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# Rheo F4

## Unique solution to analyze in one single test the dough proofing properties

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# Baking is a complex process

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# Baking – 3 essential stages

1- Mixing / kneading
- **Initiating bread structure**

2- Fermentation / proofing
- **Developing bread structure**

3- Baking
- **Setting bread structure**

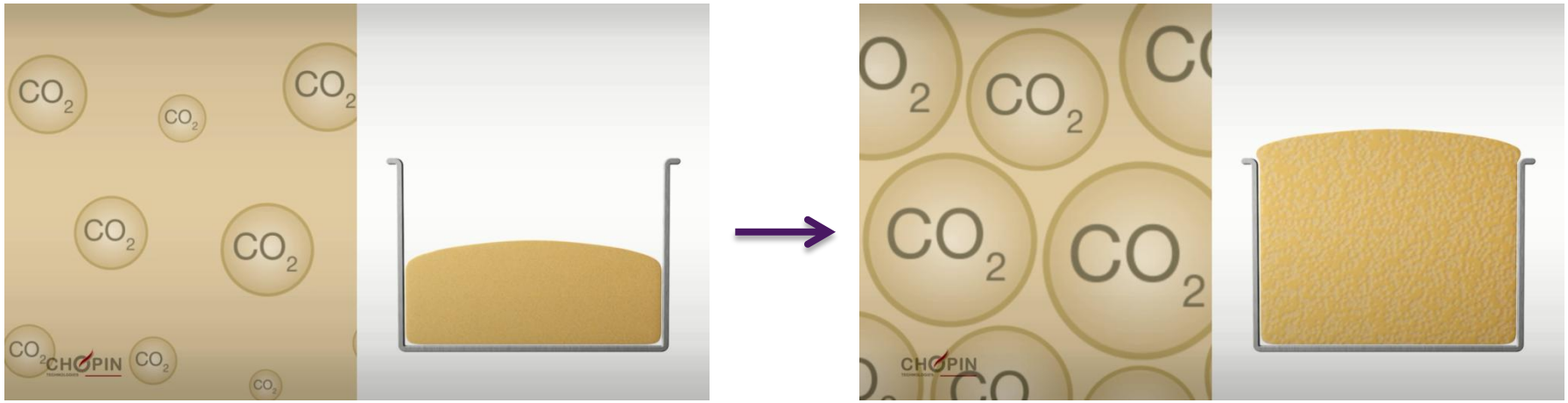
# Proofing is a key functional step

$CO_2$ production

+

$CO_2$ retention

→ Dough rising



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# Proofing is a key functional step

Overall dough proofing performance depends on :

- flour quality
- yeast performance
- added ingredients

Gas production depends on :

- Yeast
- Damaged starch
- Sugars, enzymes, etc

Gas retention mainly depends on :

- Quality of gluten network

# Rheo F4 – Presentation of the device

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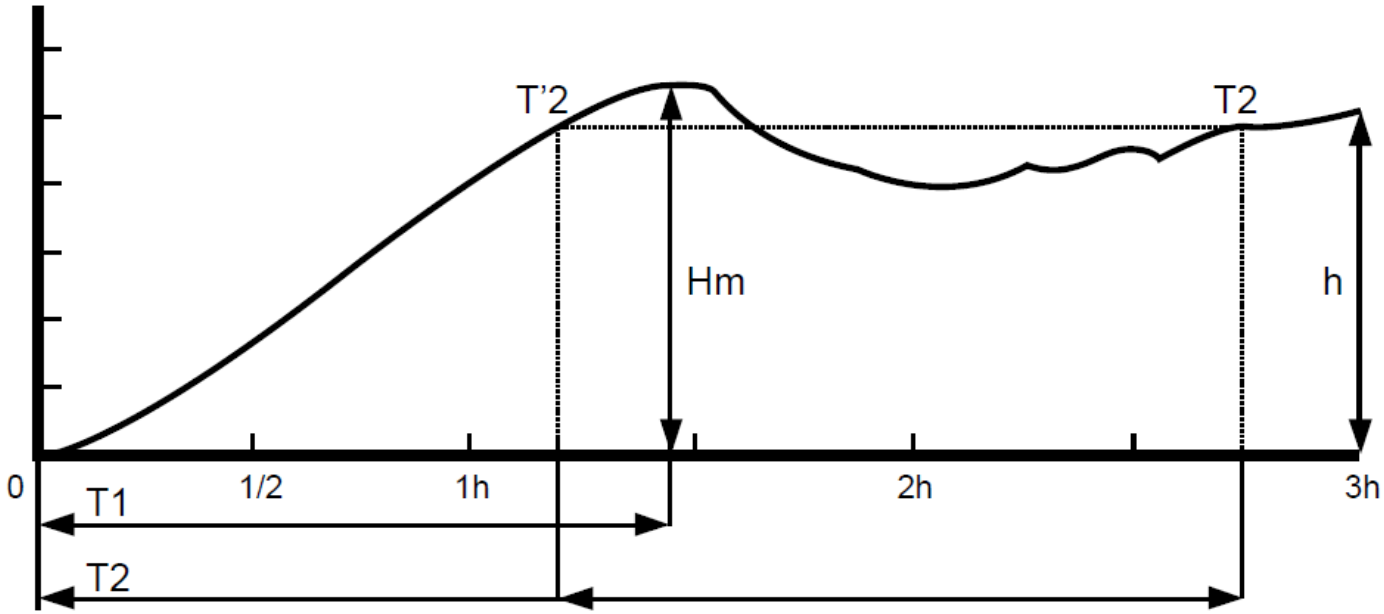
# Results from Rheo F4 – Dough development




