

THE COMPLETE SOLUTION FOR
THE MILLING INDUSTRY

MIXOLAB

Quality control for
cereals, flour and
milling products.



Compliant with
the following standards
ICC 173/1
AACC 54-60-01
NF V03-765
NF V03-764
GOST P 54498-2011



CHOPIN
TECHNOLOGIES

MEASUREMENT PRINCIPLE

The Mixolab measures the consistency of dough subject to the dual stress of mixing and a temperature rise.

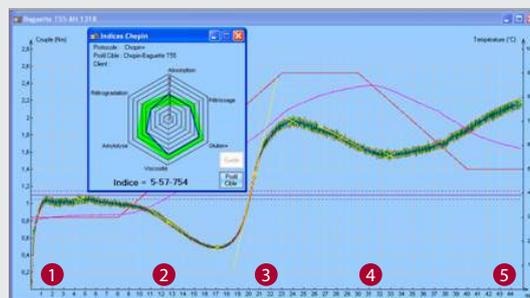
The Mixolab analyses protein and starch quality using a 50 g flour sample.

1. MIXOLAB STANDARD

The “Chopin +” standard protocol is used for analyzing :

1. Behavior during mixing (hydration, stability, etc.)
2. Protein quality
3. Starch gelatinization
4. Amylase activity
5. Starch retrogradation.

MIXOLAB STANDARD



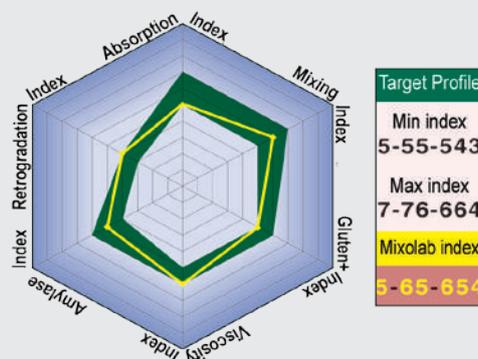
2. MIXOLAB PROFILER

The software measures all the standard curve parameters and converts them into six qualitative indexes :

1. Absorption index
2. Gluten+ index
3. Amylase index
4. Mixing index
5. Viscosity index
6. Retrogradation index

These parameters are perfectly suited to set simple and effective criteria in the specifications.

MIXOLAB PROFILER

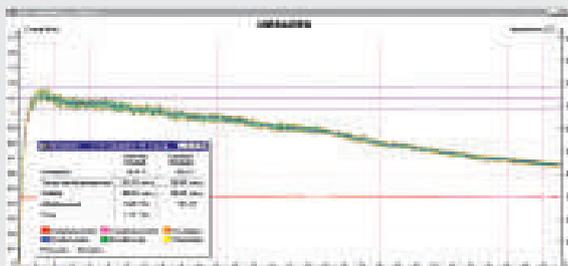


3. MIXOLAB SIMULATOR

The Simulator protocol gives results fully comparable to the Farinograph® :

- Hydration
- Weakening
- Development time
- Stability

MIXOLAB SIMULATOR



BENEFITS

✓ Standardized

Compliant with ICC173/1, AACC 54-60-01, NF V03-765, NFV03-764, GOST P 54498-2011 standards.

✓ Simple

Automatic water addition, fully removable mixer and quick cleaning.

✓ User-friendly

PC control for complete traceability.

Software available in more than 10 languages.

✓ Versatile

Suitable for both flours and ground products.

✓ Flexible

Fully customizable protocols.

✓ Adaptable

Used in Quality Control and R&D.

