

# BSAA - 3000T

Flowing Gas Principle BET Surface Area Analyzer



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**Analytical Technologies Limited**

An ISO 9001 Certified Company

[www.analyticalgroup.net](http://www.analyticalgroup.net)

## ►► Product Introduction:

- The flowing gas technique to determine BET surface area has been used for over 60 years. Many facts of the technology make it a very attractive alternative to the static volumetric principle analyzers. The speed of analysis, higher cost performance and the resulting high sample throughput is also quite attractive. As a result, for routine QA/QC analysis, there has been a renewal of interest in this technique.

The analytical technique is very easy to understand to its great similarity to chromatographic determinations. The change in the nitrogen to helium ratio of the gas after going over the sample is measured by a thermal conductivity detector.

The simple hardware, plus the lack of any waiting time following dosing as happens in the static volumetric case, makes this a very popular tool in a product manufacturing environment.

For speed, a single point measurement is typically completed within 5 minutes. For greater accuracy, a multi-point determination can be completed in less than 13 minutes.

- BSAA 3000T adopts speed and efficient continuous flowing gas (nitrogen) adsorption principle, is an expert for reference materials comparison method, single and multi-point BET method and Langmuir method analysis. BET method is universally recognized and the most commonly used way for nitrogen adsorption surface area analysis. No need of reference materials (RM) and utilizes sorption with incorporates multilayer coverage to calculate surface area. Speedy testing, high cost performances and easy operation make BSAA 3000T be a desirable assistant for quality control in production field.

Built-in mini PC inside, Win7 system, dual core; high sensitive 10 inch touchable display like iPad operation; no need to equip external PC; USB port is reserved for external peripheral port which can turn analyzer access

Power on/off

Four analyzing ports, with upgraded and new design straight shape sample tubes. Easier to load samples and clean tubes than U type tube.

Stainless steel Dewar with thick temperature protective foam covered

PC controlled fully automated elevator, no noise produced during up and down

Transparent cover protect whole analyzing procedures, also safe to operators

Drawer for keyboard and mouse



## ►► **Product Parameter:**

### **Measuring Method:**

Reference materials comparison method, single and multi-point BET method, Langmuir surface area method, adsorption and desorption isotherm, average particle size estimate, carbon black external surface (STSA), adsorption constant C analysis etc.

### **Measuring Ranges:**

0.01 m<sup>2</sup>/g to no known upper limit (surface area)

### **Accuracy:**

Repeatability errors ≤1%

### **Flow Rate Adjust:**

Gold APP Instruments patented F-Sorb micro stepping motor traffic can realize flow rate auto-adjust for every P/Po point in BET analysis; flow rate value autocollected by software and real-time displayed in interface

### **Quantitative Dosing:**

Patented F-Sorb quantitative pipe desorbs automatically, realized auto dosing for sample desorption isotherm, manual pipeline switch is not required

### **Manifolds Sealing:**

High vacuum system with stainless steel (not plastic pipe) manifolds, sound sealing performance can eliminate errors caused by gas molecules permeation

### **Sample Types:**

Powders, particle, fiber, flakes and other species

### **Sample Ports:**

4 samples simultaneously

### **Analysis Gases:**

high purity (99.999%) Helium as carrier; Nitrogen (99.999%) as adsorbate; Ar, Kr etc. are optional

### **Analysis Time:**

Less than 5 minutes for every P/Po point's desorption; analysis data will present automated by Gold APP Instruments software<sup>™</sup>

### **Pressure Required:**

Atmospheric pressure, no need vacuum, save experiment time

### **Data Acquisition:**

High precision and integration chip, minimal errors, strong anti-interference ability

### **Data Reduction:**

Windows<sup>®</sup>-base independently developed Gold APP Instruments software<sup>™</sup>, perfect versatility, ease of use and multi-model data reduction reports

### **Operation System:**

Multifunctional, fully automated, highly intelligent operation system<sup>™</sup>

## ►► Advantages :

### Structure Design

1. Stainless manifolds system is much better than plastic manifolds, obviously enhances sealing performance, eliminates errors caused by gas molecules permeation, no ageing for manifolds, increase reliability and prolong life, more appropriate for humid environment.
2. Modularity structure satisfies customer required configuration and instrument maintenance.

