

CTL28 Powder Resistivity Test Apparatus

For measurement of conductivity / resistivity of powder samples to enable identification of highly insulating powders which may create electrostatic ignition risks.

Powders will nearly always acquire electrostatic charge during processing, the level of charge being largely determined by the violence of the process. BS5958 gives ranges of charge levels which might be expected from different processes.

Whether or not these charge levels prove to be a problem, or indeed whether they can be observed at all, depends largely upon the rate at which the charge is dissipated, particularly from the bulked powder. If the bulked powder is ohmic (that is, electric current through the powder is directly proportional to applied voltage for all voltages), an indication of the severity of electrostatic problems to be expected can be obtained by measuring the resistivity of the powder. Please also refer to details of our JCI 155v6 charge decay time analyser (see: DEKRA Process Safety's range of other Electrostatic Measuring Instruments) which is the best measuring equipment for monitoring charge decays of products that have non-exponential, as well as those that have exponential, charge decay times. The powder charge decay times (time to $1/e$) of many powder products are non- exponential in nature and therefore it is important to appreciate both powder resistivity and charge decay data in conjunction when considering electrostatic risks or when applying the data to develop new products and processes associated with those products

Functional Specification and Deliverables

- > Custom manufactured power supply with 500 V, 1 kV, 2 kV, 3 kV (fixed settings) and 0 - 10 kV (adjustable settings for other uses requiring higher voltages)
- > Accuracy +/- 1 V on 500 V range, +/- 10 V (all other fixed settings), within +/- 100 V with 10k V applied on the 0 - 10 kV adjustable range. Maximum current draw from power supply 500 μ A
- > Minimum resistance measurement possible is approximately 1 - 2 M Ω – dependent on sample properties and power supply voltage output tolerances
- > Custom manufactured test cell with guard ring electrode incorporated
- > Picoammeter for measurement of current through or across the test sample (2 nA to 20 mA ranges) – 2 nA range has 10fA resolution +/- 400 fA, Noise 20 fA.
- > Miscellaneous cables

Benefits:

- > Simple to use
- > Small and compact equipment
- > Custom manufactured powder resistivity test cell with built-in guard electrode to minimise errors from surface conduction when volume resistivity measurements are made and from volume conduction when surface resistivity measurements are being made
- > Test cell sits on support base in a precise position so that uniform and reliable pressure is applied to the top of the test substance for every test



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- > In line Transorb over voltage protection unit (for protecting the sensitive pico-ammeter from over voltage)
- > Powder resistivity instruction manual and calibration certificates.

Optional Extras

- > Calibration services

The Following Items are Available at an Additional Cost

- > JCI 155v6 Charge Decay Analyser with JCI 173 Powder Sample support insert for testing charge decay time of powders. (JCI 176 sample support base is included in this optional package)