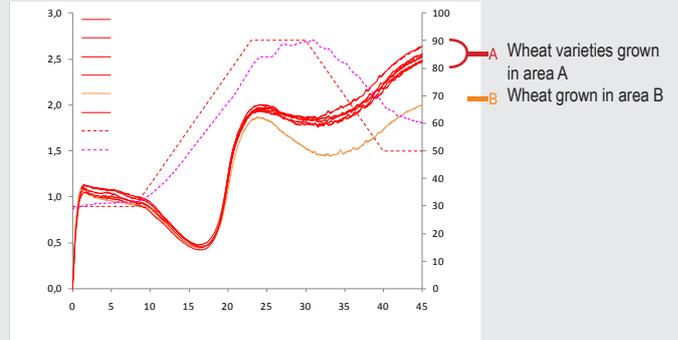
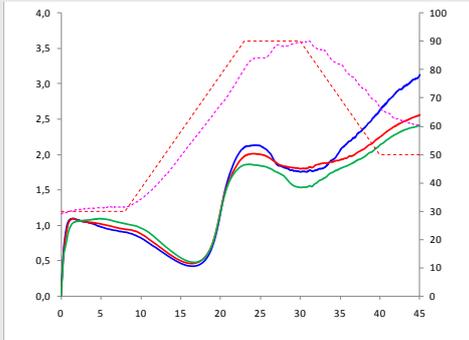


ANALYZE GROUND WHEAT

THE MIXOLAB HELPS SELECT WHEAT.

The Mixolab can be used to differentiate the main flour categories (cake, French bread, pan bread, etc.) based on the mixing behavior and starch gelatinization (C3-C2).

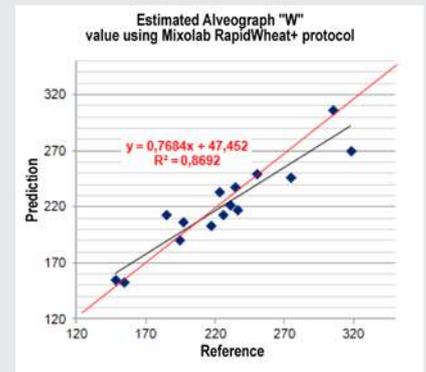
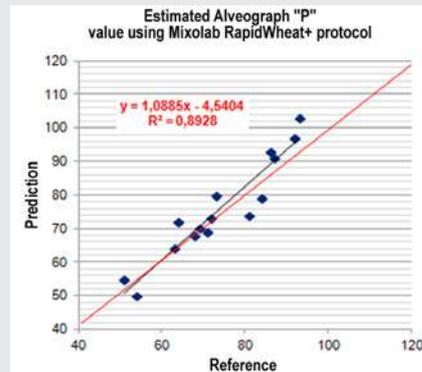
The Mixolab is also capable of differentiating various wheat grades within the same variety (growing method, region, climate, etc.).



THE MIXOLAB ESTIMATES ALVEOGRAPHIC PARAMETERS

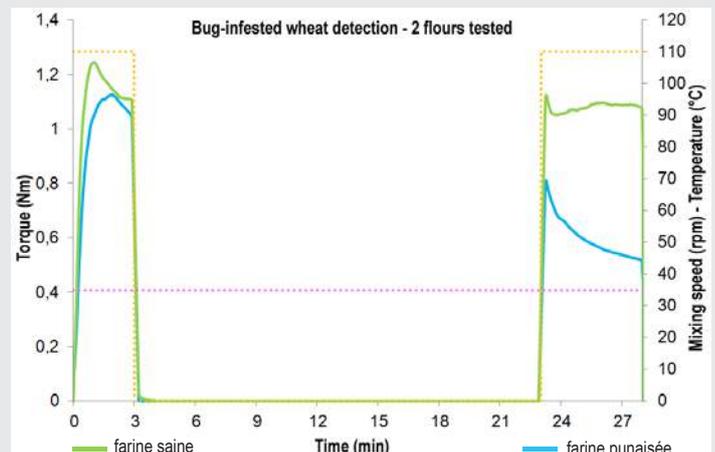
Upon wheat reception, the Rapidwheat+ protocol estimates, in less than 15 minutes (using ground wheat), its quality by predicting the Alveographic parameters.

IMPORTANT: the prediction model should be checked, reinforced and/or amended for each new harvest (same as for NIR calibration).

