



ICC-Standard no. 114/1
AACC Method no. 54-10.01
ISO 5530-2

Extensograph®-E

For measuring the flour quality
and stretching behaviour
of dough



**SOFTWARE
UPGRADE**



MetaBridge®
Brabender

New software - now available
Track your measurements from anywhere
and anytime with the MetaBridge Controller.



... where quality is measured.



The application of constant flour qualities is of decisive importance for the milling and baking industries. Different baking products require different demands regarding the flour quality.

Use the Brabender Extensograph-E for measuring the stretching properties of your dough, in particular the resistance to extension and the extensibility, to make reliable statements about the baking behaviour of the dough.

Like no other instrument, the Extensograph-E shows the influence of flour additives like ascorbic acid, enzymes (e.g. proteinases), and emulsifiers and thus permits to determine the rheological properties of each flour and to adjust the "rheological optimum" for the respective purpose.

Testing flour quality:

- Stretching behaviour of the dough
- Baking characteristics
- Influence of flour additives
- Rheological optimum

Extensograph-E

Test procedure

Before starting the test in the Extensograph-E, prepare your sample dough from flour, distilled water, and salt in the Farinograph. This ensures objectivity and reproducibility during dough preparation and a constant starting consistency.

After a certain proving time, the dough is stretched until rupture in the Extensograph-E. The force exerted is measured and recorded. This procedure is repeated three times.

Standard and short method

There are several standards describing in detail the Extensograph-E test procedure:

- ICC-Standard no. 114/1
- AACC Method no. 54-10.01
- ISO 5530-2
- RACI, GB/T, GOST R, IRAM, FTWG, and others...

Apart from these standard methods, there are accepted short methods which allow to save time with reduced proving times that are similar to those in production - the results correlate very well with those from the standard methods.

Menu-guided test procedure

The program guides you through the entire test. Clear on-line diagrams show the test progress.

The evaluation is not limited to the standard methods - you can, just as well, run tests without duplication and with any proving times.

The software manages the tests of a day and shows for each sample which proving times have already been completed.

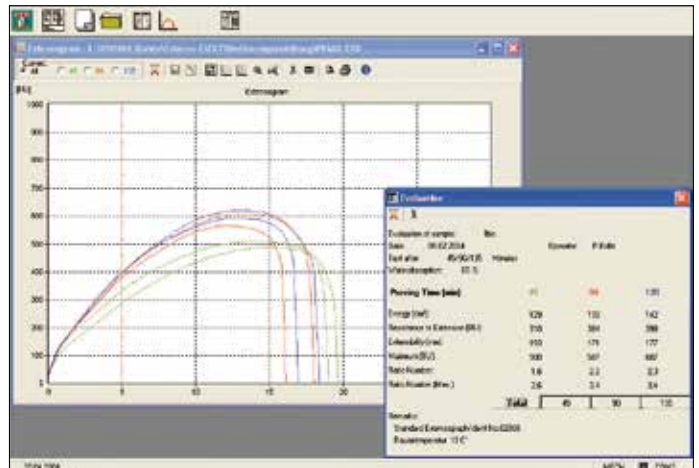
The Extensogram

The Extensogram, recorded online and represented as a color diagram on the monitor, shows the exerted force as a function of the stretching length (time).

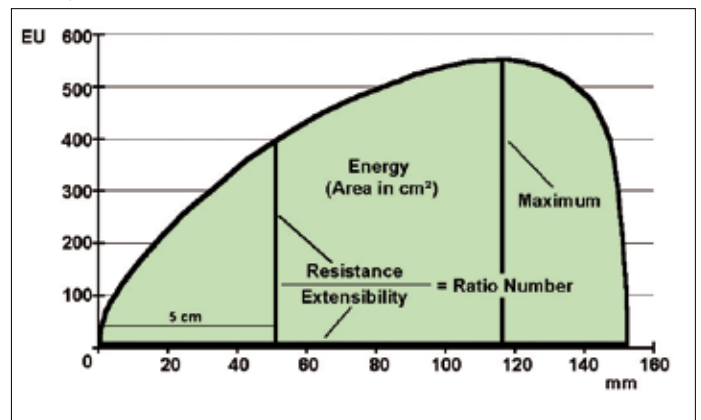
The quality of flour and additives

is made evident by following parameters:

