



V-Sorb 4800™

4 Ports Surface Area & Porosity Analyzer

Gold APP Instruments China

Lead You to Particle World Better



V-Sorb 4800 is researched by Gold APP Instruments for surface area and pore size testing by utilizing static volumetric principle. Compared with other competitors' analyzers, multi pioneered technologies make its performance much better. Heighten accuracy and consistence of results, enhance measurement stability, all these lead to a leading level among global competitors. Equipment designed from the user perspective and with fully automated operation system, user-friendly interface makes it easy to learn, imported accessories assure stability and prolong its life. High cost performance of V-Sorb 4800 easily ensure your investment profits and flexible equipped peripheral can satisfy different users' requirements.

Following Standards of:

ISO/ ASTM/ BIN

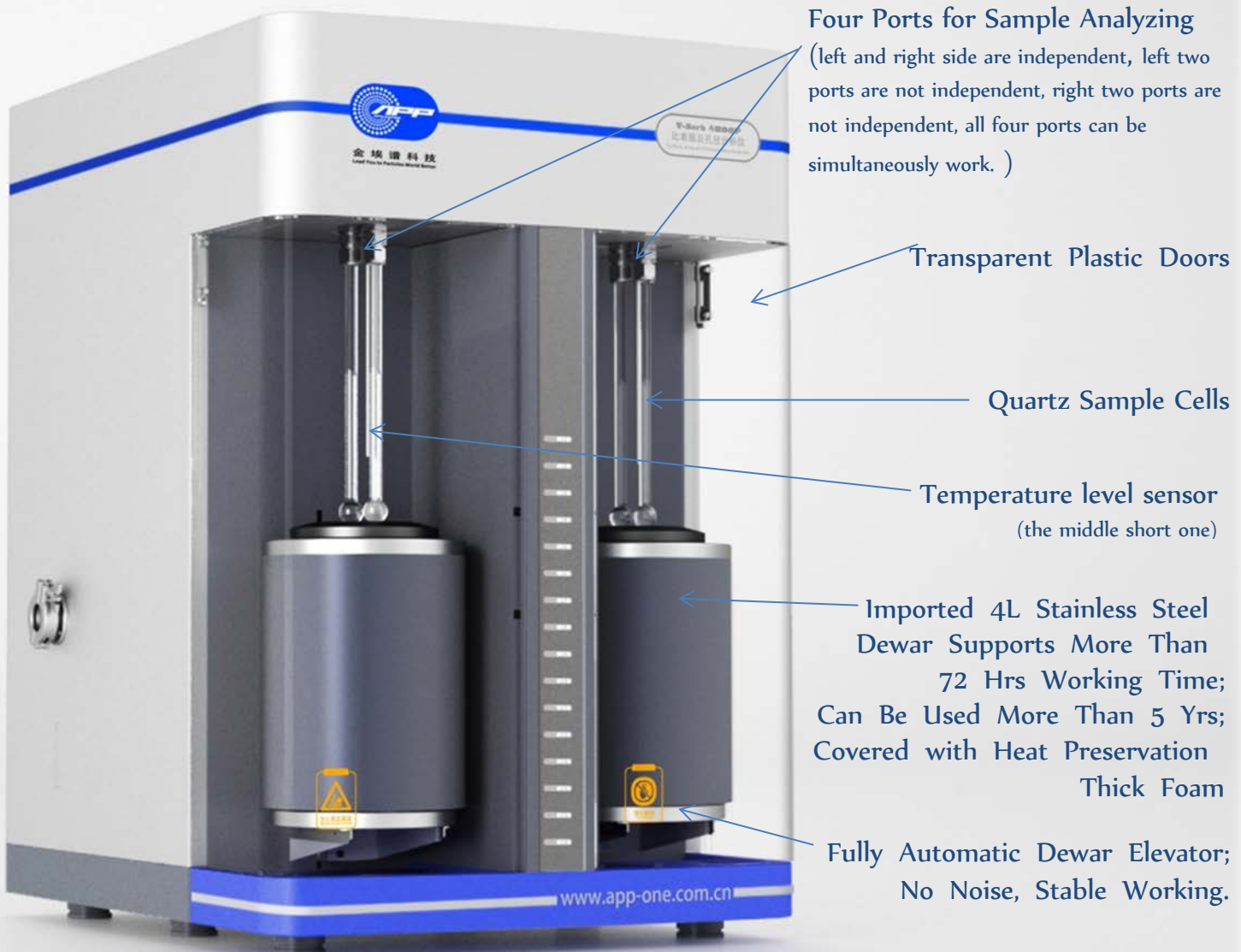
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DIN 66134/ ISO 9277:1995/ ISO 15901/ ISO 18757....

