Tap Density Tester

LMTDT-A100

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1. Introduction

Tap Density Tester LMTDT-A100 is a top-notch solution for the precise powder density measurement. The device bestows customizable vibration parameters, including amplitude, frequency, and vibration time. With a user-friendly LED panel and adjustable drop height, operators can effortlessly meet diverse international standards. Integrated micro printer ensures accurate data reporting.

2. Features

- Precision at its core
- Intuitive LED panel, easily adjustable drop height, and RPM control
- Integrated micro printer delivers instant and detailed reports
- Plastic-coated exterior ensures strength against corrosive powders
- Promises easy cleaning and extended lifespan

3. Specifications

Model No.	LMTDT-A100
Number of workstations	1
Sample Weight	≤ 500 g
Sample Volume	≤ 250 ml
Number of tapping	≤ 0 to 99999 times (result is bulk density when input is zero times)
Motor Torque	0.86 N.m.
Frequency	300 rpm (continuous adjustable in 0 to 300 rpm)
Amplitude	Maximum 15 mm (1 to 15 mm adjustable)
Display	LED
Repeatability Error	≤ 1%
Accuracy Error	≤ 1%

4. Applications

Tap Density Tester is widely used across industries like food, pharmaceutical, cosmetics, research and development, chemicals, powder coating, etc.

5. Installation

5.1 Assembly drawing of tapping apparatus

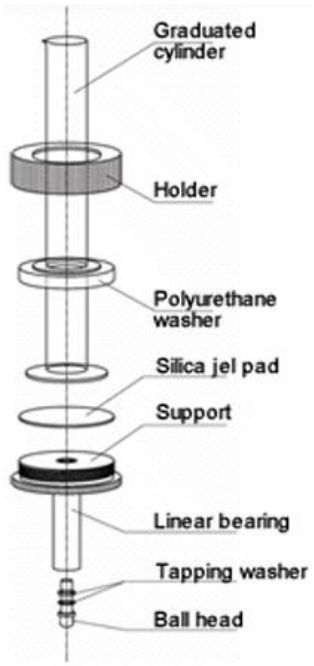

Figure-1

5.2 Cylinder selection

The powder density tester is supplied with a 25 ml, 50 ml, 100 ml, and 250 ml graduated cylinder. To improve test accuracy, it is recommended to select the appropriate cylinder based on the measured weight of powder (m) and apparent density (ρ).

Volume (cm^3)	Weight (g)	Apparent density (g/cm^3)
25	m≤10.0	ρ≤0.8
	10.0≤m≤20.0	0.8≤ρ≤2.0
	20.0≤m≤50.0	2.0≤ρ≤7.0
	50.0≤m≤100.0	ρ≥7.0
50	10.0≤m≤20.0	ρ≤0.8
	20.0≤m≤50.0	0.8≤ρ≤2.0
	50.0≤m≤100.0	2.0≤ρ≤7.0
100	m≤100.0	ρ≤1.0
	m≥100.0	ρ≥1.0
250	m≥100.0	ρ≤1.0

Note: It is recommended to select a small volume to improve the accuracy.

5.3 Cylinder installation

Install the cylinder as follows:

1) Place the Polyurethane washer on the upper side of the cylinder.
2) Place the screw cap on the upper side of the cylinder.
3) Place the silica gel pad on the bottom of the cylinder.
4) Screw down the cap slowly until gets fixed.
5) Place the tapping apparatus into the hole in the guide bearing.

Note: The cylinder is fragile, handle it carefully.

5.4 Amplitude adjustment

The maximum amplitude is 15mm and the default is 3mm (made up of 1 pc 1mm and 1 pc 2mm tapping washer). More tapping washers are available (1mm, 2mm, or 5mm).
Amplitude = Total height of tapping washer

Figure-2

5.5 Installing Printing Paper

The instrument uses a thermal paper width of 57.5 ± 0.5mm. Printing paper is installed when exporting. The green LED becomes flashing when the paper runs out. Turn off the unit, and then press the round button to open the paper cabinet, remove the paper tube, and load the new paper. Make the thermal side facing up. Close the door, and pull the paper end out from the slot. Turn on the unit, and the green light stops flashing. Press the green LED (green LED also works as a key), and a section of printing paper moves forward. When the unit is turned off, press the green button, at the same time turn on the unit then leave the green LED, it prints a self-check slip.

6. Operations

1) **Cleaning**
   Use the tube brush to clean the inside of the cylinder, or flush it with a solvent such as acetone. If you use a solvent, it should be thoroughly dried before the test.
2) **Drying**
   Typically, the powder is testable in its' actual status. In some cases, the user must dry powder. If the powder is easily oxidized, dry it in a vacuum or inert gas. If the powder contains a volatile substance, do not dry. If it is not possible to be dried, test it in its actual state.
3) **Weighing and inputting**
   Weigh an appropriate amount of the sample. Turn on the machine, press "**WT**", input numbers, and Max 5 digits.
4) **Adding**
   Add all samples into the cylinder and keep the powder surface level. Place the cylinder assembly into the vibration platform.
5) **Tapping**
   - Press the "**TAP NUM**" and enter the tap number. Press the "**START**" until the set number is completed, and the instrument stops automatically. In practice, it is possible to determine the minimum tap number N when the powder volume does not change anymore. For powders of the same kind, except for a special tap number obtained during experiments (not less than N), tap them 2N times. For metal powders in different sizes tapping 3000 times can achieve satisfactory results.
   - Vibration frequency adjustment. Users can turn the knob to select the appropriate frequency. The maximum is 300 rpm. Usually it is 100-300rpm.
6) **Reading and inputting volume**
   If the powder surface is level, read it directly. If not, read both max and min and use averaged results. Keep an estimated value. Press the **"VOL"** and input the volume number.
7) **Calculating**
   After the above step, press **"CAL"**, the computer completes the density calculation based on $\boldsymbol{\rho = m / v}$ and displays the results.
8) **Printing results**
   After calculating and displaying, press the "**PRINT**" when the green indicator light is on.

7. Maintenance

1) The power supply should be between 200V to 240V, in case there is unstable voltage or impulse disturbance, a precision purifying AC power supply is necessary.
2) The equipment should be placed on a table smooth, firm, vibration-free, and percussion-free, to prevent slipping.
3) Handle it carefully when moving it.
4) Do not let liquid flow into or spill inside the instrument.
5) Do not turn the power off and on within 5 seconds.
6) Check the ground cable occasionally.
7) Power may stay inside of the linear bearing during tapping, clean it with a brush. Lubricate the bearing regularly.

8. Troubleshooting

Problems	Reasons	Solutions
Nixietube not lighten	Forget to turn on the unit	Turn on unit
	Fuse burned out	Replace the fuse
Tapping not smooth	Linear bearing lack lubricant	Add some lubricant
No tapping	Forget to turn on the speed adjuster	Turn on the speed adjuster
	Set low speed	Turn the knob clockwise
	Tap finishes or TAP NUM “0”	Reset tap number
Report not clear or blank	Thermo paper installed in the wrong direction or bad paper quality	Check the paper or replace
The printer does not work when pressing PRINT	Out of printing paper	Install new printing paper
LED shows Err 0	WT or VOL “0”	Reset WT and VOL
LED shows Err 1	WT “0”	Reset WT
LED shows Err 2	VOL “0”	Reset VOL

9. Accessories

Standard Accessories

S. No	Accessory Name
1	Measuring cylinders of 25 ml, 50 ml, 100 ml, and 250 ml