite films, paper-plastic composite films, coextruded films, aluminized films, aluminum foils,
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<b>Extended Applications</b>		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 <sub>2</sub> , CO <sub>2</sub> , N <sub>2</sub> , Air and He
	Inflammable, Explosive Gases	Test the permeability of inflammable and explosive 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

Specifications	Film Test
<b>Test Range</b>	0.05 ~ 50,000 cm <sup>3</sup> /m <sup>2</sup> ·24h·0.1MPa (Standard volume for group A)
	0.50 ~ 500,000 cm <sup>3</sup> /m <sup>2</sup> ·24h·0.1MPa (Extended volume for group A)
	0.01 ~ 1,000 cm <sup>3</sup> /m <sup>2</sup> ·24h·0.1MPa (Group B)
<b>Number of Specimens</b>	6 pieces with independent test results (group A and group B, each with 3 pieces)
<b>Vacuum Resolution</b>	Group A 0.1 Pa Group B 0.01 Pa
<b>Vacuum Degree of Test Chamber</b>	< 20 Pa
<b>Test Temperature</b>	5°C ~ 95°C ± 0.1°C (at standard atmospheric pressure)
<b>Specimen Size</b>	Φ97mm
<b>Test Area</b>	38.48 cm <sup>2</sup>
<b>Test Gas</b>	O <sub>2</sub> , N <sub>2</sub> , and CO <sub>2</sub> (outside of supply scope)
<b>Test Pressure</b>	-0.1 MPa ~ +0.1 MPa (standard)
<b>Gas Supply Pressure</b>	0.4 MPa ~ 0.6 MPa
<b>Port Size</b>	Φ6 mm PU Tubing
<b>Instrument Dimension</b>	1370 mm (L) x 575 mm (W) x 450 mm (H)
<b>Power Supply</b>	220VAC 50Hz / 120VAC 60Hz

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**Net Weight**160 kg

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**Configurations**

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<b>Standard Configurations</b>	Instrument, Constant Temperature Control Device, Professional Software, Round Sample Cutter, Vacuum Grease, Fast Quantitative Filter Paper and Vacuum Pump (Imported)
<b>Optional Parts</b>	Blades for Sample Cutter, Vacuum Grease, Vacuum Pump Oil and Fast Quantitative Filter Paper
<b>Note</b>	1. The gas supply port of the instrument is $\Phi 6$ mm PU Tubing; 2. Customers will need to prepare for gas supply and distilled water.

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**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](http://www.labthink.com) for the latest updates. Labthink reserves the rights of final interpretation and revision.