**T1**: **time to maximum dough development** in hours and minutes.

**Hm**: **maximum dough development** height under stress, in mm.

**T2** and **T'2**: relative stabilization time at the maximum point located at a height of 0.88Hm without being lower than Hm-6mm.

**ΔT2=T2-T'2**= **dough tolerance during proofing**

**h**: **dough development height at the end of the test**

**(Hm-h)/Hm**: % of **drop in development after 3h** (case of the CHOPIN protocol) compared with T1



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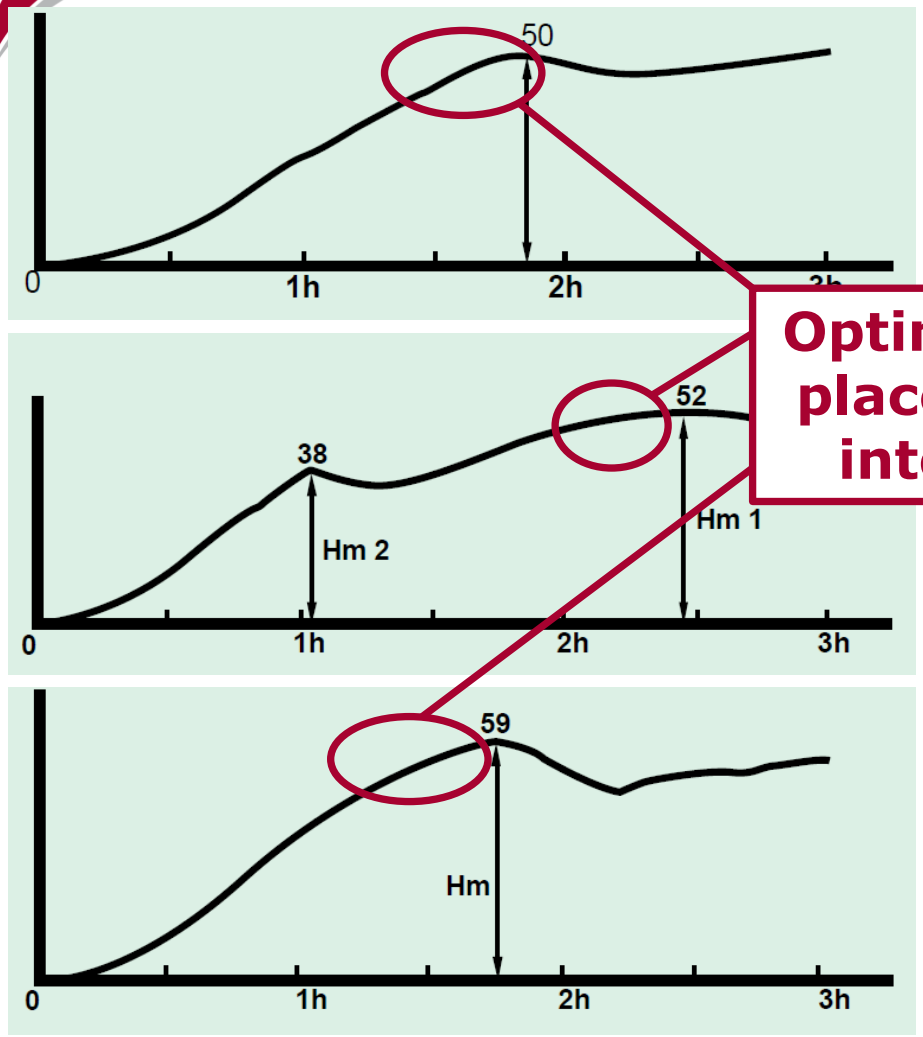
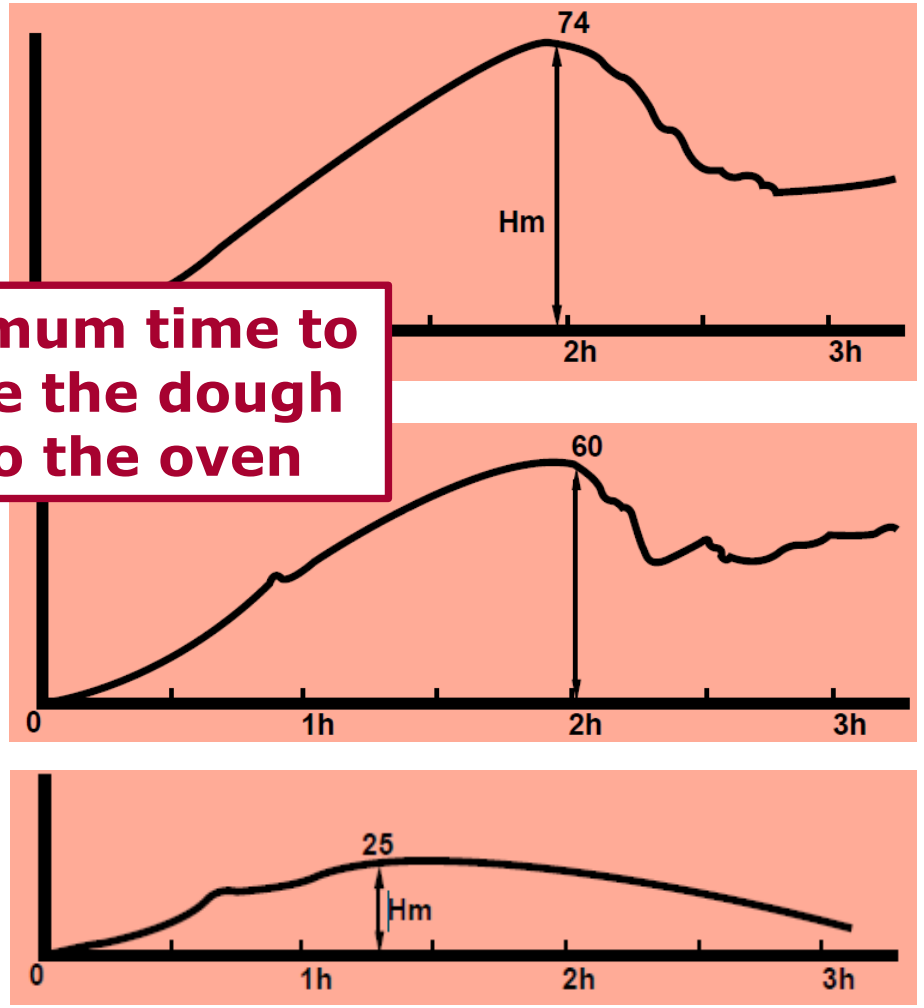
# Rheo F4 – Example of results




