

# PowderPro A1



## AUTOMATIC MEASUREMENT

- Angle of Repose, Angle of Fall
- Bulk Density, Tapped Density
- Flowability, Floodability
- And More..

## COMPLY WITH INTERNATIONAL STANDARDS

- ISO
- Ph. Eur.
- USP

## MULTIPLE CONTROLS

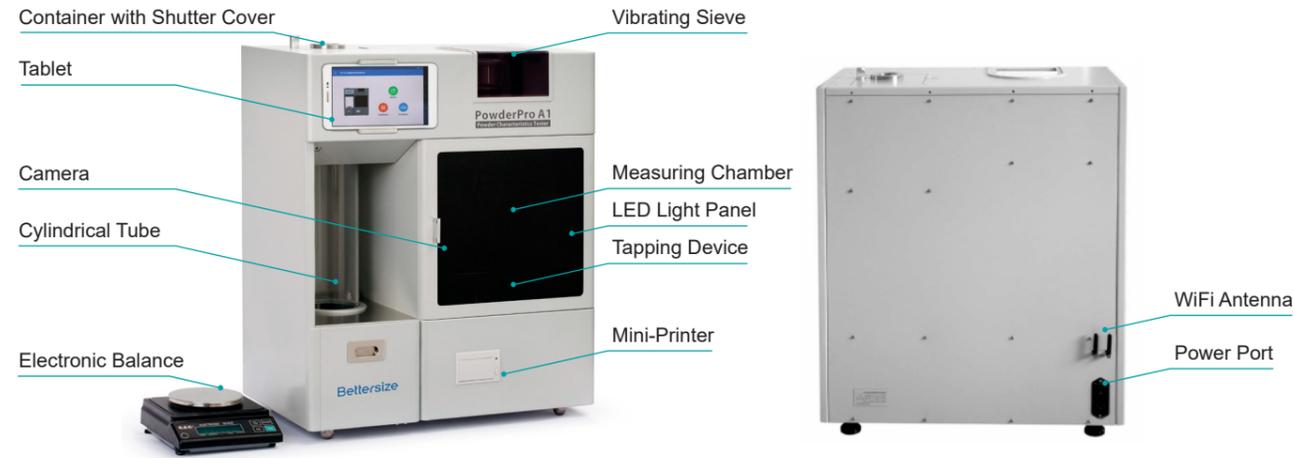
- Tablet
- Computer
- Mobile Phone

Powder Characteristics

Measured by

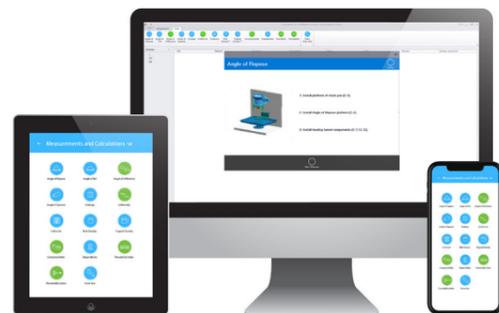
Your 14-in-1 Powder Characteristics Tester

## INTRODUCTION



The PowderPro A1 integrates many state-of-the-art technologies like the intelligent control via Wi-Fi connection, image processing technology, 3D electromagnetic vibration and rotating tapped density measurement technology. This new type of instrument is able to measure the physical properties of powders in a fast, simple, and accurate way. As a smart powder characteristics analyzer, it is an essential equipment to help you understand and research powder materials.

