

# Powder Tap Density Tester Automatic Bulk Density Analyzer For Battery Materials And Metal Powders

Item Number: DS05



## Introduction

Accurately determine powder tap density and loose bulk density with this advanced three-workstation tap density tester featuring an extended 50mm amplitude compliant with GB5162 and YS/T 677 standards for high-precision battery materials research metallurgy and industrial quality control processes

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| Application                                    | Description                                                                                                                                  | Key Benefit                                                                                                                  |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Lithium-Ion Battery Electrode Materials        | Measuring the tap density of cathode powders (LMO, NCM, LFP) and anode graphite to maximize volumetric energy density in cell manufacturing. | Ensures high active material loading in electrode slurries and guarantees consistent energy capacity per unit cell volume.   |
| Powder Metallurgy & Metal Alloys               | Assessing the packing density and compressibility of spherical and irregular metal powders (titanium, stainless steel, nickel alloys).       | Optimizes die filling, enhances green compact strength, and prevents shrinkage porosity during subsequent sintering stages.  |
| Advanced Ceramics & Refractory Compounds       | Determining particle packing efficiency of alumina, zirconia, silicon carbide, and nitride powders prior to pressing or slip casting.        | Reduces internal defects, increases green body density, and minimizes structural deformation during high-temperature firing. |
| Additive Manufacturing Feedstock               | Evaluating the flow behavior, packing fraction, and batch consistency of virgin and recycled metal/polymer powders for 3D printing.          | Prevents recoater streaking, ensures uniform layer spreading, and improves part density in laser powder bed fusion systems.  |
| Powder Coatings & Surface Finishing            | Characterizing the bulk density and aeration behavior of thermoset and thermoplastic coating formulations.                                   | Guarantees uniform fluidization during application, eliminates coating voids, and improves dry film thickness uniformity.    |
| Pharmaceutical Excipients & Active Ingredients | Analyzing bulk-to-tapped volume ratios (Hausner Ratio and Carr's Compressibility Index) for tableting and capsule filling formulations.      | Predicts powder flowability through hoppers, prevents weight variation in dosing, and improves high-speed tableting yield.   |
| Chemical & Mineral Processing                  | Quality control testing of fine catalysts, pigments, abrasives, carbon black, and mineral fillers across industrial processing plants.       | Provides precise baseline metrics for storage silo design, shipping volume calculations, and automated pneumatic conveying.  |
| Food & Agricultural Products                   | Testing powdered nutritional additives, starches, instant beverages, and dairy powders to evaluate compaction and packaging efficiency.      | Reduces container head-space, stabilizes transport settling, and ensures standardized volumetric consumer packaging.         |

| Specification Parameter      | Value / Operational Rating                                    |
|------------------------------|---------------------------------------------------------------|
| Product Item Number          | DS05                                                          |
| Test Parameters              | Tap Density (    ), Loose Bulk Density (    )                 |
| Compliance Standards         | GB5162-2006, YS/T 677-2008 (Lithium Manganese Oxide Protocol) |
| Vibration Stroke Amplitude   | 50 mm ± 0.2 mm                                                |
| Vibration Frequency          | 60 taps / min                                                 |
| Tap Count Setting Range      | 1 – 9,999 taps (User Programmable)                            |
| Number of Workstations       | 3 Simultaneous Workstations                                   |
| Measurement Error            | Error < ±1.5%                                                 |
| Standard Measuring Cylinders | 3 Units, Stainless Steel Construction                         |
| Cylinder Dimensions & Volume | 16.6 ml Capacity (Inner Diameter: 16.25 mm, Depth: 80 mm)     |

| Specification Parameter                       | Value / Operational Rating                      |
|-----------------------------------------------|-------------------------------------------------|
| Guide Assembly Material                       | High-Grade Stainless Steel Frame                |
| Data Interface & Analysis                     | Computer Software Data Management & Calculation |
| Operating Voltage                             | AC 220 V $\pm$ 10%, 50/60 Hz                    |
| Rated Power                                   | 110 W                                           |
| External Dimensions (W $\times$ D $\times$ H) | 400 mm $\times$ 280 mm $\times$ 270 mm          |
| Net Weight                                    | Approx. 13 kg                                   |