

Technical Note:

Brabender GlutoPeak – Rapid Flour Check

Sergej Gall, Jessica Wiertz



GlutoPeak – Rapid Flour Check

The GlutoPeak is a fast rheological method for the characterization of wheat flour. It can be used to quickly and reliably assess flour and gluten quality and to classify grain and flour batches. Conventional methods for analyzing raw material quality are often more laborious and time consuming than the GlutoPeak, which requires less than 5 minutes per test with minimal associated sample preparation and clean up.

A new evaluation option, the Rapid Flour Check, has now been developed to expand our evaluation parameters. With only 9g of flour and 9g of distilled water, you can now get good correlations with the protein content, wet gluten, Farinograph water absorption and Alveograph W-value, in addition to the general and extended evaluation points.



Figure 1 – Brabender GlutoPeak

Adding value across the market value chain

The new Rapid Flour Check GlutoPeak option can be useful for the following groups:

- Breeders and grain traders
- Millers and bakers
- Starch producers
- Researchers

It can be useful for breeders to aid in rapidly screening gluten quality in early generation breeding lines, especially when considering the small sample size requirement.

Grain traders and millers can use the GlutoPeak to efficiently manage their incoming raw materials and silo occupation, or to control process adjustments within the mill.

For bakers, the device can be used for rapid analysis of incoming raw materials and for checking specifications.

Researchers can rapidly characterize gluten aggregation kinetics and associated parameters for a more in-depth exploration of flour functionality and performance potential.

Measuring principle and method

Rheological measurement with the GlutoPeak is performed by measuring the torque, which results in good correlations to other more time-consuming rheological methods.

The method is distinguished by its simplicity and speed, and consists of the following basic steps:

- Weigh 9g of flour and 9g of distilled water
- Push down on the measuring head
- The software automatically starts the test and performs the evaluation

The measurement is carried out at a constant temperature of 36°C and at a rotational speed of 2750 rpm. During the measurement, the gluten is washed out and aggregates after a characteristic time, which is indicated by a peak in the torque curve. As a result of further shearing, the aggregate disintegrates, resulting in a drop in the torque curve.

Evaluation

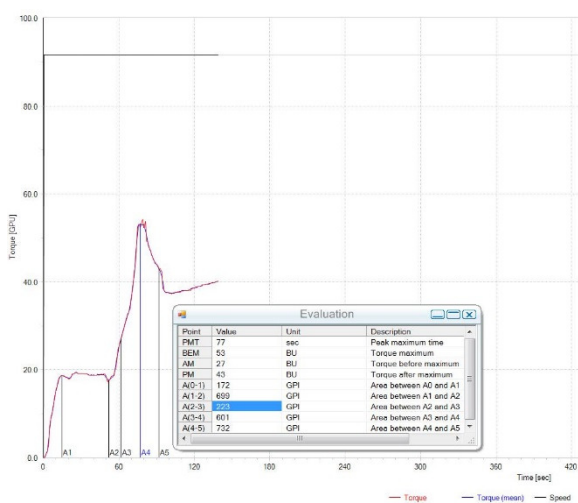


Figure 2: Extended Evaluation

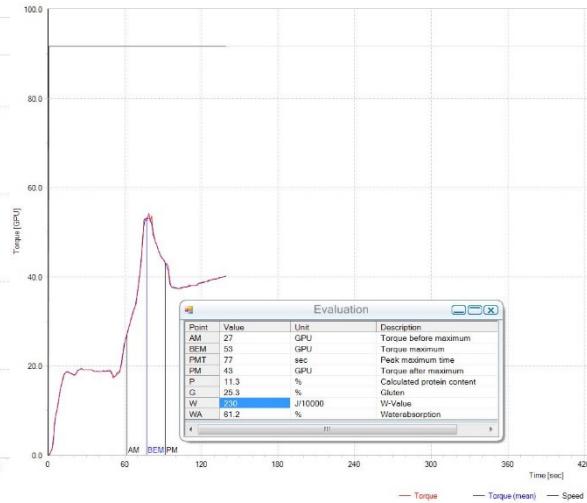


Figure 3: Rapid Flour Check Evaluation

General GlutoPeak evaluation points:

BEM: Maximum torque

PMT: Time of maximum torque

AM: Torque 15 sec. before maximum

PM: Torque 15 sec. after maximum

Using the extended evaluation, the area under the curve is added and broken down into segments for more in-depth analysis of samples (Figure 2). The customer has the opportunity to define different quality standards for each application.

