



Application Note AN N305

Flour & Milling Analysis by FT-NIR

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

Bruker offers solutions for the Flour & Milling industry for the analysis of wheat, various flour types as well as co-products based on FT-NIR Spectroscopy. Ready to use calibration NIR 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 in order 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

If a wheat flour is suitable 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 substituted by FT-NIR leading to 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

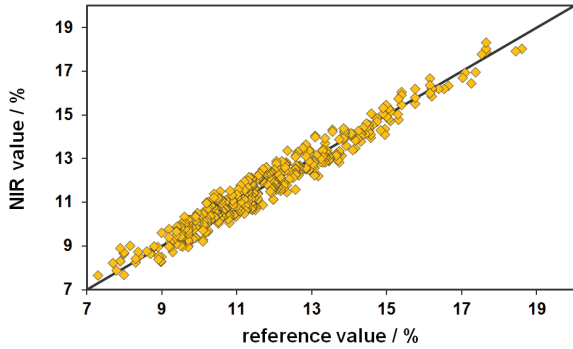
Wheat & Flour

- Moisture
- Protein
- Ash
- Wet Gluten Content

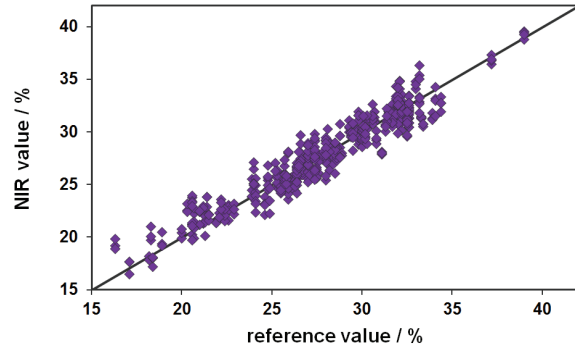
Additional Parameters for Flour

- Alveograph (L, P, P/L, W)
- Resistance
- Extensibility
- Water Absorption

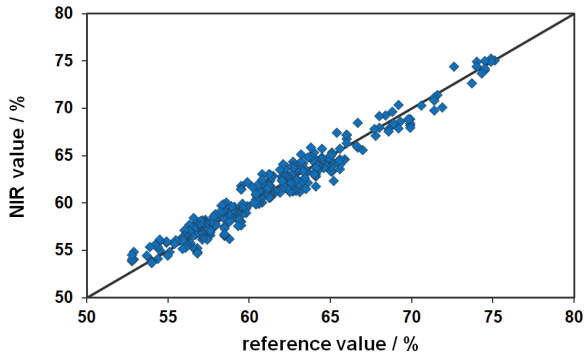
Wheat, unground: Protein



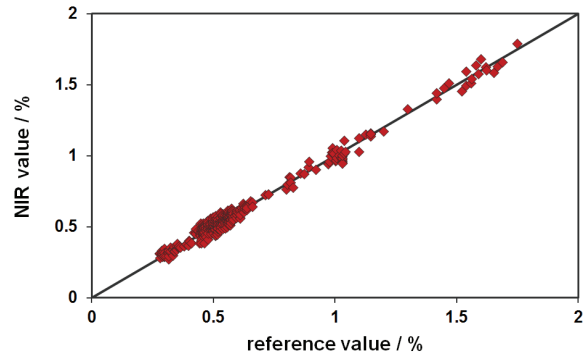
Wheat unground: Wet Gluten



Flour: Water Absorption



Flour: Ash



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-I



At-line analysis with optional NEMA4/IP66 protection.

MATRIX-F



Process monitoring with probes and measurement heads.

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