**Optimum time to place the dough into the oven**



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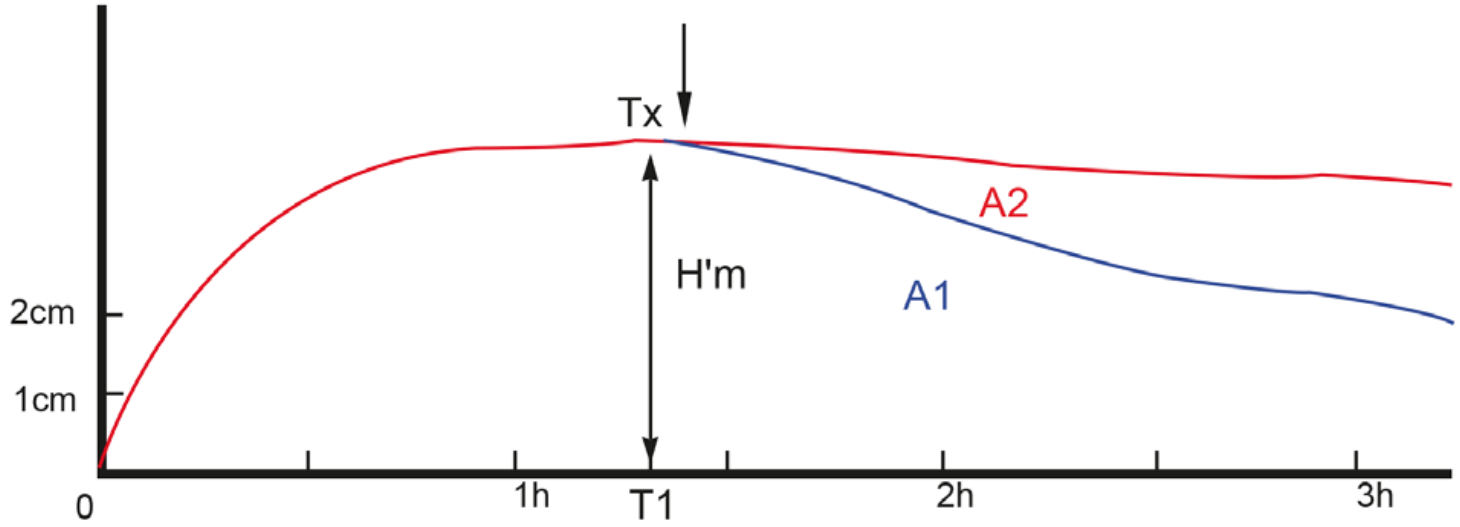
# Results from Rheo F4 – Gas release/porosity




