Density-100

Pycnometer Density Analyzer

Gold APP Instruments China

Lead You to Particle World Better

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INTRODUCTION

True density is one of the important parameters in measuring physical property of solid materials, especially for powder. Value of true density depends on material purity and compactness which affect the quality of sample. The traditional measuring way of true density is based on Archimedes water displacement method. As its serious inaccuracy of manual operation and drainage exists, the ISO (International Standard Organization) official implemented gas displacement method (ISO 12154) to test the true density in 2014.

If the material has no porosity, the true density can be measured by displacement of any fluid in which the solid remains inert. The accuracy of the method is limited by the accuracy with which the fluid volume can be determined. Usually, however, the pores, cracks, or crevices of the material will not easily be completely penetrated by a displaced liquid. In these instances, the true density can be measured by using a gas as the displaced fluid if the material does not contain closed pores, which cannot be penetrated by the analysis gas. Therefore, the density experimentally determined by gas pycnometry generally is the so-called skeleton density of the material which equals the true solid-state density only for samples without closed pores --- cite from ISO 12154.

Density-100 true density analyzer can quickly and accurately produce true volume and true density for various solid materials such as powders, particles, fibers and blocks. The sample chamber volume range is from 1 ml to 100 ml. It takes about 3 minutes to complete analyses without influencing accuracy.

FEATURES

1. Self-developed All-in-one Module

Setting sample chamber, expansion chamber, pressure sensor & control valves all-in-one, ensuring homogeneity of test system temperature. Accuracy of true density can be up to ± 0.03%, repeatability is ± 0.02%;

2. Measuring Pressure Range

Density-100 pycnometer density analyzer can fast & accurately measure true density of solid samples from 1-1.3 bar pressure ranges. Do not use vacuum pump during testing, to avoid powder samples contaminate analyzer manifolds when vacuuming.

3. Pressure Sensor

Density-100 equips a branded 2 bar pressure sensor, ensure an excellent testing result in true density measurement. Non linearity of the pressure sensor is better than ±0.2% which benefits a lot in pressure values recording.

4. Gas Leakage Detection

The instrument is equipped with an intelligent self-checking program, can automatically judge sealing performance and give alert of gas leakage, maximum eliminates testing errors.

5. Certificated Reference Materials

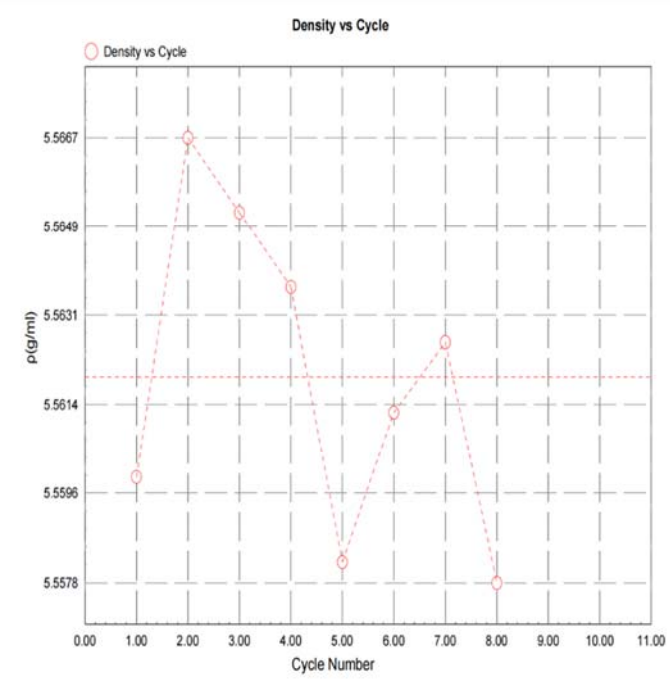
Standard Reference Material is made by non-expanded alloy, be certificated by National Institute Metrology, volume precision is up to 10-4 cc.

6. Testing Software

Density-100 provides automatic testing, takes about 3 mins for a complete measurement. Operators can freely set repeat times, detailed analysis data be recorded, displayed and saved automatically in TXT format. Reports can be exported by USB thumb drive, or be printed through a printer.

SPECIFICATIONS

Principle:	gas displacement method
Applications:	true density, true volume, open porosity
Testing Port:	1
Testing Range:	0.0001 g/ml to no upper limit
Resolution:	0.0001 g/ml
Accuracy:	± 0.03%
Repeatability:	± 0.02%
Time of Testing:	around 3 mins
Testing Gases:	Helium (He) or Nitrogen (N2)
Testing Mode:	positive pressure and ambient temperature
Net Dimension:	depth: 380 mm; width: 280 mm; height: 280 mm; weight: 10 kgs
Electric Supply:	AC 220V ± 20 V, 50/60 Hz; maximum power 100W



Density vs Cycle

Sample ID: 5-3
Sample Mass: 7.7300
Number of Purges: 3 Analysis Gas: He
Number of Cycles: 8 Temperature: 26.73 ℃
Start Time: 2024-01-04 2046 End Time: 2024-01-04 2128

Density and Volume Table

No.	Pcd0	Pd	Pcd1	Mp	Volume(cm3)	Density(g/cm3)
1	19.2395	150.6010	92.4135	1.2577	1.3903	5.5599
2	19.2859	150.6113	92.4434	1.2579	1.3886	5.5667
3	19.2319	150.9798	92.6218	1.2578	1.3890	5.5652
4	19.2266	150.5435	92.3765	1.2578	1.3894	5.5637
5	19.2949	150.7358	92.5125	1.2576	1.3907	5.5582
6	19.2200	150.7780	92.5071	1.2577	1.3900	5.5612
7	19.2112	150.6984	92.4577	1.2578	1.3896	5.5626
8	19.2699	150.5545	92.3986	1.2576	1.3908	5.5578
			Average	1.2577	1.3898	5.5619
			Std Dev			0.0030
			RSD			0.0542%
			Temperature			26.73 ℃

Density & Volume Detailed Report

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