

Faster Clean Label Bakery Formulation with Predictive Capabilities of Performance

Encore Plus™ 5450
Encore Relax™ 5451
Encore Strong™ 5452

Presented by: Alejandro J Perez-Gonzalez
R&D Manager, Delavau Food Partners

Clean Label Conference, March 26-28, 2018



SMARTER. FRESHER. BETTER.™

The Clean Label Bakery Challenge

What consumers don't want

...but bakers need

Traditional Bakery Ingredients

Many are NOT Label Friendly

- Dough Strengtheners

Azodicarbonamide (ADA)

Sodium stearoyl lactylate (SSL)

Diacetyl tartaric acid ester of mono- and diglycerides (DATEM)

Potassium iodate

→ Dough strength and tolerance

→ Uniform grain and increased volume in baked product

- Dough Relaxers

L-Cysteine

Sodium metabisulfite

→ Dough extensibility and machinability

→ Control shape and size in baked product



Delavau's Clean Label Solutions

Optimized Dough Conditioner Systems

Optimized Dough Conditioner Systems

Encore Plus™ 5450

Wheat flour, dried yeast, ascorbic acid, enzymes

Encore Relax™ 5451

Wheat flour, dried yeast, enzymes

Encore Strong™ 5452

Wheat flour, ascorbic acid, enzymes

- ✓ Approved for food use in the United States as well as many other countries
- ✓ Produced in the United States of America using global raw materials
- ✓ Kosher

What Makes These Systems Unique?

Delavau's Approach

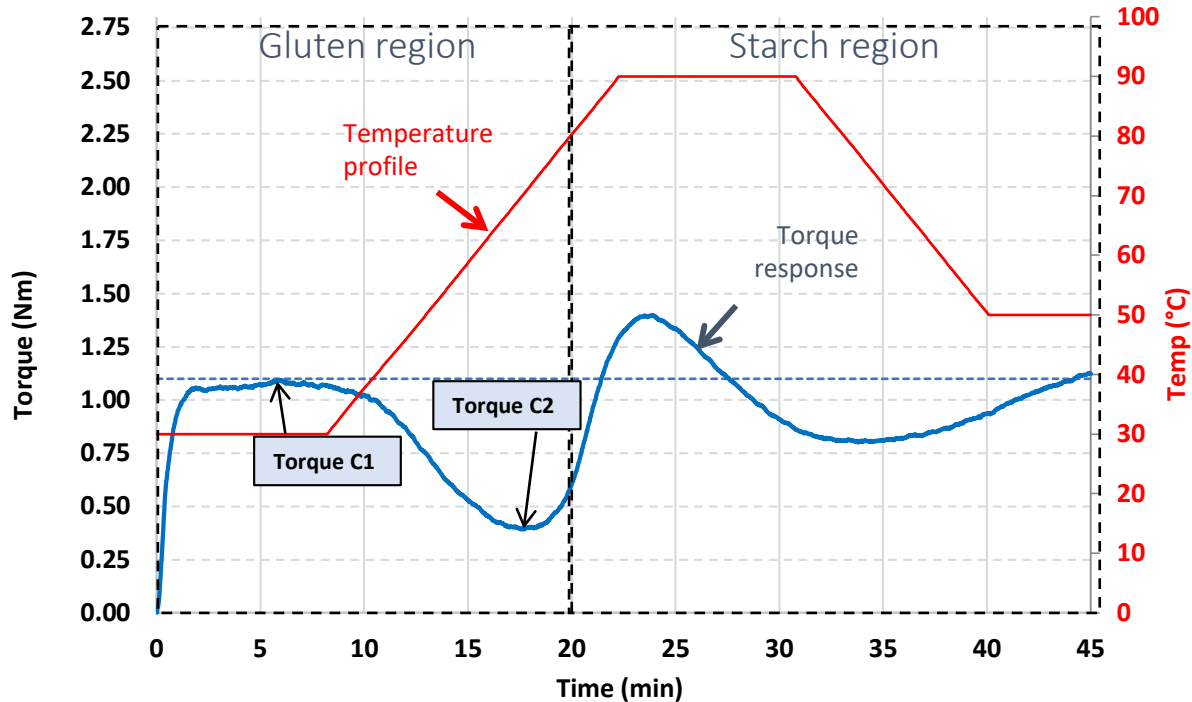
Predictive Capabilities of Performance

- Dough conditioner systems are designed to optimize dough rheology and finished product attributes
- Predictive capabilities allow reduction of the number of bake trials
- Dough rheology method
AACCI 54-60.01
- Internal laboratory
bread roll method