- Shape of the measuring curve
- Area below the curve
- Numerical values of the evaluation points



Extensogram



Scheme Extensogram

Automatic test evaluation

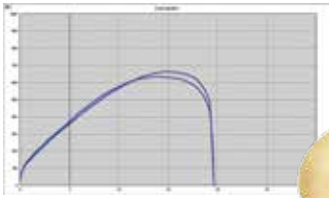

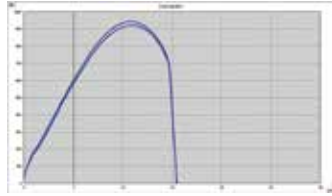

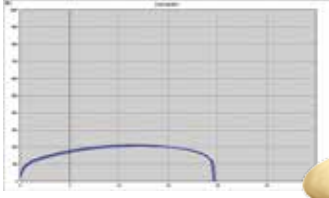

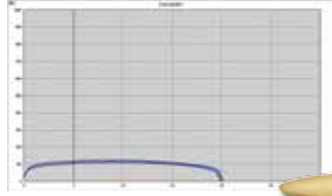
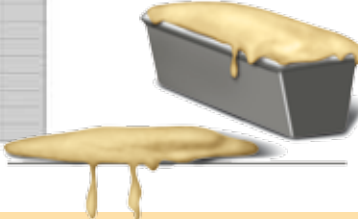
The Extensogram includes

- Resistance to extension (5 cm)
- Resistance to extension (Max.)
- Extensibility
- Area below the curve (energy)
- Ratio number (Resistance 5 cm / extensibility)
- Ratio number (Max.) (Resistance max. / extensibility)

From these values, the rheological properties of the respective flour and the influence of flour additives (ascorbic acid, enzymes, emulsifiers) on the flour quality can be clearly recognized.

Furthermore, the "rheological optimum" for the respective application of the flour can be determined and adjusted on the basis of the evaluated data.

Extensogram profiles of different flour qualities

 	 
<ul style="list-style-type: none"> • Strong flour • Extensible, elastic dough • Suited for long fermentation processes, large proving tolerance 	<ul style="list-style-type: none"> • Light, voluminous baking products with a good volume • Rigid, tough dough structure • Poor extensibility • Dough hardly rises during proving • Results in small pieces of dough with poor spring
 	 
<ul style="list-style-type: none"> • Flour producing a wet, plastic dough • Soft dough 	<ul style="list-style-type: none"> • Narrow fermentation tolerance, dough tends to spread • Small baking volume • Flour not suitable for normal baking products

Proving cabinet for Extensograph-E

Capacity increase for the Extensograph

Additional external proving cabinet for using with an already existing Brabender Extensograph or Extensograph-E. Tempering to 30 °C takes place by connection to a thermostat.

The system consists of a tempered proving cabinet with 3 fermentation chambers, as well as the appropriate tray supports, dough trays and clamps.



Proving cabinet for Extensograph-E	
Mains connection	not necessary
Dimensions (W x H x D)	740 x 205 x 420 mm
Weight	approx. 30 kg



Setup possibilities

... where quality is measured.

