

Test Mill Set Up and Flour Analysis for a Commercial Milling Environment

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What is Test Milling?

- Primarily a Laboratory operated mill.
- Sample sizes vary from 2kg +
- Grinding of the samples to obtain a quantity of flour to be used in conducting laboratory analysis.



Benefits of Test Milling to Flour Millers

- Assessment of flour quality to meet customer requirements
- Research of new varieties
- Assess potential grists
- Impacts of chemical treatments (from wheat to flour)

Why conduct Test Milling?

- Provides valuable information on **IF** the grain you are looking to purchase will possess the desired product functionality
- Provide a snapshot of the flour quality & end product functionality
- Provide flour samples to customers for trials
- Experiments

Test Mill Set Up vs. Commercial Mill Set Up

- Test Mill Set Up
 - Only B1, B3, R1, R3 are adjustable. B2 and R2 will automatically be adjusted as a result
 - Standard Roll gaps used
 - Standard feed rate
- Commercial mill
 - Each passage can be adjusted
 - Feed rate altered to suit product

Limitations to Consider

Test Mill

- 6 flour streams
- Bran
- Pollard

Commercial Mill

- 15 + flour streams
- Bran
- Pollard
- Additional extraction aids such as bran finishers, purifiers, impact mills, drum detaches

Conditioning Times

Prime Hard (APH)	18 - 24 Hours
Hard (AH)	16 – 20 hours
APW	14 – 18 Hours
ASW	12 – 16 Hours
ASW - Noodle	8 – 12 Hours
Durum	3 - 4 Hours
Soft	4 – 8 Hours

- Test Mill : Standard period for all wheat types

Influence of Correct Conditioning

- Better sieving
- Higher extractions
- Tougher Bran – minimize the opportunity for water to penetrate to the endosperm.
- Less power consumption

How do these factors effect flour quality?

- Flour Extraction
- Starch Damage
- Wet Gluten
- Dough Rheology

Quality Impact Flour Yield

- Commercial mill yields 2 – 3% more than a test mill

Why??

- Roll adjustments
 - Test mill remains constant
- Auxiliary equipment
 - Test mill does not readily use.
- Optimized Conditioning



Starch Damage

- Lower levels in Test millings
- Why??
 - Over conditioning
 - Less processing
 - Ask for Baker's suggestion on optimum levels



Quality Impact Wet Gluten

Higher from a commercial mill
than a test mill.

How much higher?

Level of tail end reduction flours

- Wet Gluten will increase with more tail end flour
- Gluten quality will decrease

Test Mill does not offer this
flexibility



Quality Impact Dough Rheology

Farinograph

- Higher water absorption from a commercial mill
- Potentially reduced stability due to tail end flour
- Consideration needs to be given to end product functionality



Quality Impact Dough Rheology

Extensograph

- Dough strength will be impacted.
- Increased extensibility
 - More tail end flour
 - Increased gluten / protein levels



Conclusion

- Test Milling is a valuable form of information gathering
- Analyse the data carefully
- Look for the Upside in the data
- Feedback from customers

Acknowledgements

- Fellow AWB staff members

**THANK YOU FOR YOUR KIND
ATTENTION**



 **AWB**

