

HORIBA

Single and Multi-Point Surface Area Analysis

Activated Carbon • Batteries • Catalysts • Cement • Ceramics • Pharmaceutical



SA-9650 SERIES

BET Surface Area Analyzers

The all-in-one solution for surface area analysis

The SA-9650 Series

HORIBA's most advanced surface area analyzer, the SA-9650 series provides convenience, remarkable measurement speed, and very low cost-per-analysis for a wide variety of materials. Perform extremely fast single-point or multi-point surface area measurements using the robust, time-proven flowing gas (dynamic) technique to acquire gas adsorption and desorption data.

Housed in a completely redesigned cabinet, the SA-9650 is built to provide safe and easy access to the Preparation and Test stations. Both single and three Test station models are available, allowing up to three simultaneous surface area measurements at once. Results can be viewed immediately and a PDF report automatically generated.

Applications

The SA-9650 provides quick, user friendly specific surface area analysis for an assortment of powders ranging from catalysts to active pharmaceutical ingredients (API's). Low surface area API's and excipients are particularly well suited for analysis by the SA-9650, which provides a quicker measurement time at a lower cost than competitive options.

To ensure repeatable and accurate measurements, the analyzer calibrates the detector and zeros the baseline before every analysis. Because it is fully automated, the SA-9650 eliminates variables that are sometimes introduced by operator involvement, such as the measurement of nitrogen or movement of the Dewar flasks. Various sample cells are available, allowing measurements to be made on diverse sample types.



Push and Go

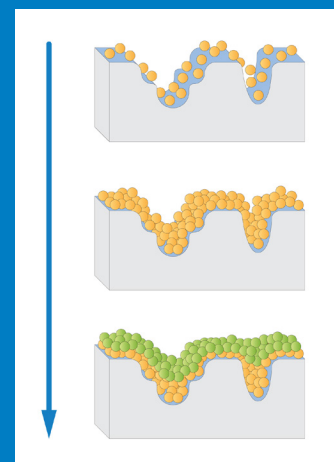
With the push of a button, the analyzer can automatically perform every measurement step. Detector baselines are zeroed, then a high precision valve injects 1cc of nitrogen (N_2) into the flow system to calibrate the analyzer. Next, a liquid nitrogen bath is raised around the sample cells. From a stream of mixed gas flowing through the sample cell, N_2 is adsorbed on the powder's surface. Then the bath is lowered, and the amount of desorbed N_2 is measured and proportioned to the calibration signal to determine the sample's surface area. Finally, the surface area is divided by the sample's weight to provide the specific surface area in m^2/g . For multi-point analysis, this sequence is repeated for each data point. Utilizing onboard mass flow controllers, the gases are automatically mixed to the target ratio for each point. For single-point surface area analysis, the flowing gas is 30% nitrogen (user selectable).



How it Works

Gas adsorption (physisorption) is the build up of gas molecules on the surface of a solid, which is reversible. At low mixture concentrations, the sample surface begins to adsorb gas molecules. As the gas concentration increases, the whole surface of the sample is covered by adsorbed molecules and multilayer coverage begins.

The amount of adsorbate from corresponding concentrations is then used in the BET equation to calculate the monolayer volume and the surface area of the sample.



SA-9650 Series

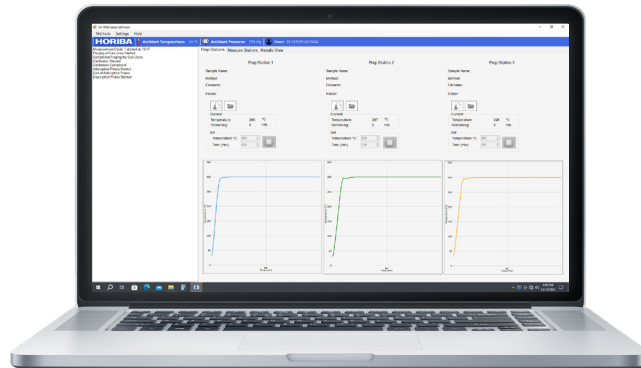
Stand-alone Operation



Integrated computer and display

The SA-9650 analyzer is a complete solution with on-board computer, full alphanumeric keyboard, LCD display, and integrated three sample de-gas preparation station. The analyzer stores up to 100 analyses in memory and provides a parallel output to furnish ASCII files to printers or send serial output to LIMS.