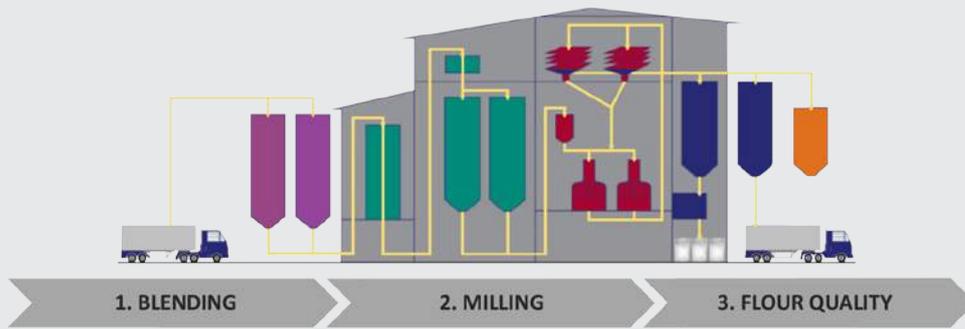


THE MIXOLAB DETECTS BUG-INFESTED WHEAT

Using a specific variable speed protocol of 28 minutes, the Mixolab detects bug-infested wheat. The principle consists in measuring the drop in consistency after a resting phase.

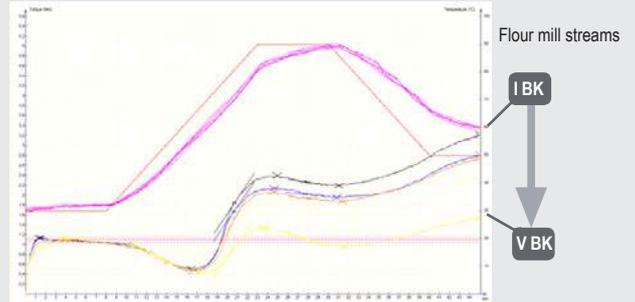


CONTROL THE PRODUCTION PROCESS



ANALYZE THE VARIOUS FLOUR MILL STREAMS

Analyzing the various flour streams (break and reduction flours, sizings, middlings, tailings) with the Mixolab helps **ensure a consistent production**.
The flour streams are fully characterized, incorporating the protein and starch quality.



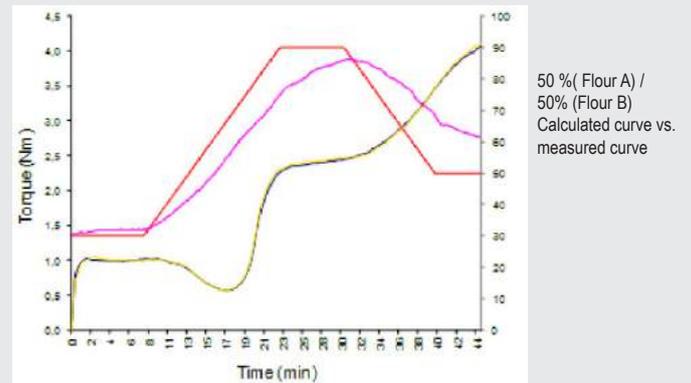
APPLICATION OF BLEND LAW

The Mixolab helps to determine blend composition.

In the example opposite, the calculated curve of the blend (shown in yellow) is identical to the curve measured with the Mixolab (shown in green).

It is thus possible to anticipate the behavior of a flour blend with the Mixolab.

It simulates the Mixolab results for a blend of several flours analyzed individually and saved in the database.



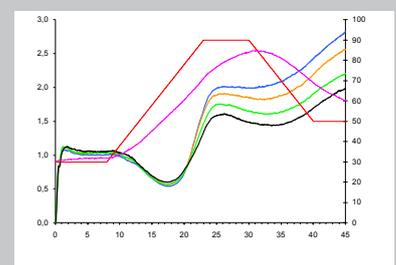
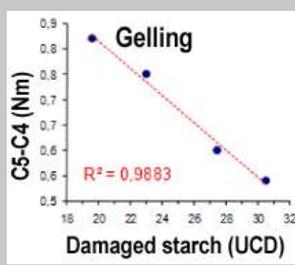
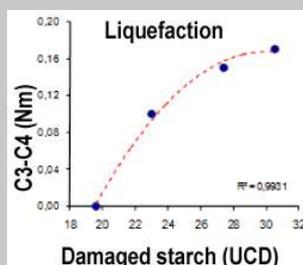
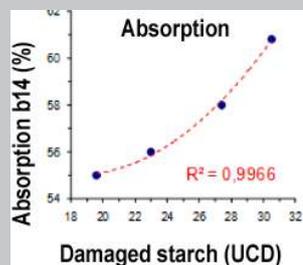
FLOUR QUALITY: EXAMPLE OF DAMAGED STARCH

The Mixolab detects any process deviation very early.