With the new Rapid Flour Check evaluation, the customer also receives correlations to established chemical and physical measurement methods (Figure 3). The parameters protein content, wet gluten, Farinograph water absorption and Alveograph W-value are automatically determined by the software.

Correlations

Brabender GmbH & Co.KG
Kulturstr. 51-55
47051 Duisburg
Germany

Tel.: +49 (0) 203-7788-0
Fax: +49 (0) 203-7788-100
brabender@brabender.com
www.brabender.com

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The Rapid Flour Check method for the GlutoPeak shows good correlations with protein, wet gluten, Farinograph water absorption and Alveograph W-value. Table 1 displays the correlation values for each parameter. A plot of actual Alveograph W-values versus those predicted by the GlutoPeak is shown as an example in [Figure 4](#).

Table 1: GlutoPeak Correlations

Correlations (r)	Protein	Wet gluten	W-value	Water absorption
GlutoPeak Protein	0.89			
GlutoPeak Wet gluten		0.89		
GlutoPeak W-value			0.92	
GlutoPeak Water absorption				0.89

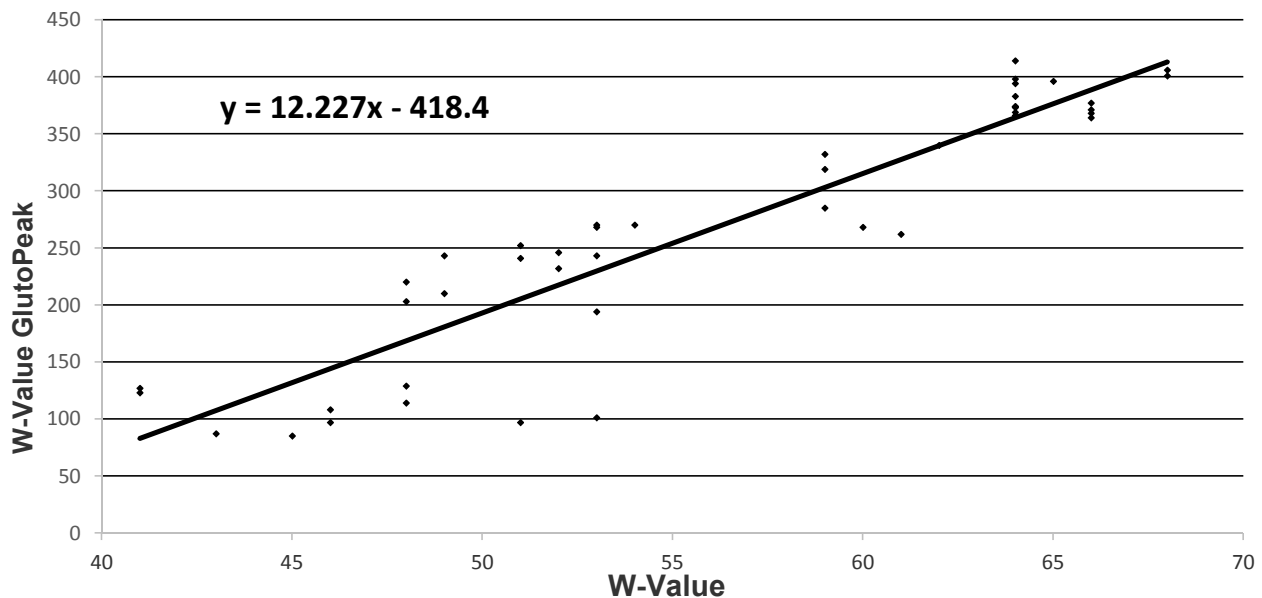


Figure 4: Correlation of GlutoPeak predicted vs. actual Alveograph W-Value

Conclusion and outlook

The GlutoPeak is an innovative rapid method for screening cereals and flour. It extends the portfolio of classic flour analytics and enables efficient process decisions in raw material reception and production lines. Customers report that their use of the GlutoPeak has considerably shortened the amount of time needed for raw material analysis and decisions regarding silo occupation.

Due to the new Rapid Flour Check evaluation, the customer is now given the opportunity to use the GlutoPeak for the direct determination of defined parameters such as, for example, protein content. The GlutoPeak software is continuously being developed to add value and insight to the decision making process for customers. New methods for the GlutoPeak analysis of other raw materials, such as vital wheat gluten, are planned for the future.