Certificated by:

ISO 9001: 2008

State Calibration Certificates
IQNet & CQC...



V-Sorb 4800 CAN PRODUCE

Carbon black external surface area (STSA) curve,
Single and multi-point BET surface area curve,
Adsorption and desorption isotherms curve,
Average particle diameter estimation curve,
Langmuir method surface area curve,
t-plot external surface area curve,
Adsorption constant value C,
True density analysis curve,
t-plot method micropore analysis curve,
Dubinin-Astakhov (DA) micropore curve,
Dubinin-Radushkevich (DR) micropore curve,
BJH total pore volume and pore size distribution analysis curve.
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V-Sorb 4800 PARAMETERS

Analysis Method: static volumetric nitrogen adsorption principle

Measuring Ranges: 0.005m²/g to no known upper limit (surface area)
2 to 500nm (pore size)

Accuracy: repeatability errors ≤1%

Vacuum System: V-Sorb unique **monolithic manifolds** and **pneumatic valve control system**, greatly reduce the dead volume; improve the adsorbate micro-change sensitivity; enhance pore size distribution analysis resolution; decrease connecting points; strengthen sealing performance and prolonged instrument life

Coolant Level Prober: V-Sorb original **coolant level probe system** with temperature probe, ensure the coolant level unchanged when compares with sample cells in the whole analysis process, completely eliminate the analysis errors caused by dead volume change

Transducer Accuracy: **imported silicon thin film pressure transducer**, accuracy can reach 0.1% of real reading, better than 0.1% of F.S.(full-scale), far accurate than Pirani resistance vacuum gauge (general error is 10%-15%)

Sample Treatment: the whole pretreatment procedures are controlled by dedicated software, as well with a **delay time setting function** which can realize unattended operation at night

Control System: programmable controller pneumatic valve system with high integration and strong anti-interference ability, enhance instrument's stability and life

Sample Ports: 4 samples analyzing and 4 samples degassing concurrently

Pressure Measurement: Sweden brand Atlas Copco **sectional measuring dual pressure transducer**, notably improve the measuring accuracy at low P/P₀ point, 0-1000Torr (0-133Kpa), 0-10Torr (0-1.33Kpa)

Partial Pressure: P/P₀ controllable accuracy range is 5×10⁻⁶—0.998

Ultimate Vacuum: 4×10⁻²Pa (3×10⁻⁴Torr)

Sample Types: powders, particle, fiber, flakes and other species

Adsorbate Gas: high purity nitrogen (≥99.999%), Ar, Kr, CO, CO₂, C₄H₁₀ etc. non-corrosive gases are optional

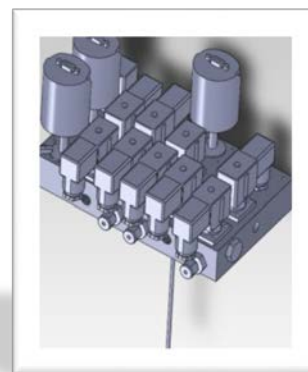
Data Acquisition: high-precision and high integration data acquisition modules, minimal error, strong anti-interference ability

Data Reduction: Windows®-based independent developed Gold APP Instruments software™, perfect versatility, produced full featured and multi-model reports

V-Sorb 4800 UNMATCHED ADVANTAGES

A: Vacuum System

1. Unique integral manifolds system, decrease connecting points apparently, reduce leak rate, improve ultimate vacuum.
2. Modularity design can configure as customer requests, benefits future functions extension and instrument maintenance.
3. Atlas Copco brand bipolar vacuum pump, low noise, stable working, oil-return prevention; ultimate vacuum can reach $4 \times 10^{-2} \text{Pa}$ ($3 \times 10^{-4} \text{Torr}$).