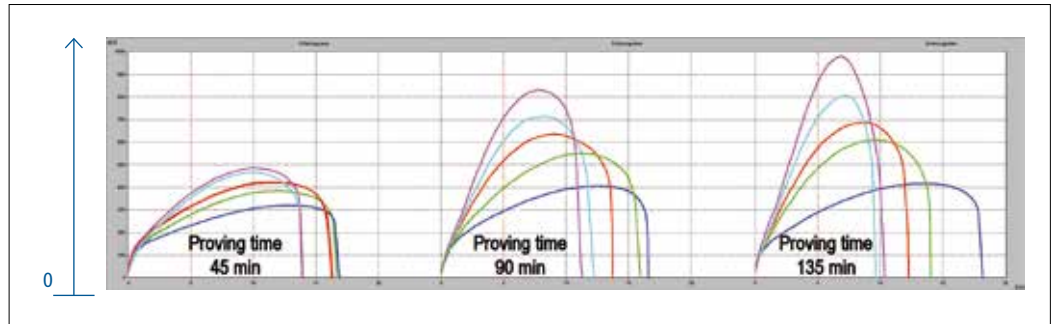
Extensograph-E

Rheological optimum

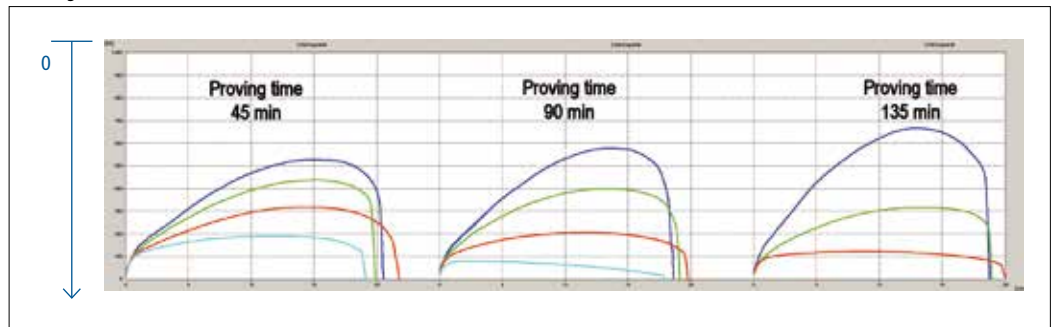
Different products require different flour qualities and dough properties. The "rheological optimum" characterizes the physical condition of a dough which, under the given processing conditions, supplies an optimum baking result.

The diagrams show the effect of various amounts of flour additives on the flour quality.

Influence of additives



Increasing addition of ascorbic acid
 — no addition
 — highest addition

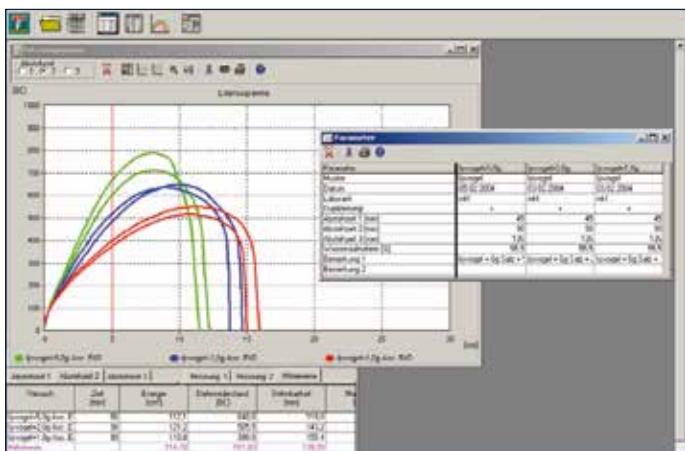


Increasing addition of proteinase
 — no addition
 — highest addition

Data correlation

Use the powerful correlation program to compare diagrams and results of up to 10 tests with each other. Test conditions and results are contrasted in tables and evaluated statistically.

You can quickly assess trends or irregularities by drawing and printing the Extensograms of a proving time in a single diagram.



Data correlation of three flours

Extensograph-E	
Sample weight	300 g of flour + 6 g of salt + dist. water
Speed of balling unit	83 ± 3 min ⁻¹
Speed of dough roll	15 ± 1 min ⁻¹
Speed of stretching hook	14.5 ± 0.5 mm/s
Force measurement	electronical
PC port	USB
Mains connection	1 x 230 V; 50/60 Hz + N + PE; 3.2 A 115 V; 50/60 Hz + PE; 6.3 A
Dimensions (W x H x D)	850 x 450 x 630 mm
<ul style="list-style-type: none"> instrument with tray holder arms, without rack space required (at table edge) 	850 x 1000 x 630 mm
Weight	approx. 75 kg net



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