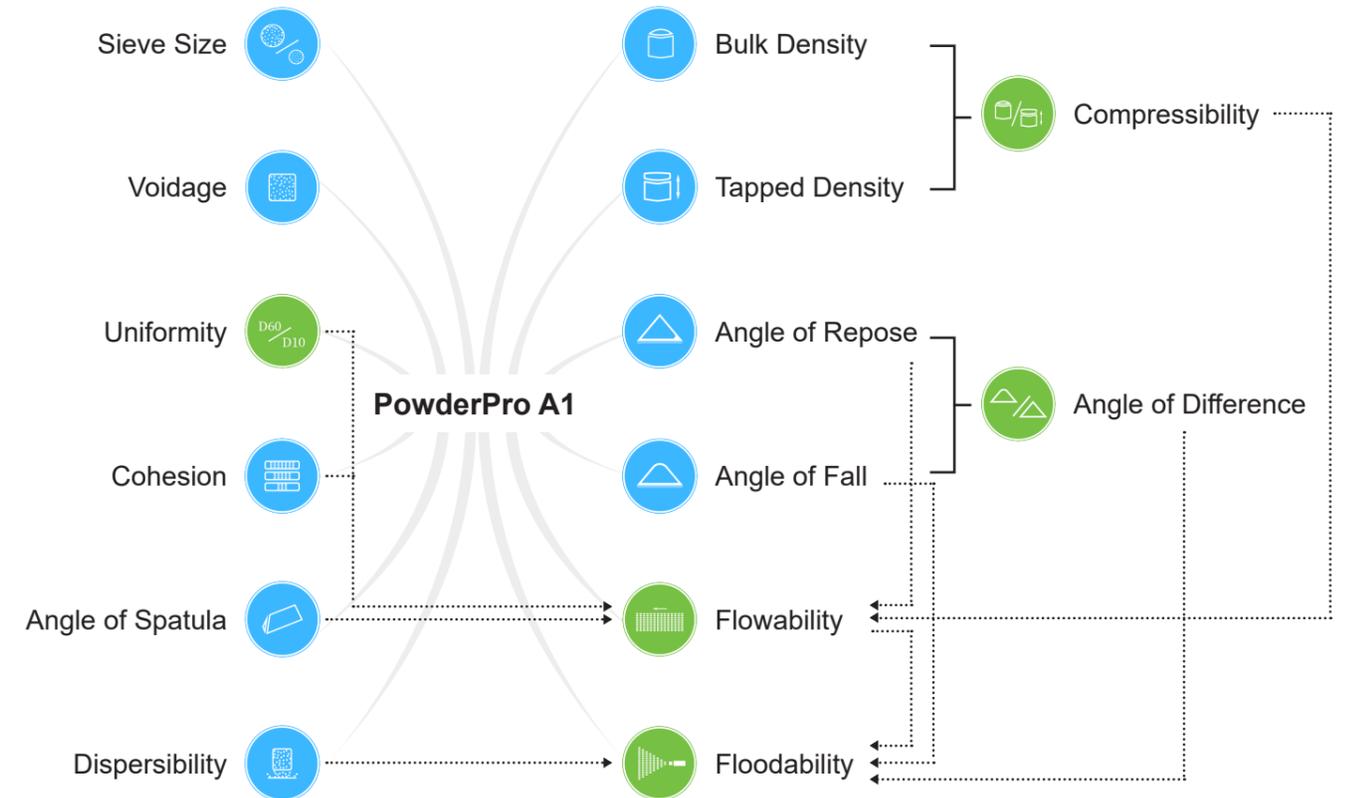
## ONE APP. MULTIPLE DEVICES



 Powder Tester App, for smart phones and tablets, is the one and only App in the powder characteristic market. It is designed to offer you the most user-friendly way to measure up to 14 physical properties of your samples. The App is intuitive and easy to operate across different devices, you will find yourself need no user manual to start a measurement.

 PowderPro software is also available for PC user, and it is as user-friendly as the Powder Tester App.

## MEASURED & CALCULATED PARAMETERS



 Measured Parameters

 Calculated Parameters

## YOUR 14-IN-1 POWDER CHARACTERISTICS TESTER



## Measurement of Flowability

### Bulk Density ( $\rho_B$ )

Empty cup (Mass A) → Fall freely → Scrape → Cup filled by loose powders (Mass B)

$$\text{Bulk Density } (\rho_B) = \frac{\text{Mass B} - \text{Mass A}}{\text{Volume of the Cup}}$$

### Tapped Density ( $\rho_T$ )

Empty cup (Mass A) → Vertical vibration → Scrape → Cup filled by packed powders (Mass C)

$$\text{Tapped Density } (\rho_T) = \frac{\text{Mass C} - \text{Mass A}}{\text{Volume of the Cup}}$$

### Compressibility ( $C_p$ )

$$\text{Compressibility } (C_p) = \frac{(\rho_T - \rho_B)}{\rho_T} \times 100\%$$

### Angle of Repose ( $\theta_R$ )

Image processing technology

### Angle of Spatula ( $\theta_{sp}$ )

Shocked once

Before shock impacts ( $\theta_a$ )

After shock impacts ( $\theta_b$ )

$$\text{Angle of Spatula } (\theta_{sp}) = \frac{\theta_a + \theta_b}{2}$$

### Cohesion ( $C_h$ )

2.00 g

Mass C, Mass B, Mass A

PowderPro A1

Vibration

Mass C → Mass X

Mass B → Mass Y

Mass A → Mass Z

$$\text{Cohesion } (C_h) = (X \times 5\% + Y \times 3\% + Z \times 1\%) \div 0.1 \text{ g} \times 100\%$$