**H'm**: **maximum height of the gas release curve**.

**T1**: time required to obtain H'm

**Tx**: dough porosity time (**time when the dough starts to lose $CO_2$**).

**Total volume**: **total volume of gas released** in ml (A1+A2 of the curve).

**Volume of $CO_2$ lost**: carbon dioxide volume in ml that the dough has lost during proofing (**A2**).

**Retention volume**: carbon dioxide volume in ml still retained in the dough at the end of the test (**A1**).



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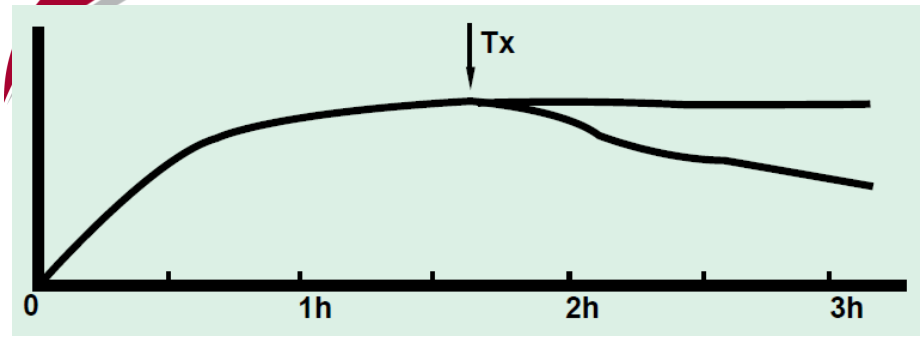
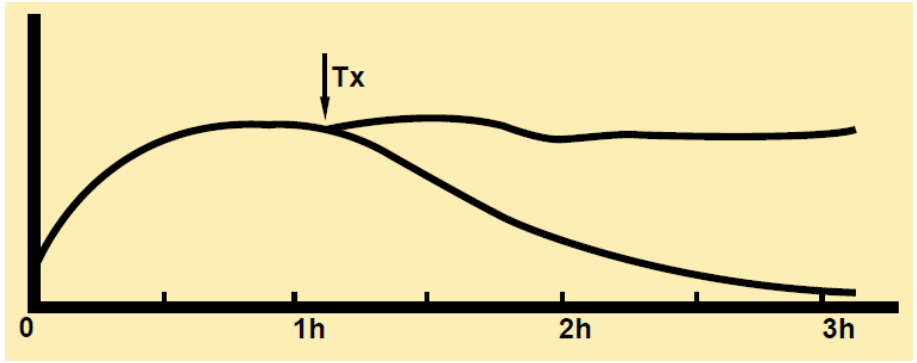
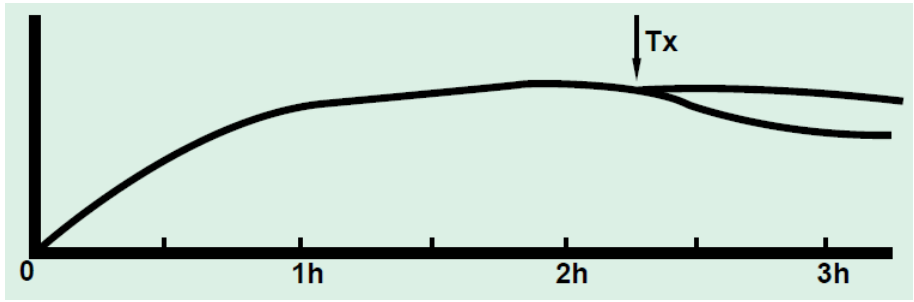
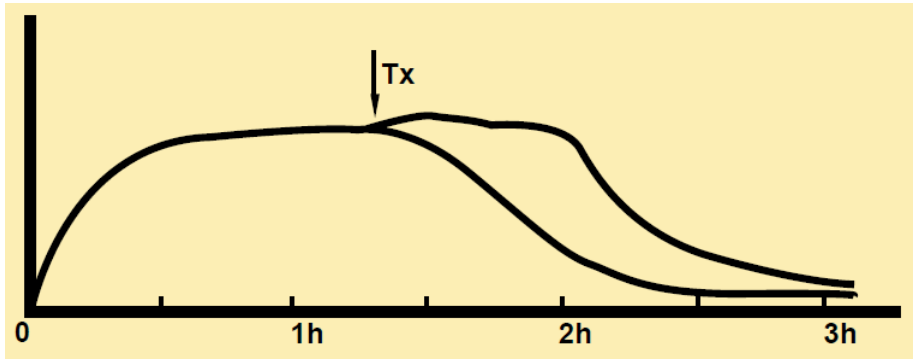
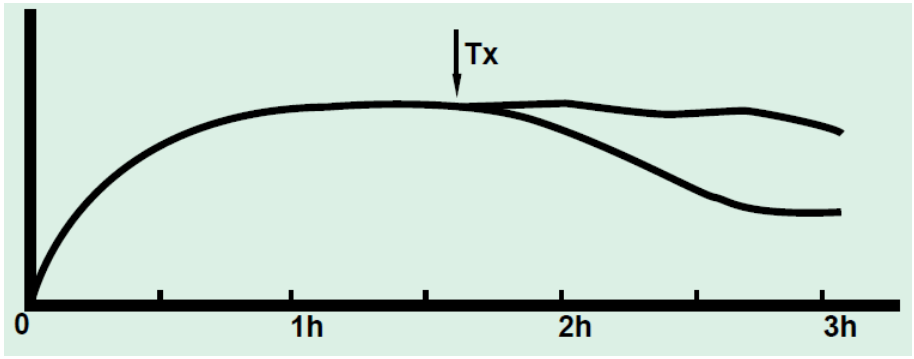
# Rheo F4 – Example of results