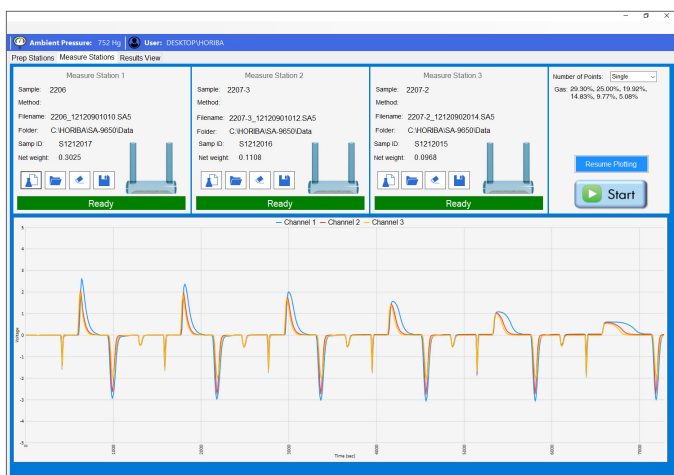
Connect to Windows PC



Prep Station control screen on Windows PC

While the instrument can be operated as a stand-alone system, it can also be hooked up to a Windows PC via USB connection. Using the SA-9650 software, users can get more detailed views of their measurements and operate the analyzer using their own hardware in a familiar, Windows-based environment.

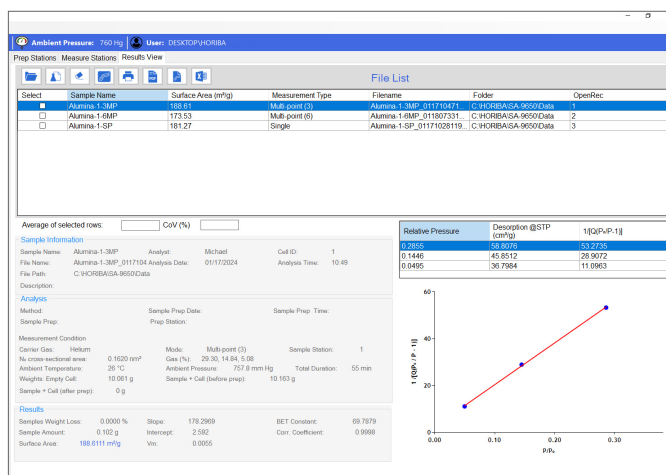
Newly Designed Software



Test Station control screen

Brand new software can be operated remotely from any PC with Windows. Users can easily operate the analyzer by following a simple, 3-step process:

1. Type in the sample name
2. Choose the measurement type
3. Click "Start" to begin measurement



Results View screen

In just a few minutes, the full surface area report will be complete. View the measurement in real-time to see the auto-calibration, adsorption, and desorption. The Results View permits simple averaging or overlaying of multiple results as well as easily exporting data.



SA-9650 Single Station Model



SA-9650 Three Station Model

	SA-9650-1SP	SA-9650-1MP	SA-9650-3SP	SA-9650-3MP
Single-point	Yes	Yes	Yes	Yes
Multi-point	No	Yes	No	Yes
Analysis Stations	1	1	3	3
Preparation Stations	3	3	3	3
Measurement Range	Total Surface Area: 0.1 to 50 m ² Specific Surface Area: Approximately 0.01 – 2,000 m ² /g			
Reproducibility	Better than 1% Coefficient of Variation			
Power Requirements	100, 120, 220 or 240 volts AC, 50/60 Hz Maximum peak power 200 Watts			
Weight	59 lbs (26.76 kg)	62 lbs (28.12 kg)	63 lbs (28.58 kg)	66 lbs (29.94 kg)
Dimensions	26" H x 25" W x 20" D (66.1cm H x 63.5cm W x 50.8cm D)			
Compliance	CE Meets EU safety, health and environmental protection requirements.			



Please read the operation manual before using this product to assure safe and proper handling of the product.

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