

ATDA-3100

Automatic True Density Analyzer



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Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

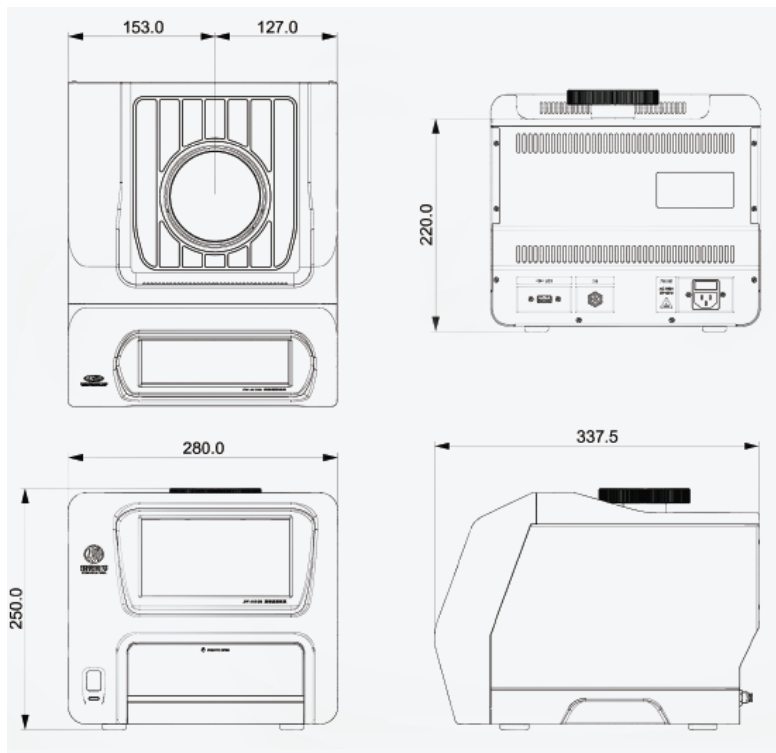
►► Outline

True density is one of the important parameters in measuring physical property of solid materials, especially powder. Value of true density depends on material purity and compactness which affect the quality of sample. The traditional measuring true density of materials is based on Archimedes water displacement method. As the serious inaccuracy of manual operation and drainage exists, ISO (the International Standard Organization) officially implemented gas displacement method to test. ATDA 3100 Series True Density Analyzer can quickly and accurately produce true volume and true density of various solid materials such as powders and blocks. The sample chamber volume range is 1 cm³ - 100 cm³. It takes about 3 minutes to complete analyses without influencing accuracy.

►► Features

Self-developed Kernel Module

Setting sample chamber, expansion chamber, pressure sensor, control valve in one, ensuring homogeneity of test system temperature. Accuracy of true density test can be better than $\pm 0.03\%$, repeatability is better than $\pm 0.02\%$;



Pressure Sensor

ATDA 3100 with 2 bar (F.S.) makes test has a good result in the true density measurements. Non Linearity of pressure sensor is better than $\pm 0.2\%$ which benefits recording pressure.



Density Measurement

ATDA 3100 Automatic True Density Analyzer can accurately measure true density of powder over 1-1.3 bar pressure ranges. Do not use vacuum pumps during testing to avoid pumping samples to pollute analyzer.

Sample Test Chamber and Sample Cell

Sample test chamber	Sample cell	Conversion chamber
10ml	10ml	----
100ml	100ml	10ml

Operating Software

The ATDA 3100 provides automatic tests for user. It takes about 3 minutes to complete a test. Users can free to set up repeat times, test data is automatically saved and displayed in txt files, results can be exported through USB port. Densi 100 is configured with PC-side standard test report generate and print software.

Standard Substances

Standard substance is made by non-expanded alloy and calibrated by National Institute Metrology, China. Volume precision is up to 10-4 cc.

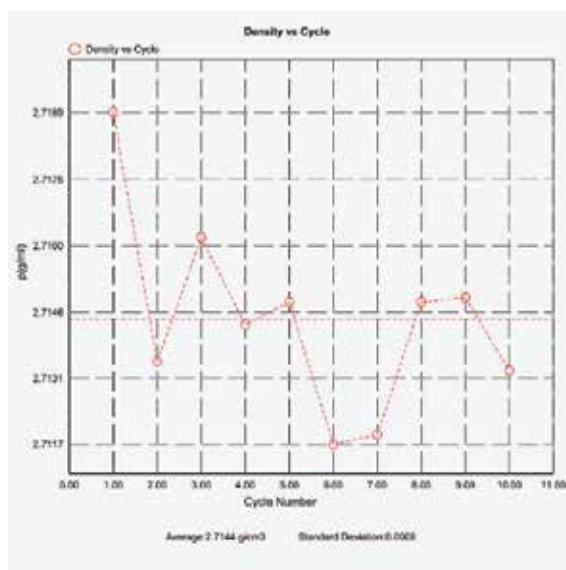
▶▶ Typical analysis examples

Density vs Cycle

Sample ID: 03
 Sample Mass: 8.7888
 Number Of Purses: 3
 Number Of Cycles: 10
 Analysis Day: 2017-06-21
 Analysis Time: 14:25
 Analysis Gas: N₂
 Temperature: 27.80 °C

Density and Volume Table

No.	FC	P ₁	P ₂	M ₁	Volume(ml)	Density(g/ml)
1	0.0064	31.4136	15.5658	1.0332	3.2318	2.7189
2	0.0077	31.2678	16.8870	1.0324	3.2382	2.7135
3	0.0071	31.4131	15.6638	1.0328	3.2348	2.7162
4	0.0069	31.3145	15.9113	1.0325	3.2373	2.7163
5	0.0073	31.3785	15.5404	1.0326	3.2367	2.7168
6	0.0055	31.3139	15.9078	1.0322	3.2403	2.7117
7	0.0067	31.4181	16.8598	1.0322	3.2401	2.7118
8	0.0062	31.4231	16.0175	1.0326	3.2367	2.7148
9	0.0075	31.4190	15.9638	1.0328	3.2366	2.7148
10	0.0052	30.9531	15.7263	1.0324	3.2385	2.7133
Average				1.0328	3.2371	2.7144
Std Dev				0.0008		
Temperature				27.80 °C		



►► Specifications

Feature	ATDA 3100
Principle	Non corrosive gases, such as N ₂ , Ar, Kr, H ₂ , O ₂ , CO ₂ , CO, NH ₃ , CH ₄ , etc.
Application	True density, true volume, opening porosity of solid and foam materials.
Analytical bit	1
Range of test	0.0001 g/mL to infinity
Resolution	0.0001 g/mL
Accuracy	±0.03%
Repeatability	±0.02%
Efficiency	3 min per measurements
Adsorbed gas	N ₂ , He
Test pattern	Positive pressure test in ambient temperature.
Sample form	Powder, particle, granule
Machine specification	Depth: 380 mm; width: 280 mm; height: 280 mm; weight: 10 kg
Ambient temperature	15-40 °C
Related Humidity	30%-60%
Electrical supply	AC220 V ± 20 V, 50/60 HZ, maximum power 100W;
Application fields	Graphite anode materials, carbon materials, ceramics, alumina, catalysts, filter media, nuclear fuel, petrochemicals, soils, fertilizers, carbon black, coke, fiber, minerals, pharmaceuticals, cosmetics, cement, powder foods, desiccants, powder metal, ion exchange resins, silica gel, titanium dioxide, solid foams, etc.

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