### Control System

1. Integrated multifunctional control system; motor screw rod lifting system ensures Dewar stability.
2. Innovated balanced bridge circuit greatly improves signal voltage sensitivity, as well as achieves auto balance of signal zero drift.
3. Fully-auto operation, minimal operator involvement and work efficiency improved.

### Data Acquisition and Reduction

1. High precision data acquisition and signal amplification, high integrated A/D transformation system, strong anti-interference ability and high real time, can reduce environmental influence on analysis procedures.
2. Utilize super sensitive thermal conductivity detection and balance system can increase detectable signal range; zero drift auto calibration system enhances stability and accuracy.
3. Independently innovated Windows<sup>®</sup> compatible software, versatile applications, flexible customer-tailor interface, ease of use; self developed data reduction module can efficiently eliminate system errors and improve precision.
4. Customer made data reports and diversified data calculation models are convenient for data analyzing; powerful data archiving and searching capacity helps a lot for data management.

### Analysis Optimize

1. Multi analysis methods, no need to convert operations frequently, all set in dedicated software.
2. Contrast reference materials method and BET method can switch freely, simplify operation steps and improve measurement efficiency.
3. Pioneered gas amount auto-adjust system brings extremely accurate, stable and no user intervention analysis.



520ml stainless steel Dewar plated with cooper which can buff liquid nitrogen volatilization. Can be used at least 5 years.



The 1<sup>st</sup> factory among this analyzer field to adopts straight type sample tubes. Easy to load into samples, easy to clean tubes than old U type design.



## ►► Reports :

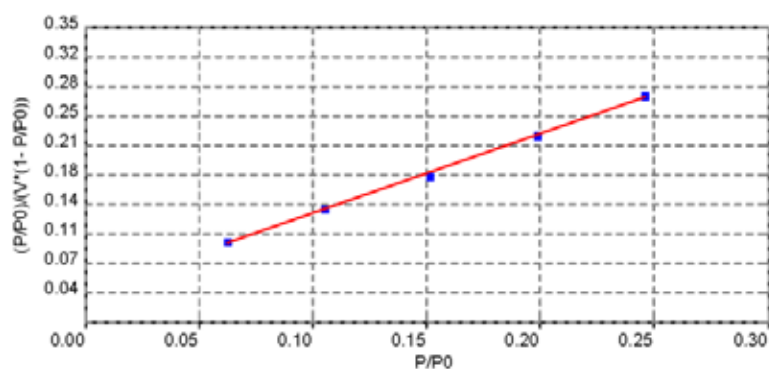
BSAA 3000T test reports offer a detailed and comprehensive analysis data concern about specific surface area, including single and multi-point BET, Langmuir surface area, external surface area, each P/P<sub>0</sub> point adsorption quantity, the slope, the intercept, the V<sub>m</sub>, the C value etc. Operator can clearly and easily master every sample data details.

### Specific Surface Area Report

Surface Area Analyzer

#### Analysis Data

|          |                 |        |                                   |
|----------|-----------------|--------|-----------------------------------|
| Quality  | 5143.40 (mg)    | Degas: | Vacuum degassing at 60°C for 3Hrs |
| Method   | Multi-Point BET |        |                                   |
| Temp.    | 25°C            | Result | 4.4612 (m <sup>2</sup> /g)        |
| Reported | 2021-1-15       |        |                                   |