The impact of damaged starch on the rheological behavior of dough is clearly visible on the Mixolab curve.

In a single test, the following points are identified :

- ✓ Water absorption increases (C1)
- ✓ Amylase activity intensifies: difference between C3 and C4 increases
- ✓ Slower retrogradation (the product has a longer shelf-life): difference between C5 and C4 decreases

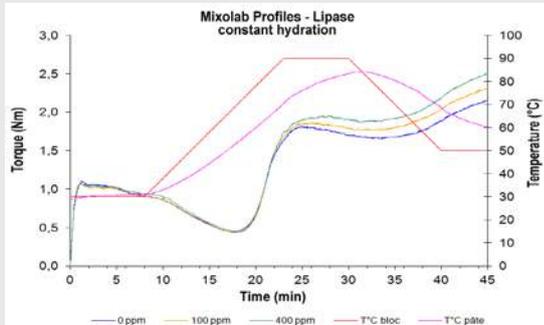


IMPROVE FLOURS

THE MIXOLAB CAN BE USED TO SELECT THE RIGHT ADDITIVE TO IMPROVE FLOURS

The Mixolab software and a series of accessories have been specially developed to study the impact of additives. A bread-making flour not meeting customer quality criteria can be corrected using an **additive selected using the Mixolab**.

Example opposite: lipase effect



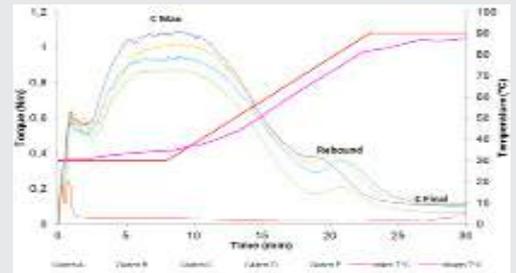
Nozzle suitable for adding liquid



Addition of liquid additive

VITAL WHEAT GLUTEN ANALYSIS

The **Vital Wheat Gluten (VWG)** is a key improver in the cereal industry. With the **Wheatgluten1 protocol**, it is now possible to obtain an analytical and repeatable analysis of **VWG** quality and its impact on the rheological properties of dough.



GUARANTEE CONSISTENT DELIVERY QUALITY

PROFILER

The Profiler is a unique tool converting the Mixolab curve into 6 indexes. Incorporated in the specifications, it sets simple but comprehensive criteria. It thus helps guarantee consistent flour quality.



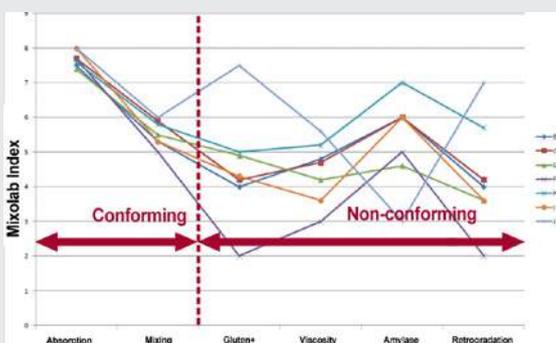
1. Define a specific target profile based on 10 samples



2. Flour IN (conforming)



3. Flour OUT (non-conforming)



In the example (lift corner), conventional analyses focusing on mixing properties are not able to detect non-conforming flours. **With the comprehensive Mixolab analysis, non-conforming samples are detected with certainty.**

Method

The method is simple and the same for developing any predictive model :

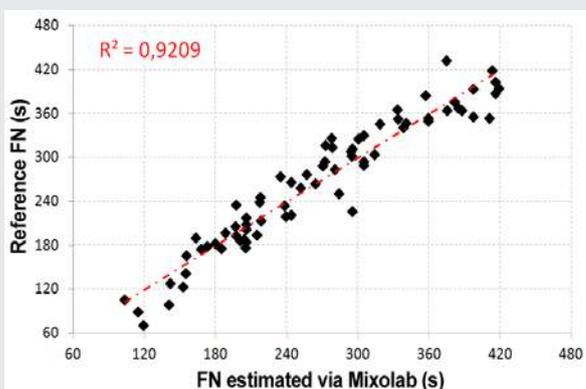
- Test samples on Mixolab.
- Compare the results with “reference” method via a statistical tool to create a prediction model.
- Validate the model with new samples.