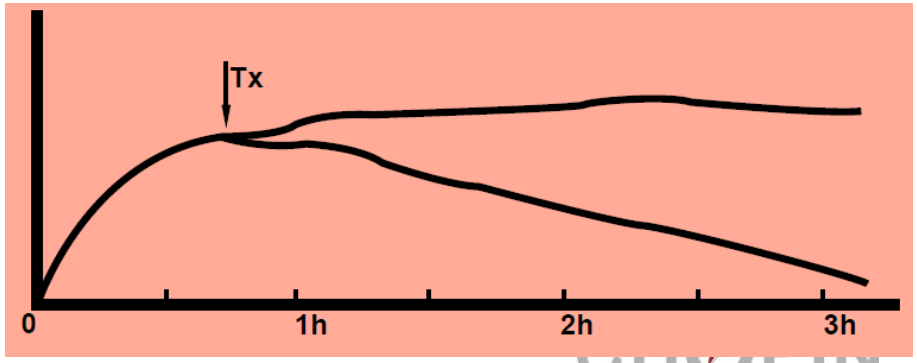


# Rheo F4 – The market

Rheo F4

**Millers**

**Bakers**

**Additives manufacturers**

**Enzymes manufacturers**

**Yeast producers**

**Research Institutes / Universities**

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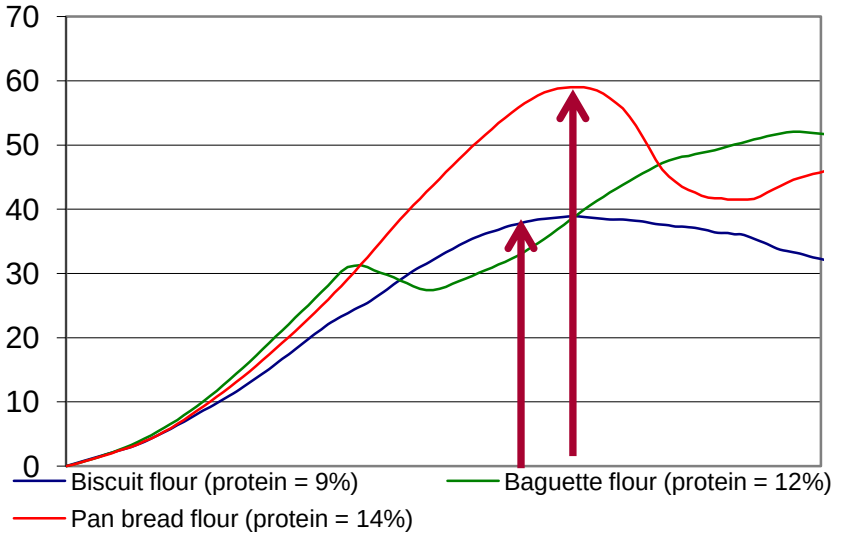
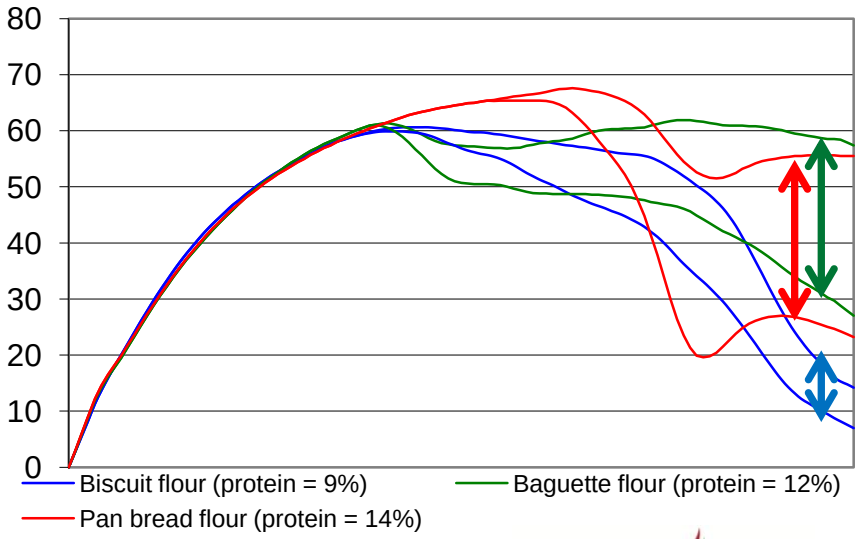
# Applications – Different flours

