Flour & Milling Analysis by FT-NIR

Application Note N305

Cereals are the cornerstone of daily nutrition for most people around the world. The flour & milling industry plays an essential role in turning cereals into flours for human consumption.

Bruker offers solutions for the flour & milling industry for the analysis of wheat, assorted flour types, as well as co-products based on FT-NIR spectroscopy. Ready-to-use NIR calibration packages give you results in seconds and are a highly cost-effective solution compared to conventional testing methods.

Wheat Intake: Know what you get

It is essential to verify the grade as well as the quality of wheat before forwarding it to the milling process. This way, the maximum yield and the correct quality of flour can be achieved. Parameters like moisture, protein, ash and wet gluten content can be monitored with FT-NIR spectroscopy within seconds.

Conditioning: Maximize the yield

FT-NIR spectroscopy helps you to monitor the moisture content of the wheat in order to optimize the conditioning step and addition of water.

Flour Milling: Optimize the process

The analysis of ash content is essential during the milling phase. Monitoring the ash concentration serves as a benchmark for the production process. Moreover, parameters like protein content or gluten content can be utilized to optimize the blending process for increased profitability. These parameters can easily be assessed on-line or at-line with FT-NIR.

Flour Quality: Monitor the final product

The suitability of a wheat flour for baking purposes is traditionally assessed by an array of rheological and chemical tests. Most of these labor-intensive tests like protein content, Alveograph or Extensograph testing can be replaced by FT-NIR enabling substantial cost reductions and process improvements. Moreover, due to the speed of FT-NIR, a high sample throughput can be achieved.

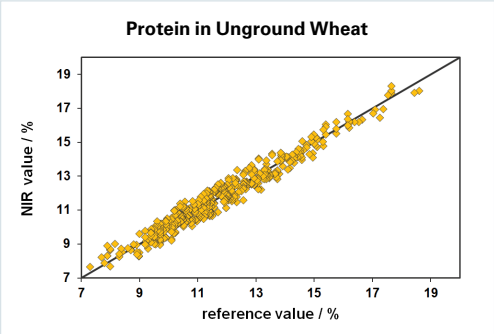
Parameters commonly analyzed with FT-NIR spectroscopy:

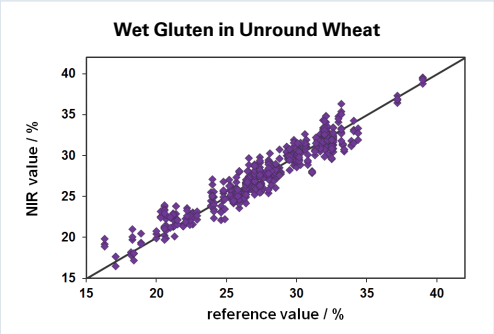
Wheat & Flour
- Moisture
- Protein
- Ash
- Wet Gluten Content

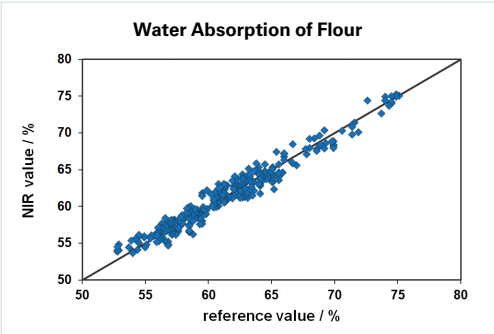
Additional Parameters for Flour
- Alveograph (L, P, P/L, W)
- Resistance
- Extensibility
- Water Absorption

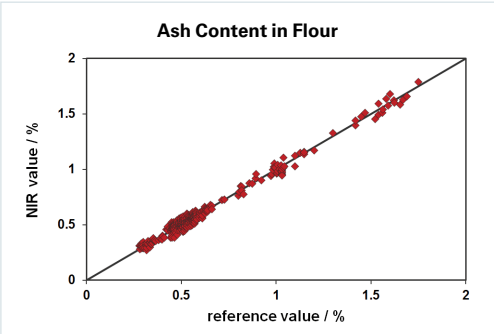
Expect high standards

Bruker uses BIPEA proficiency test samples for calibration development and validation. BIPEA is a European non-profit organization located in France which organizes interlaboratory comparison programs and proficiency testing schemes.









Calibration models:
Models shown here display validation results for four example parameters in a set of wheat and wheat flour data.

FT-NIR Spectrometers: Bruker Optics offers various FT-NIR spectrometer models for lab, at-line and on-line applications:

TANGO

FT-NIR analyzer for routine use in the lab

MPA II

Multi Purpose Analyzer for maximum flexibility

MATRIX-F II

Process monitoring with probes and sensor heads

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Bruker Optics is ISO 9001, ISO 13485, ISO 14001 and ISO 50001 certified.