

MCP-PD51

An easy solution to measure volume resistivity and conductivity of powders with the new MCP probe.

Powder Resistivity Measuring System

Measuring range $10^{-4} \sim 10^{13} \Omega$

Powder resistivity is an important property as it is different from solid bulk properties as well as single particle properties.

If the powders are used to manufacture products where particle state is maintained, controlling powder resistivity can have an influence to final product specifications.

Hi-esta-UX



Lo-esta-GX



Powder Resistivity Measuring System < MCP-PD51 >

- Built-in load-cell that monitors the applied pressure up to 20kN with high accuracy.
- Direct measurement with quick release of probe unit.

Control and Monitor the Characteristic of Powders via Resistivity

- A wide range of conductive powders can be measured under different pressures using the high accuracy pressure sensor and the unique probe unit (4-terminal / ring electrodes).
- Easy to measure powder resistivity and filling properties with precisely controlled pressure. Optimal for controlling properties of powders.

Uses

- Research and Development
- Quality Control

Applications

■ Carbon Powders

Rechargeable battery electrode materials / Electronic parts materials (condensers, resistors, etc.) / Activated carbon / Cokes / Graphite / Carbon black / Carbon fibers / Carbon nanoparticles etc.

■ Metal Powders

Battery electrode materials / Thin film materials (copper powder, ITO powder, etc.) / Conductive pastes / Conductive paints and coatings.

■ Other Powders

Toners and related powders / Magnetic materials such as Ferrite / Food and pharmaceuticals / Automotive parts / Motor parts etc.

Features

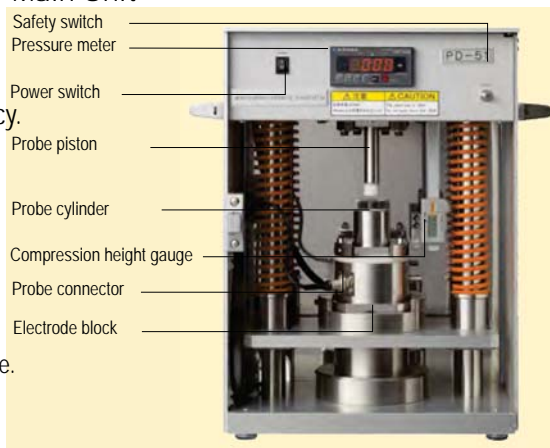
- Shape and size of powders can be monitored by resistivity and volume density / pressure relationship.
- Equipped with 4-terminal electrode and ring electrode essential for measuring the resistivity of powder sample inside the cylinder.
- Easy sampling and cleaning with quick release of probe unit.
- By connecting to Loresta and Hiresta, wide range of resistivity values can be measured.

Specifications

- Maximum load to the powder unit / 20kN (approx. 60MPa)
- Probe unit / Capacity: $\phi 20 \times 50$ mm
- Electrode / 4-terminal method (Electrode interval: 3mm)
/ Ring electrode method (Electrode diameter: 20mm)
- Main unit: Dimensions: W450xD270xH500mm, Weight: 39kg
- Hydraulic pump: Dimensions: W180xD950xH700mm, Weight: 13kg
- Power Source / AC90 - 240V (50 - 60Hz)
- Measuring range / High resistance ($10^3 \sim 10^{13} \Omega$)
/ Low resistance ($10^{-4} \sim 10^{-7} \Omega$)

Measuring Range (Ω)	10^{-4}	10^{-3}	10^{-2}	10^{-1}	10^0	10^1	10^2	10^3	10^4	10^5	10^6	10^7	10^8	10^9	10^{10}	10^{11}	10^{12}	10^{13}
Loresta-GX																		
Hiresta-UX																		

Main Unit

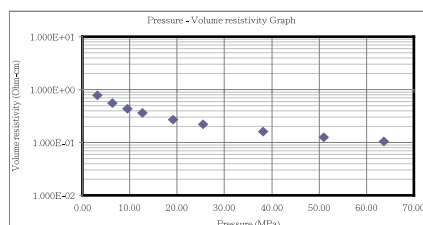


Probe Unit

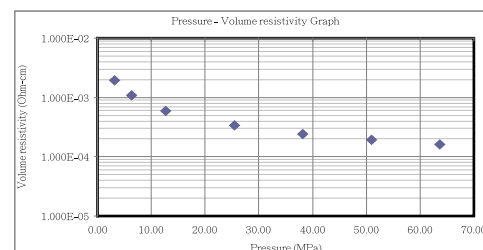


For Low Resistivity
(4 pin method)
MCP-PD511

For High Resistivity
(Ring electrode method)
MCP-PD522



Results									
Sample name		Graphene 0.8g							
No.	Load (kN)	Pressure (MPa)	Thickness (mm)	RCF	Resistance (Ohm)	Volume resistivity (Ohm-cm)	Conductivity (S/cm)	Density (g/cc)	
1	1.00	3.18	4.55	2.970 OK	5.737E-01	7.753E-01	1.290E+00	5.597E-01	
2	2.00	6.37	4.18	3.100 OK	4.248E-01	5.505E-01	1.817E+00	6.092E-01	
3	3.00	9.55	3.92	3.191 OK	3.434E-01	4.295E-01	2.328E+00	6.496E-01	
4	4.00	12.73	3.74	3.254 OK	2.950E-01	3.590E-01	2.785E+00	6.809E-01	
5	6.00	19.10	3.48	3.342 OK	2.341E-01	2.723E-01	3.673E+00	7.317E-01	
6	8.00	25.46	3.28	3.408 OK	1.986E-01	2.220E-01	4.505E+00	7.764E-01	
7	12.00	38.20	3.00	3.494 OK	1.538E-01	1.612E-01	6.203E+00	8.488E-01	
8	16.00	50.93	2.79	3.552 OK	1.274E-01	1.263E-01	7.921E+00	9.127E-01	
9	20.00	63.66	2.65	3.588 OK	1.110E-01	1.055E-01	9.475E+00	9.609E-01	



Results									
Sample name		Nickel 4g							
No.	Load (kN)	Pressure (MPa)	Thickness (mm)	RCF	Resistance (Ohm)	Volume resistivity (Ohm-cm)	Conductivity (S/cm)	Density (g/cc)	
1	1.00	3.18	3.58	3.309 OK	1.647E-03	1.951E-03	5.125E+02	3.557E+00	
2	2.00	6.37	3.37	3.379 OK	9.430E-04	1.074E-03	9.313E+02	3.778E+00	
3	4.00	12.73	3.11	3.461 OK	5.470E-04	5.888E-04	1.688E+03	4.094E+00	
4	8.00	25.46	2.82	3.544 OK	3.370E-04	3.368E-04	2.969E+03	4.515E+00	
5	12.00	38.20	2.62	3.595 OK	2.560E-04	2.411E-04	4.147E+03	4.860E+00	
6	16.00	50.93	2.48	3.627 OK	2.140E-04	1.925E-04	5.195E+03	5.134E+00	
7	20.00	63.66	2.36	3.651 OK	1.860E-04	1.603E-04	6.240E+03	5.395E+00	

Note:

Follow instructions in manuals to correctly install, connect and operate the instruments. Contents of catalogues are subject to change without prior notice when improvements are made in performance. The actual color of the goods may appear different from color printed. All screen images are simulated.

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MITSUBISHI CHEMICAL ANALYTECH CO., LTD.

1623-14 Shimotsuruma, Yamato, Kanagawa 242-0001, Japan

Tel: +81(0)46-278-0056

URL: <https://www.mccat.co.jp/global>