

Dielectric Material Test

Keysight Technologies and
MWI Laboratories

Accurate testing of the dielectric properties
of powders, liquids and pliable materials



When testing the dielectric properties of powders, liquids or pliable substances, measurement uncertainties can be introduced due to the movement of the material under test.

A new dielectric measurement technique from MWI Laboratories allows the characterization of powder, soil, or an aqueous solution within a well-defined RF dielectric containment fixture that eliminates the shifting of the material during measurement. It also reduces the requirement for direct contact between the test probe and the material under test.

The new measurement system comprises a Keysight Technologies E4990A impedance analyzer, a MWI 16541b dielectric test probe and calibration kit, a MWI_PD-14 dielectric containment fixture, and a laptop computer pre-loaded with TMACS data collection combined with MWI_PDS-14 reduction and Microsoft Excel software.

Researchers at MWI Laboratories originally developed the test method for studying and improving quality control standards when measuring the dielectric properties of ceramic powders and mud mixtures before they were fired in kilns to produce ceramic heat shields.

The dielectric test system uses advanced mathematical “Morphology Modeling” techniques to produce a detailed model that allows the user to determine the level of uncertainty of the measured results. The technique also provides a better understanding of the detailed effects between the material under test, the waveform produced by the test probe, and the surrounding environment.

- Dielectric testing of powders, liquids and pliable materials
- Containment fixture eliminates movement of material under test
- Reduces measurement uncertainty and the requirement for direct contact between probe and material
- Used with Keysight E4990A Impedance Analyzer
- Aerospace, agricultural, automotive, construction, food/drug, oil/gas and mining industries
- Accurate dielectric measurements of powders, liquids and pliable materials



Dielectric Material Test

The system can be used in applications in aerospace, agricultural, automotive, construction, food/drug, oil/gas and mining industries. It can be used to measure powders such as ceramics, salts, medical powders, crushed or sifted soils; liquids such as food, oils, paints, saline solutions, water; and pliable materials such as mud, putty, sludge etc. MWI also has test solutions for hardened materials using Keysight's Vector Network Analyzers and portable Field Fox Network Analyzers.

With the new dielectric test system from MWI Laboratories and Keysight you can reduce the measurement uncertainty when testing powders, liquids and other pliable substances.

System Components

Keysight Technologies

E4990A	Impedance Analyzer
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MWI Laboratories

MWI 16541B	Dielectric Test Probe and Calibration Kit
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MWI PD-14	Dielectric Containment Fixture
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TMACS	Data collection software
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MWI PDS-14	Data reduction software
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	Laptop computer with Microsoft Excel
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To learn how this solution can address your specific needs please contact

Keysight's solutions partner,
MWI Laboratories

www.keysight.com/find/mwi



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Extending our solutions to meet your needs

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Material-Wave Interactions (MWI) Laboratories is a spin-off from Arizona State University with exclusive rights for two research patents: the revolutionary Gaussian Beam and Linearly Polarize Resonate Loop Technologies. MWI is the premier provider of "Non-Destructive" In-Process Quality Control and Laboratory Quality Assurance Radio Frequency testing services used to measure the anisotropic/dielectric/magnetic material properties.

www.mwilab.com

For information on Keysight Technologies' products, applications and services, go to

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