

FAR BEYOND THE ORDINARY



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● ELASTOGRAPH E1

**For rheological analysis of the dough and  
measuring flour quality**

**ERKAYA**  
INSTRUMENTS

# ELASTOGRAPH E1

## Standardized methods to determine the flour quality and rheological properties of dough

The Elastograph is a widely-used quality control device for measuring flour quality and dough elasticity. Among the available options, the Erkaya brand's Elastograph E1 stands out for its ease of use, reliability, and the repeatability of its results.

The Elastograph E1 comprises  
4 fermentation cabinets,  
1 rolling chamber,  
1 shaping cylinder and  
1 tray holder arm.

Thanks to Windows 10 Operating System! With all the controls conveniently located on a single screen, the Elastograph E1 offers a user-friendly experience!

Its program guides you through the entire testing process, while the actively recorded elastogram enables real-time monitoring of the analysis stages. Additionally, you have the flexibility to choose the analysis time that suits your needs.







## HIGH TECHNOLOGY

### Areas of Application

The extensibility and strength of dough, which refer to its resistance to extension, are commonly employed to assess the quality of bread flour and to identify appropriate raw materials. These rheological properties also play a crucial role in determining the processability of wheat for various products. Of these properties, extensibility is particularly important in grain chemistry as it provides vital insights into baking performance and the quality of the final product. Therefore, the Elastograph E1 is an essential tool for the milling and bakery industry to make reliable assessments of product quality.

The Elastograph provides valuable insights into the rheological properties of flour and allows for the determination of the optimal level of additives, such as ascorbic acid, enzymes, and emulsifiers. By analyzing the effects of these additives on the dough, the Elastograph enables adjustments to be made to achieve the "rheological optimum" for a given purpose. This capability makes the Elastograph a valuable tool for optimizing the quality and consistency of flour-based products.

It helps miller to;

- ▶ Optimize flour quality and wheat blends
- ▶ Decide on the use of dough condition (redox agents, emulsifiers, enzymes for strengthening or weakening of dough)
- ▶ Decide which product to make according to quality of flour
- ▶ Classify wheats according to baking strength and define their end use or application

### Principle

The dough sample is obtained from Harinograph and put into fermentation cabinets. After undergoing specific fermentation processes, the dough is loaded into the tray holder arms and stretched until it fractures. The Elastograph E1 measures and records the applied force at this point. This process is then repeated three times for different fermentation times, ensuring a comprehensive analysis of the dough's properties.

### Rheological Optimum

To be able to maintain a sustainable standard flour quality, a rheological optimum is required. Elastogram helps miller to check dough characteristic such as resistance to extension, extensibility and bread making energy. Flour additives can be also used to standardize desired flour quality and effect can be measured by Elastograph.

## Elastograph E1 Proving Cabinets

The system consists of 4 tempered proving cabinets, tray holder arms, dough trays and clamps.

## Elastogram

The Elastogram, which is actively recorded with the test and displayed as a color diagram on the screen, shows the applied force as a function of the stretch length (time).

### The elastogram shows:

- ▶ Area under/below the curve (Energy)
- ▶ Resistance to extension (EU- 5 cm)
- ▶ Extensibility
- ▶ Resistance to extension (EU- Max.)
- ▶ Ratio Value (Resistance 5 cm/extensibility)
- ▶ Ratio Value (Max. Resistance/extensibility)

### With these parameters we can detect the quality of flour and additives;

- ▶ The shape of the measuring curve
- ▶ The area under the curve
- ▶ Numerical values of evaluation points

### Measured Parameters

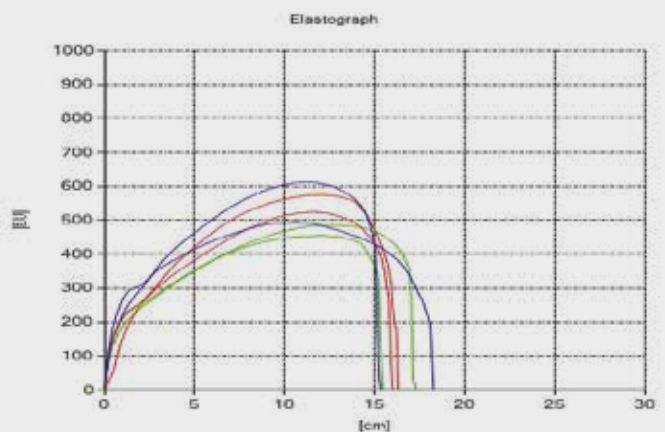
- ▶ Stretching behavior of the dough
- ▶ Baking properties
- ▶ Effect of flour additives
- ▶ Rheological optimum

## Technical Specifications

|  |   |
|--|---|
| Sample Weight                                  | 300 g of flour + 6 g salt + dist. water |
| Speed of balling unit                          | 83 ± 3 min <sup>-1</sup>                |
| Speed of dough roll                            | 15 ± 1 min <sup>-1</sup>                |
| Speed of stretching hook                       | 14.5 ± 0.5 mm/s                         |
| Force Measurement                              | electronical                            |
| PC port  | USB                                     |
| Mains Connection                               | 1 x 220 V; 50/60 Hz + N + PE; 3.5 A     |
| Dimensions<br>(with hook and tray holder arms) | 66*117*102 cm                           |
| Weight   | approx. 120 kg net                      |

## ELASTOGRAPH

|                              |               |
|------------------------------|---------------|
| Evaluation of sample         | : Sample 1    |
| Date                         | : 21.12.2022  |
| Operator                     | : ERKAYA      |
| Test after 45/90/135 Minutes |               |
| Waterabsorption              | : 56.0%       |
| Providing Time [min]         | : 45 90 135   |
| Energy [cm <sup>2</sup> ]    | : 110 122 131 |
| Resistance to Extension [EU] | : 352 402 439 |
| Extensibility [mm]           | : 163 162 168 |
| Maximum Resistance [EU]      | : 470 550 553 |
| Ratio number                 | : 2.0 2.0 2.5 |
| Ratio number (max)           | : 2.0 3.0 3.0 |
| Remarks                      | :             |



**From these values, the rheological properties of the relevant flour and the effect of flour additives (ascorbic acid, enzymes, emulsifiers) on flour quality can be clearly obtained.**

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