#### Detail Data List

| P/P <sub>0</sub> | Quantity Adsorbed(ml/g) | (P/P <sub>0</sub> )/(V*(1-P/P <sub>0</sub> )) | Single point BET |
|------------------|-------------------------|---|------------------|
| 0.246193         | 1.217684                | 0.268214                                      | 3.9947           |
| 0.198307         | 1.119266                | 0.221002                                      | 3.9051           |
| 0.151030         | 1.035676                | 0.171770                                      | 3.8285           |
| 0.105297         | 0.878267                | 0.134002                                      | 3.4197           |
| 0.062700         | 0.701163                | 0.095404                                      | 2.8601           |
| Slope            | Intercept               | V <sub>m</sub> (ml)                           | C Value / R      |
| 0.941166         | 0.034357                | 1.025091                                      | 28.39 / 0.999163 |
| Mean Diameter    | Multi-BET Area          | Langmuir SSA                                  |                  |
|                  | 4.4612                  | 7.0850  |                  |

## HPLC Servicing, Validation, Trainings and Preventive Maintenance :

**HPLC Servicing** :HPLC Servicing : We have team of service engineers who can attend to any make of HPLC promptly @the most affordable cost.

**Trainings** :We also take up preventive Maintenance to reduce downtime of HPLC's Trainings.

**AMC's/CMC** :AMC's/CMC :We offer user training both in-House and at customer sites on HPLC principles, operations, trouble-shooting.

**Validations** :Validations :We have protocols for carrying out periodic Validations as per GLP/GMP/USFDA norms.

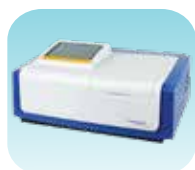
**Instruments** :Instruments :We offer instruments/Renting Services Modules like pumps,detector etc. on Rent.



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Analytical Technologies is synonymous for offering technologies for doing analysis and is the Fastest Growing Global Brand having presence in at least 96 countries across the global. Analytical Technologies Limited is an ISO:9001 Certified Company engaged in Designing, Manufacturing, Marketing & providing Services for the Analytical, Chromatography, Spectroscopy, Bio Technology, Bio Medical, Clinical Diagnostics, Material Science & General Laboratory Instrumentation. Analytical Technologies, India has across the Country operations with at least 4 Regional Offices, 6 Branch Offices & Service Centers. Distributors & Channel partners worldwide.

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Size Analyzer



Ion Chromatograph



Water purification  
system



## Regulatory compliances



## Corporate Social Responsibility

Analytical Foundation is a nonprofit organization (NGO) found for the purpose of:



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**Foundation**

1. Research & Innovation Scientist's awards/QC Professional Award : Quality life is possible by innovation only and the innovation is possible by research only, hence ANALYTICAL FOUNDATION is committed to identify such personalities for their contributions across various field of Science and Technology and awarding them yearly. To participate for award, send us your details of research / testing / publication at [Info@analyticalfoundation.org](mailto:Info@analyticalfoundation.org)

2. Improving quality of life by offering YOGA Training courses, Work shops/Seminars etc.

3. ANALYTICAL FOUNDATION aims to DETOXYFY human minds,souls and body by means of yoga, Meditation, Ayurveda, Health Care, Awards, Media, Events, Camps etc.

## Reach us @



 **Analytical**<sup>®</sup>  
Technologies Limited

HPLC Solutions   MultipleLabs   Analytical Bio-Med   Analytical Distributors   Analytical Foundation (Trust)

**Corporate & Regd. Office:**  
Analytical House, # E67 & E68,  
Ravi Park, Vasna Road, Baroda,  
Gujarat 390 015. INDIA

T: +91 265 2253620  
+91 265 2252839  
+91 265 2252370  
F: +91 265 2254395

E: [info@hplctechnologies.com](mailto:info@hplctechnologies.com)  
[info@multiplelabs.com](mailto:info@multiplelabs.com)  
[info@analyticalgroup.net](mailto:info@analyticalgroup.net)  
[info@analyticalbiomed.com](mailto:info@analyticalbiomed.com)

W. [www.analyticalgroup.net](http://www.analyticalgroup.net)  
[www.hplctechnologies.com](http://www.hplctechnologies.com)  
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