B: Control System

1. Industry used programmable pneumatic valve system, strong anti-interference ability, convenient for installation and uninstallation.
2. Separated analysis and pretreatment manifolds can prevent foreign matter to contaminate manifolds during pretreatment.

C. Measures for Improving Accuracy

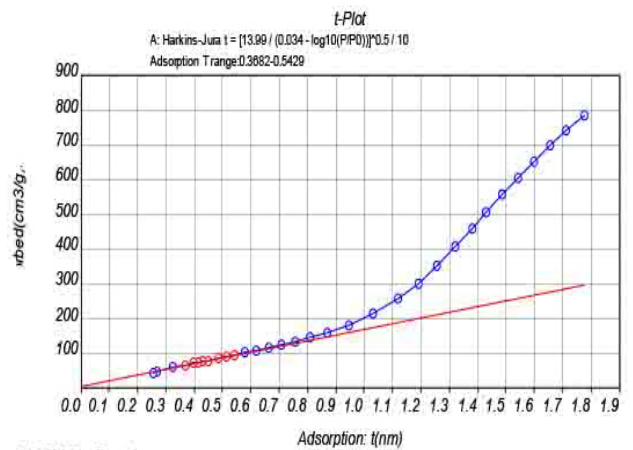
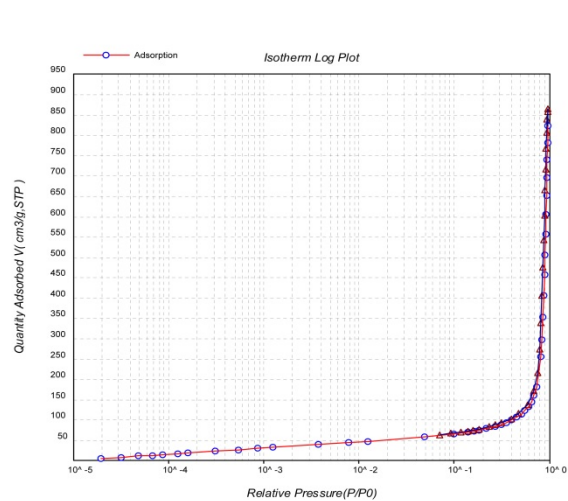
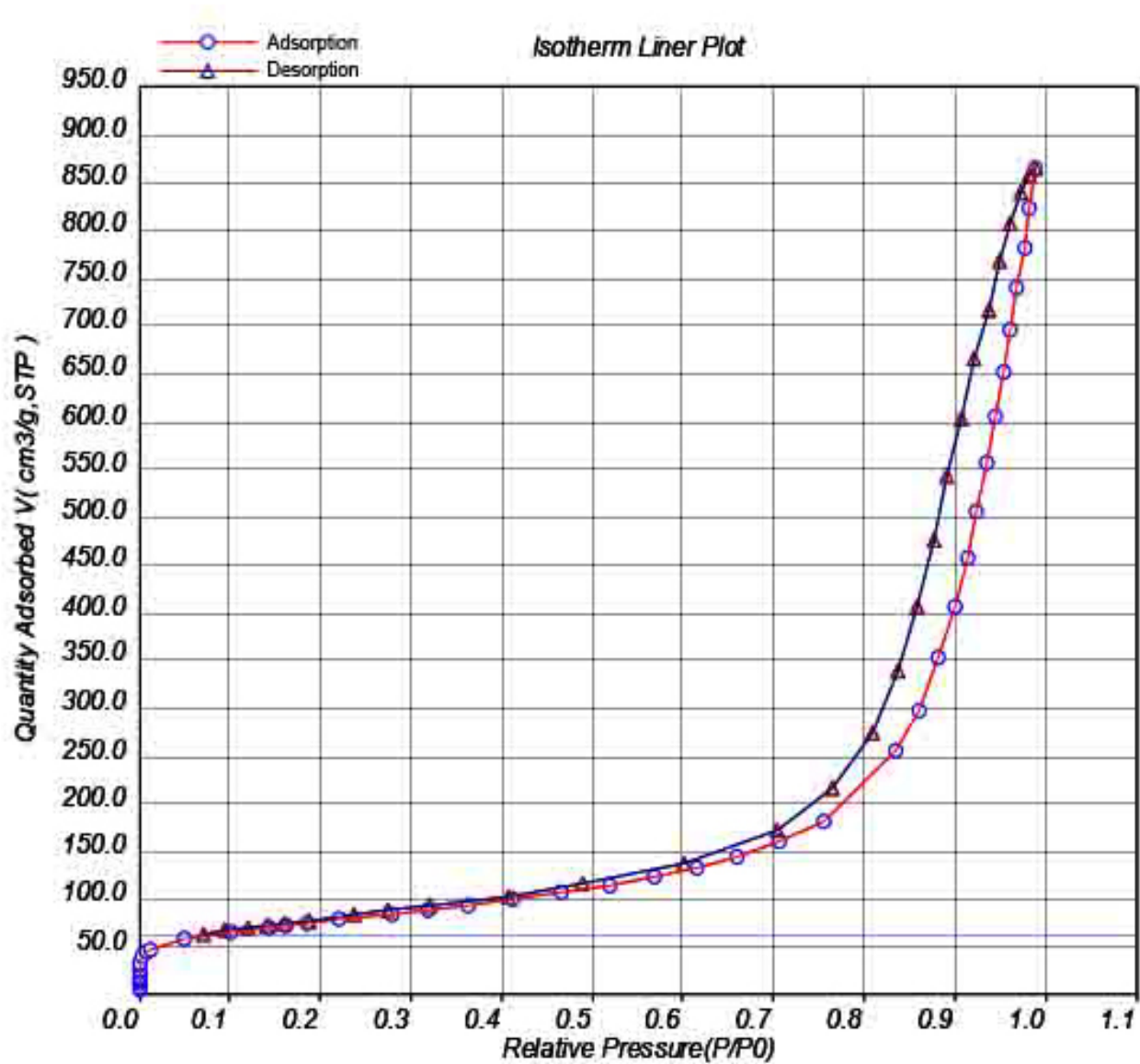
1. Imported silicon thin film capacitive pressure transducer, accuracy can reach 0.1% of real reading, better than 0.1% of F.S. (full-scale).
2. 0-10Torr and 0-1000Torr dual transducers, sectional measurement in pressure range can reduce errors in low vacuum, 0-10Torr silicon thin film transducer is highly accurate than Pirani resistance vacuum gauge (general error is 10%-15%).
3. Unique monolithic manifolds system, decrease connecting points and reduce leak rate apparently.
4. Original stepping coolant level control system, ensure the coolant level unchanged when compares with sample cells in the whole analysis process, completely eliminate the analysis errors caused by dead volume change.
5. Pioneered gas outlet and inlet control system can efficiently prevent sample splash in evacuation and gas inlet process, guarantee clean manifolds and sample weight unchanged, avoid zero and liner drifting caused by transducer's macro-change.