**Flours with different protein contents have different behaviors during proofing.**

**Rheo F4 identifies the optimal properties for every products.**



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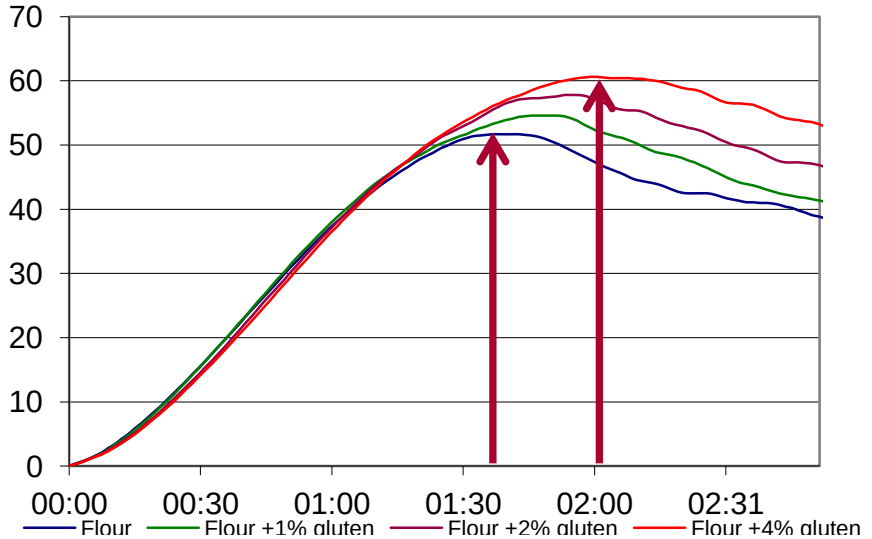
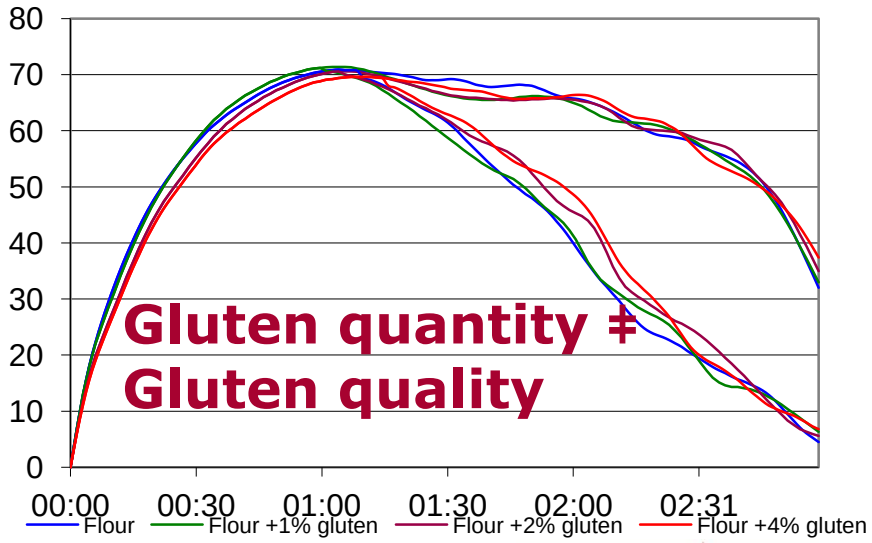
# Applications – Vital Wheat Gluten

