

Measuring Moisture in Food

Cost Savings and Consistent Quality

Keeping the moisture content of food materials strictly within specifications is key to operational excellence and optimal properties of the final product. This application note describes how METTLER TOLEDO Halogen Moisture Analyzers advance the analysis of food materials and deliver precise data on moisture content within minutes.



Food production line

Introduction

Moisture in food and food ingredients is frequently analyzed before, during and after the manufacturing process to ensure the final product meets the desired overall properties and standards.

This application note illustrates the fast and easy moisture determination with METTLER TOLEDO Halogen Moisture Analyzers, exemplified with corn meal.

Moisture determines food quality

Texture, taste, appearance, mouth feel as well as shelf-life are affected by the water content. The product must retain its properties up to the time when it is consumed. Therefore, ensuring the optimal moisture content is a key aspect of quality control.

Legal requirements and economical aspects

When truckloads of raw material are delivered to the factory, the moisture content is now routinely verified to ensure specifications are met. This protects the buyer from paying for water instead of valuable supplies.

Optimal moisture for optimal processing

The frying temperature of french fries is adjusted to the moisture content of the potatoes to guarantee that the fries are always golden and crispy. Precise monitoring of moisture during production empowers the plant operator to apply optimal settings for best product quality and highest production yield.

Halogen Moisture Analyzers for quick and reliable results

The drying oven is the typical reference method noted in food regulations¹. However, quality and process control of raw materials, semi-finished and final products usually needs information on

moisture much quicker to enable timely interventions. A much faster and cost-effective alternative to the drying oven are the Halogen Moisture Analyzers from METTLER TOLEDO. These too are based on the LOD (loss on drying) principle but provide reliable results in minutes instead of hours. The benefit is obvious: fast testing enables 100% control of goods, e.g. on the receiving dock: "After the first out of spec delivery was detected, the instrument was paid for" a content customer states.

HC103: perfect for the laboratory and production floor

Whether you work in a busy laboratory or a harsh production environment, the robust design guarantees reliable results and a long instrument lifetime. The intuitive user interface guides you through the workflow with step-by-step instructions on the large, bright 7" color touchscreen.

Validated food methods

The HC103 stores up to 20 tailor-made methods which are easily accessible via shortcuts on the home screen. Up to 100 results, with drying curves, can be stored in the instrument. Benefit from our know-how by uploading methods from our vast method library via USB; all methods are validated against an official drying oven standard.



Intuitive operation and storage for many methods

¹ National food regulations such as SLMB (Swiss Food Regulation)

Material and Methods

- HC103 Halogen Moisture Analyzer
- Corn meal

Instruction how to use HC103 to determine moisture in corn meal

1. Press shortcut 'Corn meal'

- Drying program: Standard
- Drying temperature: 160 °C
- Switch-off criterion: 3 (1mg/50sec)



2. Weigh approx. 5 g of corn meal into tared sample pan



3. Close lid to begin measurement



4. The end result and the real-time drying curve is displayed



Results

The moisture content of corn meal is measured with the HC103 for quality control. The result obtained is 14.36 %MC.

This moisture content guarantees perfect product quality and processability over the entire shelf-life.

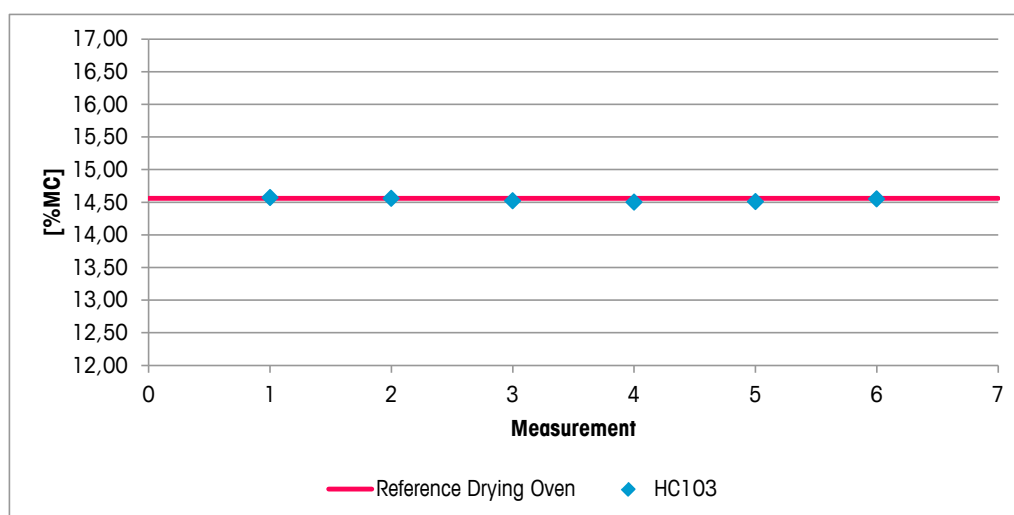
Correlation HC103 versus Drying Oven

To prove precision of HC103 results, a comparison study with corn meal is performed. Results are compared to the drying oven method (Swiss Food Manual, 2006).

The study shows that the HC103 achieves highly repeatable results corresponding to the drying oven in minutes instead of hours.

	HC103			Drying Oven		
	Mean [%MC]	SD	Time [min]	Mean [%MC]	SD	Time [min]
Corn meal	14.54	0.03	12	14.56	0.01	90

Table 1: Results of moisture content determination by HC103 (6 measurements) and by drying oven. MC = moisture content, SD = standard deviation.



Results

The HC103 is well suited for the moisture analysis of raw materials, intermediate products and finished products, both on the factory floor and in the lab.

The METTLER TOLEDO Halogen Moisture Analyzers ensure optimal product quality and maximize production yield by providing precise and reliable moisture information within minutes.

www.mt.com/moisture

For more information

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