

Moisture Measurement With The PTL110 Capacitance Transducer

The PTL110 capacitance transducer can be used to measure moisture contents of a wide range of materials in solid or particle format. The measurement is non-destructive and either individual samples or complete packs of products can be measured on a continuous basis. Moreover, if the sample material is homogeneous then the measurement can be made to be largely independent of sample size or mass. The measuring technique is instantaneous and is based on measuring the capacitive admittance of a sample when it is placed in a test cell. This technique readily lends itself to application to conveyed products. Depending on the shape of the sample, the test cell may consist of a set of either parallel or adjacent electrodes. Examples of simple parallel and adjacent electrode test cell configurations are shown below.

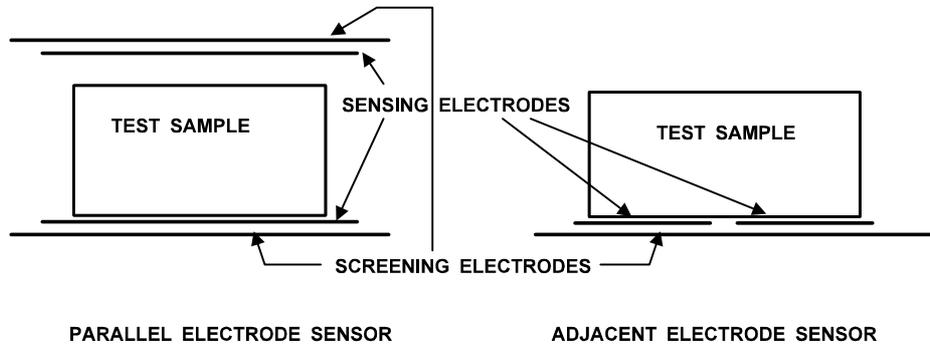


Fig1: Basic Capacitance Test Cells

The technique requires the test cell to be calibrated initially using samples of material of known moisture content. The measured parameters of capacitance C , conductance G , or their ratio G/C may then be used to determine the moisture contents of unknown samples of similar material. For samples with moisture contents below 20% by weight, the ratio of G/C is independent of the sample size or mass and is a particularly useful indicator of moisture content.

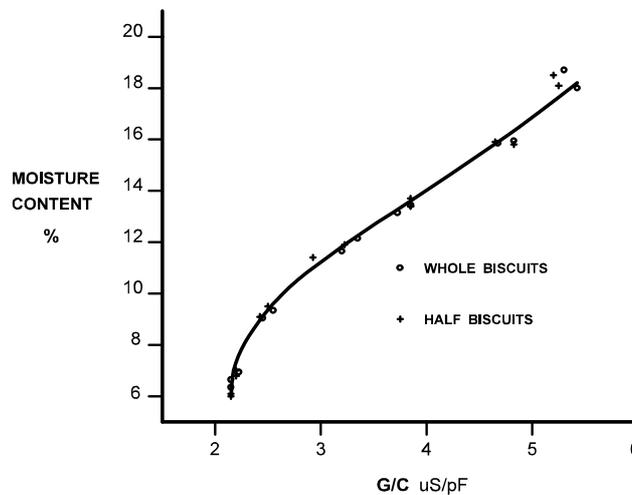


Figure 2. Measured moisture content of cereal biscuits

A set of measured values of G/C for cereal wheat-flake biscuits taken from various stages of the production process is shown below, for both whole and half biscuits, and confirms that the technique is largely unaffected by the size of the sample.

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