**The more VWG added, the stronger dough development.**

**With Rheo F4, adjust precisely the quantity of VWG needed for optimal dough development.**

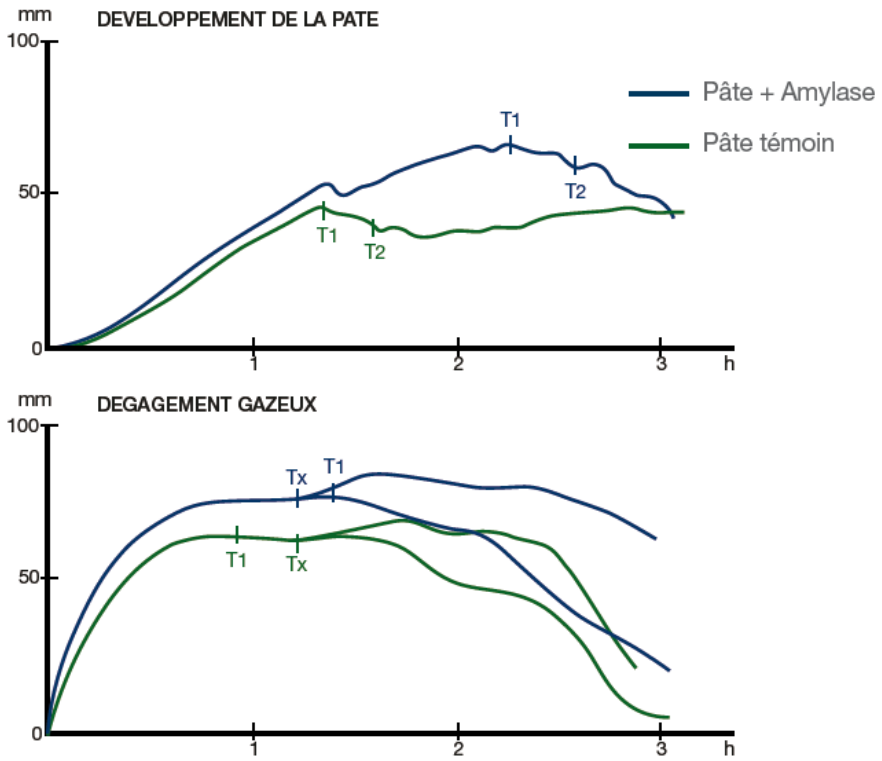


# Applications – Alpha amylase

**Alpha amylase increase fermentative capacities of dough : higher dough development and gas production.**

**With Rheo F4, identify precisely effects of Alpha amylase on dough behavior.**



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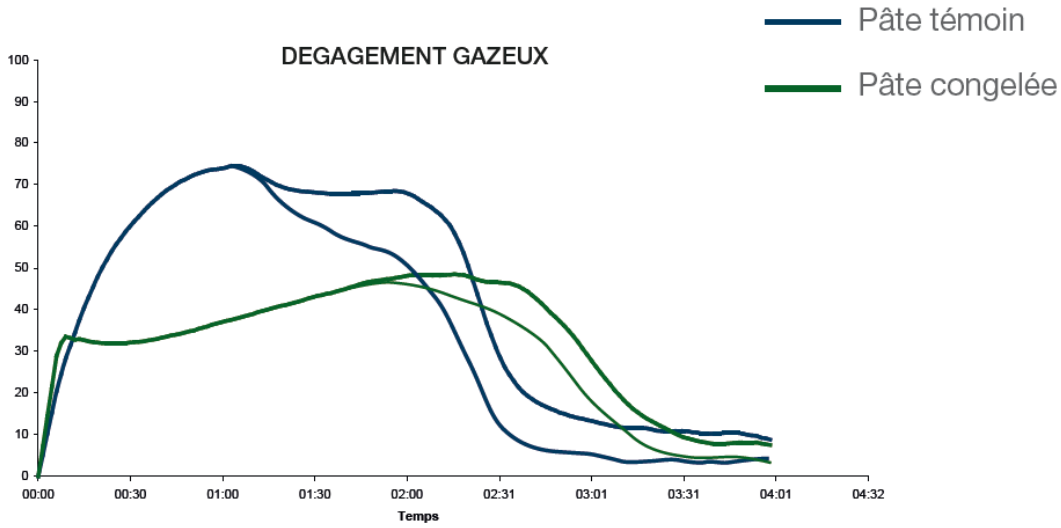
# Applications – Frozen dough

**Pre-frozen dough shows lower gas production than fresh dough. Additives may be used to correct this.**

**With Rheo F4, evaluate and optimize fermentative performance of pre-frozen dough.**



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# Conclusion

