

Impedance measurement of organic-solvent

Key words

- CorrosionSolution
- Coating Dielectric material

Solid electrolyte

Frequency Response Analyzer FRA5087 / FRA5097

OUTLINE

For example, a solution or a solvent, such as a dielectric material, if the impedance is very high, the method adding a voltage of several V, and measuring small current by shunt resistance, doesn't work properly due to the noise. In such case, the impedance is measured more precisely with a high voltage applied by bipolar power supply.



In the above system, an experimental result of measuring the impedance of the cooking oil is shown below. This impedance characteristic is measured in the frequency range up to 1kHz from 1Hz. it was measured after leaving for one week and immediately after opening.



▲ The impedance characteristics immediately after opening

The Impedance characteristics after leaving for 1 week

POINT

In the measurement of the solution and the solvent, which has very high impedance, measuring the impedance by the following method.

- Voltage: AC signal from the FRA is amplified by power amplifier and apply to the DUT.

-Current: A very small current signal to be detected and amplified by the programmable current amplifierCA5350 and converted to a voltage

-Impedance: The voltage value and the current value were measured and calculated by the FRA.

😑 Because the measurement circuits can be freely configured, Applying high voltage or using the current measurement by current amplifier is possible. This is unlike the LCR meter that there is a limit to apply limited voltage or small current measurement.

Frequency Response Analyzer

FRA5087 / FRA5097

- Frequency range 0.1mHz to Oynamic range : 140 dB 10MHz / 15MHz
- Gain accuracy : ± 0.05 dB Phase accuracy : $\pm 0.3^{\circ}$
- Maximum input
- voltage:250Vrms
- Auto ranging