### Uniformity ( $U_f$ )

$$\text{Uniformity } (U_f) = \frac{\text{Particle size at the 60 \% point of the cumulative, undersize PSD } D_{60}}{\text{Particle size at the 10 \% point of the cumulative, undersize PSD } D_{10}}$$

## Measurement of Floodability

### Angle of Fall ( $\theta_F$ )

Shock 3 times

Image processing technology

### Angle of Difference ( $\Delta\theta$ )

$$\text{Angle of Difference } (\Delta\theta) = \text{Angle of Repose } (\theta_R) - \text{Angle of Fall } (\theta_F)$$

### Dispersibility ( $D_s$ )

Empty container (Mass C)

10.00 g powder

Fall freely

Mass D

$$\text{Dispersibility } (D_s) = \frac{10.00 \text{ g} - (\text{Mass D} - \text{Mass C})}{10.00 \text{ g}} \times 100\%$$

## APPLICATIONS



## FEATURES

### Measuring angle with imaging technology

A picture of powder pile is taken by adopting the high-definition Charge Coupled Device (CCD) camera imaging technology. Parameters such as the angle of repose, angle of fall and angle of spatula etc. are obtained with high precision and good repeatability through the unique image processing technology.

### Compact design

9 measured items including the angle of repose, angle of fall, angle of spatula, bulk density, tapped density, cohesion, dispersibility, voidage, sieve size and 5 calculated items including the angle of difference, compressibility, uniformity, flowability index, floodability index can be achieved in just one instrument - the PowderPro A1.

### Automatic control technology

Fully automatic computer or mobile control ensures easy usage and fast operation. Accurate and reliable results can be obtained with the help of Standard Operating Procedure (SOP).

### Data communication

An electronic balance is connected with the instrument and the weight data can be recorded by the control system for further data processing and calculation.

### Unique data output

A mini-printer of the PowderPro A1 is convenient and efficient to print the measurement data timely.

## SPECIFICATION

Powder	Type	Metallic Materials (Fe, Ni, alloy, etc.)
		Non-metallic Materials (CaCO <sub>3</sub> , SiO <sub>2</sub> , Polymer, etc.)
Parameters	Number	9 (Measured) + 5 (Calculated)
Measuring Angle	Method	Fully Automatic by CCD Camera
	Range	0-90°
Repeatability		≤ 3%
Tapping	Frequency	50-300 taps/min (Continuous Adjustment)
	Stroke Height	3 or 14 mm
	Display	Digital Display
Conformity	ISO	ISO 3953: 2011
	USP	USP 32 - NF 27 <616>
	Ph. Eur.	Ph. Eur. 7.0 07 / 2010: 20934E
Control Terminal	Tablet	Android System
	Phone	Android System
	PC	Windows System
Connection		Wi-Fi, LAN
Dimension		600 × 350 × 730 mm (L × W × H)
Weight		42 kg
Power Supply		AC 110/220 V, 50/60 Hz, 230 W

# Bettersize

BETTER PARTICLE SIZE SOLUTIONS

[www.bettersizeinstruments.com](http://www.bettersizeinstruments.com)  
[info@bettersize.com](mailto:info@bettersize.com)

## **Bettersize Instruments Ltd.**

**Address:** No. 9, Ganquan Road, Jinqun Industrial Park,

Dandong, Liaoning, China

**Postcode:** 118009

**Tel:** +86-415-6163800

**Fax:** +86-415-6170645

## **Bettersize Inc.**

**Address:** Suite K-2, 3188 Airway Ave, Costa Mesa, CA 92626,

United States

**Tel:** +1 833-699-7493 (SIZE)

Visit Our PowderPro A1 Site:



Visit Our Official Youtube Channel:



**Disclaimer:** By using or accessing the brochure, you agree with the Disclaimer without any qualification or limitation. Diligent care has been used to ensure that the information in this brochure is accurate, Bettersize Instruments Ltd. shall not be liable for errors contained herein or for damages in connection with the use of this material. The information on this brochure is presented as general information and no representation or warranty is expressly or impliedly given as to its accuracy, completeness or correctness. It does not constitute part of a legal offer or contract. Bettersize Instruments Ltd. reserves the right to modify, alter, add and delete the content outlined in the brochure without prior notice and without any subsequent liability to the company.

Copyright: © 2023 Bettersize Instruments Ltd. | All Rights Reserved