- Unique and complete information in one test
  - **Dough development**
  - Total **gas production**
  - **Dough porosity / Gas retention**
  - **Dough tolerance** during proofing

- Easy to use
  - Total software **control PC** (USB)
  - Fully **automated test**

- Economic
  - **Simple design, low maintenance, only one consumable**

- **Rheo F4 : The Best Solution to control proofing and ensure correct volume of final products**



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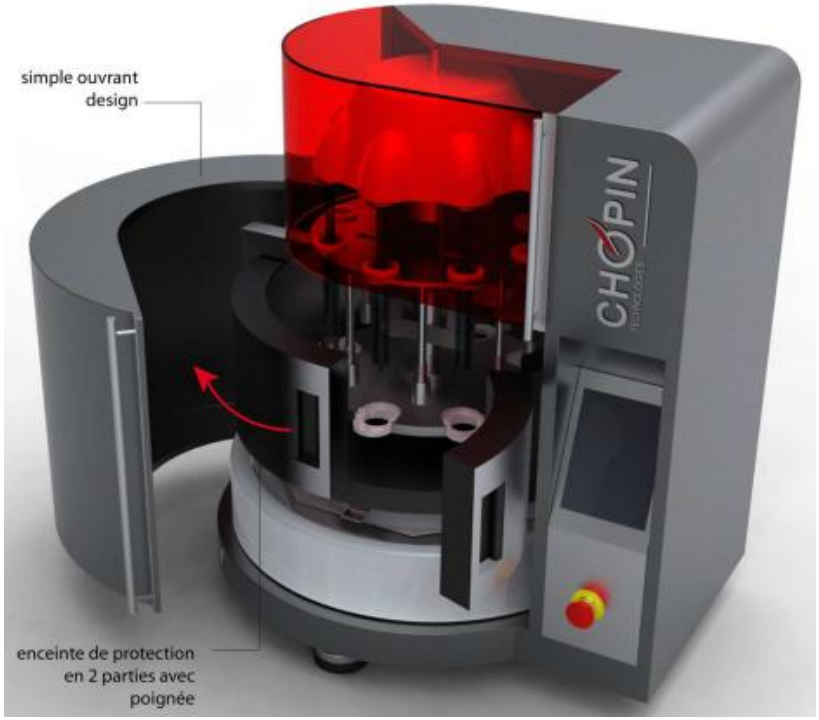
# New SRC Chopin automatic (Available in 2014)




# Thank you for your attention



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