The Applications laboratory has developed different models. The performances are shown in the table on the right.

Equipment	Parameter	Matrix	Mixolab prediction (r ²)
Amylograph	gelatinization peak	white flour	0,929
		rye flour	0,87
Extensograph	maximum resistance	white flour	0,88
	extensibility		0,74
	energy		0,9
	ratio		0,77
RVA	peak	white flour*	0,76
	holding strength		0,7
	final viscosity		0,89
	setback		0,85
Falling Number	Falling number	white flour	0,9
		wholegrain	0,92
		rye flour	0,88
Farinograph	Hydration	white flour	0,99
	Development time		0,96
	Weakning		0,806
	Stability		0,883

Wheat - Wholegrain



BREAD MAKING CORRELATION

Bread making tests remain a reference method for assessing the baking quality of a flour. Prediction models have been developed using the Mixolab for Belgian bread making (CRA-W), French bread making (NF V03-716), “Sponge and Dough” bread making (AACC 10-11.01) and Russian bread making (GOST). The Mixolab predicts each bread making method accurately*.



- Over 90% of the samples tested have an accurately predicted volume (within repeatability limits).
- The main parameters can be predicted for the “Sponge & Dough” test.

Performance of the models developed			
	Range	Limits	Spl. in*
Volume (cm ³)	1963-2650	150	100%
Absorption (%)	55-63	1.5	91%

* % of predicted samples with an error of less than ± once the limit (limit set by partner)

- 88% of the samples tested have an accurately predicted volume.
- It is possible to predict the main parameters of the French bread making test.

Performance of the models developed			
	Range	Uncertainty NF V03-716	Spl. in** NF V03-716
Volume (cm ³)	1963-2650	225	88%
Absorption (%)	55.5-65.3	2.5	99%
Total score (/300)	104-286	31	77%
Dough score (/100)	17-100	13	76%
Crumb score (/100)	76-100	7	92%
Bread score (/100)	5-92	20	81%
Crumb score (/100)	76-100	7	92%
Bread score (/100)	5-92	20	81%

** % of predicted samples with an error of less than ± once the limit (limit set by standard)

*Models to be defined individually

ANALYZE MUCH MORE THAN WHEAT FLOUR

The Mixolab analyzes wheat flour with the Chopin+ protocol, but also has the flexibility required to analyze **barley, rye, rice, corn, quinoa**, spelt, kamut, triticale, millet, fonio, teff, buckwheat.

The Mixolab is thus an essential tool for defining **gluten-free** blends with given rheological properties.

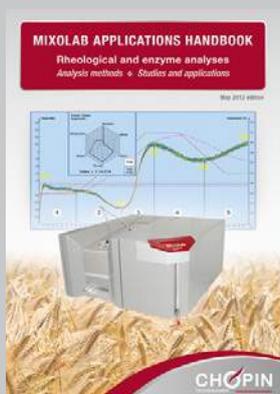
The Chopinwheat+ protocol is specific to the analysis of whole wheat flour.



ACCESS CHOPIN TECHNOLOGIES SERVICES

MIXOLAB APPLICATIONS HANDBOOK

Visit www.chopin.fr and discover the new Mixolab Applications Handbook with the results of over 200 studies.



CT CENTER

Become an expert on your CHOPIN Technologies systems. The CT Center offers you training to gain more in-depth knowledge on your Mixolab and master its use.



APPLICATIONS LABORATORY AT YOUR SERVICE

Experts are on hand to help you deal with any issues, for developing models or performing specific tests.



TECHNICAL DATA

▼ Technical characteristics

Power supply	220/240 V - 50/60 Hz
Power	1000 W
Net weight	33 Kg
Dimensions(mm)	L 460 x P 505 x H 270
Volume	0.06 m ³

Ordering information :
Code : MIXOLAB



CHOPIN Technologies in the world



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