D. Data Acquisition and Reduction

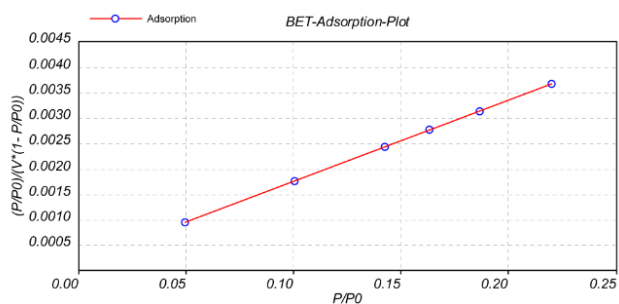
1. High precision and integration data acquisition module is easy to connect, minimal errors and strong anti-interference ability; standard RJ45 communication mode is good for analyzer's applications extension and interconnection, can also conveniently switched to RS232 and USB modes.
2. Multi calculating methods for data reduction provides all-round sample analysis options; powerful data archiving and searching system helps a lot for data management.





BET Tabular Report

P/P0	Adsorbed thickness(nm)	Quantity Adsorbed(ml/g)			
0.362512	0.542887	92.564953			
0.318872	0.513587	87.647323			
0.279422	0.487884	83.334787			
0.220059	0.449806	77.129360			
0.186684	0.428230	73.611507			
0.163375	0.412845	71.114371			
0.142668	0.398793	68.838087			
0.100498	0.368215	63.855708			
Slope	Intercept	C	Micro Vol.(ml/g)	Micro Area(m ² /g)	external Area(m ² /g)
164.122915	3.360600	0.999979	0.005198	16.126383	253.865325



Sample pretreatment: V-Sorb™ degasser

Surface area and porosity measurement is closely connected with samples' external surface area. Besides, the key of gas sorption is the adsorbate can be efficiently attached onto samples' surface or be filled into pores, thus, no more important than particle surface purity. The purpose for sample pretreatment is to remove atmospheric contaminants on samples' surface and make room for adsorbate. Most samples need pretreatment and ways are changed with samples' characteristics. Normally, water molecule is the item need to be removed, thus, to dry samples in atmospheric pressure and temperature over 100°C (usually 105°C-120°C) is enough which can simplify operation procedures. It is easy to adsorb contaminants in atmospheric pressure and temperature for microporous and strong adsorptive samples, but sometimes need to be degassed under vacuum condition, even to inlet rare gases for better desorption. All in all, pretreatment is to clean and purify sample external surface to ensure more precision results.



Specifications:

- ⌘ Up to 4 samples pretreatment currently, independent temp controller;
- ⌘ Max temperature is up to 450 °C, accuracy ± 1 °C;
- ⌘ Programmable heating process, step is 1-10 °C;
- ⌘ User-defined analysis gases (N_2 or He are more normally used);
- ⌘ 48 hours uninterrupted/unattended operation, Surface area analysis less than 30 mins (based on sample property);
- ⌘ A needle pointer vacuum meter was installed and can real time show vacuum values;
- ⌘ PT100 with resolution 0.01 °C, analysis software integrated PID theory.

Features:

- ⌘ Adopts stainless steel vacuum system, perfect sealing performance, high vacuum, stable working and long service duration;
- ⌘ Speedy heating process, saving time and improving pretreatment efficiency;
- ⌘ Easy installation and uninstallation for sample cells;
- ⌘ Unique sample splash proof system;
- ⌘ Modularity inner structure design, convenient for installation, uninstallation and future upgrade;
- ⌘ Each sample station has its own adjustable evacuation/backfill rate control.

Environmental:

- ⌘ Ambient temperature: 10 to 50 °C;
- ⌘ Maximum relative humidity: 90%.

Electrical:

- ⌘ Voltage 100 - 240 VAC;
- ⌘ Frequency: 50 or 60 Hz.

Physical:

- ⌘ Height 15.7 inches (40 cm)
- ⌘ Width 11.8 inches (30 cm)
- ⌘ Depth 19.7 inches (50 cm)
- ⌘ Weight 33 lbs (20kg)



Accessories list

Sr. No.	Supplier	Parts	Qty.
1	Gold APP Instruments Supplied	V-Sorb 4800 Analyzer (with vacuum pump)	1 set
2		Analysis Software (English)	1 set
3		Rubber O-rings for Sample Cells Sealing	10 pcs
4		Spherical Sample Cells	10 pcs
5		V-shape Sample Funnel	10 pcs
6		Reference Material(large surface area)	10 g
7		Reference Material(medium surface area)	10 g
8		Reference Material(small surface area)	10 g
9		Copper Gas Pipe	2 m
10		Analysis Dewar	2 pcs
11		Fuse	2 pcs
12		RJ 45 Cable	2 pcs
13		Protective Gloves	1 pair
14		User Manual (English)	1 copy
15		P _o Cell	4 pcs
16		Filling Rod	8 pcs
17		Sample Cell Cleaning Brush	1 pc
18		Funnel Cleaning Brush	1 pc
19		Sample Weighting Cup	1 pc
20		Sample Pretreatment Degasser	1 set
21	Customer Prepared	Liquid Nitrogen (purity upper 99.999%)	1 pot
22		0.0001 Precision Balance	1 set
23		Computer (Window 2000/07/08/XP/Vista etc)	1 set
24		Printer (not a must)	1 set
25		Power Cable	1 pc
26		Gas Regulator (should fit 1/8" NPT gas pipe, max reading is larger than 0.6 Mpa)	2 sets
27		He Gas (Purity upper 99.999%)	1 cylinder
28		N ₂ Gas (Purity upper 99.999%)	1 cylinder

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