Predictive Capabilities of Performance

Dough Rheology Output



Variable	Calculation
Development Time (min)	Time to Torque C1
Gluten Weakening Index (Nm)	[Torque C1] – [Torque C2]

- We focused on gluten-dominated region of curve where dough conditioners have the greatest effect

Predictive Capabilities of Performance

Bread Roll Method

INGREDIENT	% FWB
Flour	100
Sugar	2
Salt	1.75
Shortening	2.5
Yeast	3
Water	60

- Batch straight-dough process
 - Mix
 - Divide, round and mould
 - Proof
 - Bake

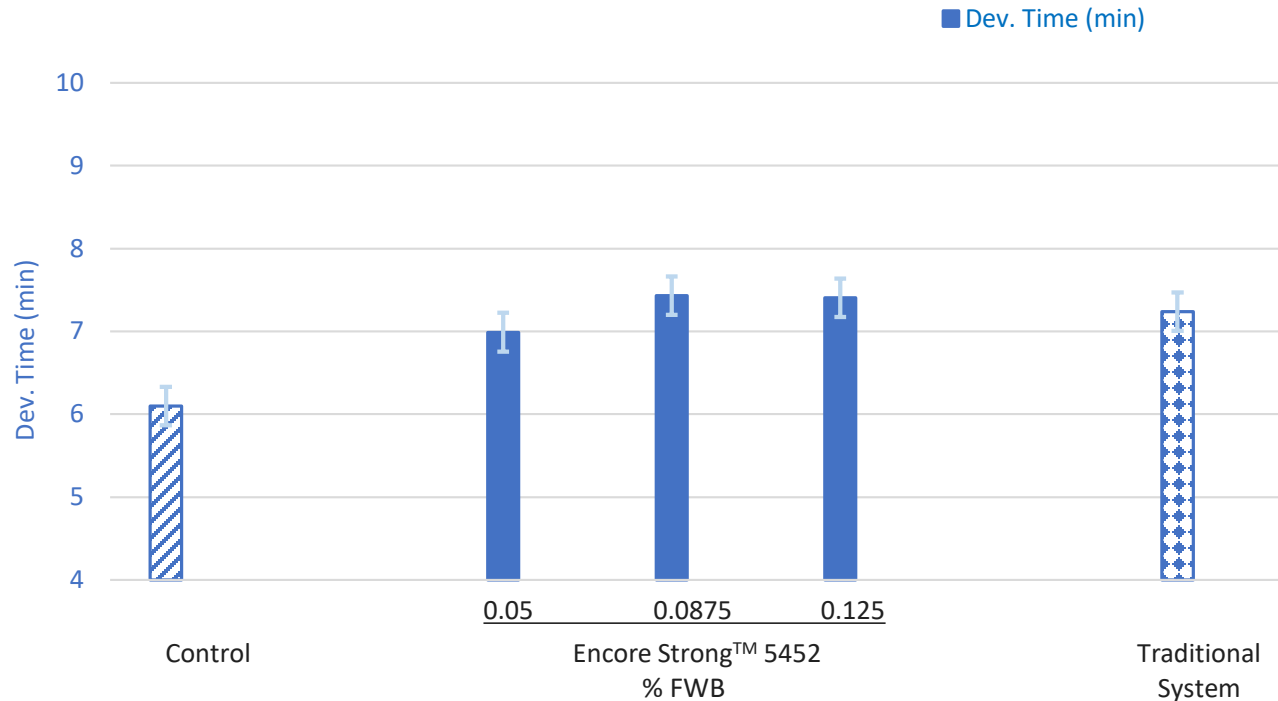


Delavau's Approach

A Case Study: Encore Strong™ 5452

Optimized Dough Conditioner Systems

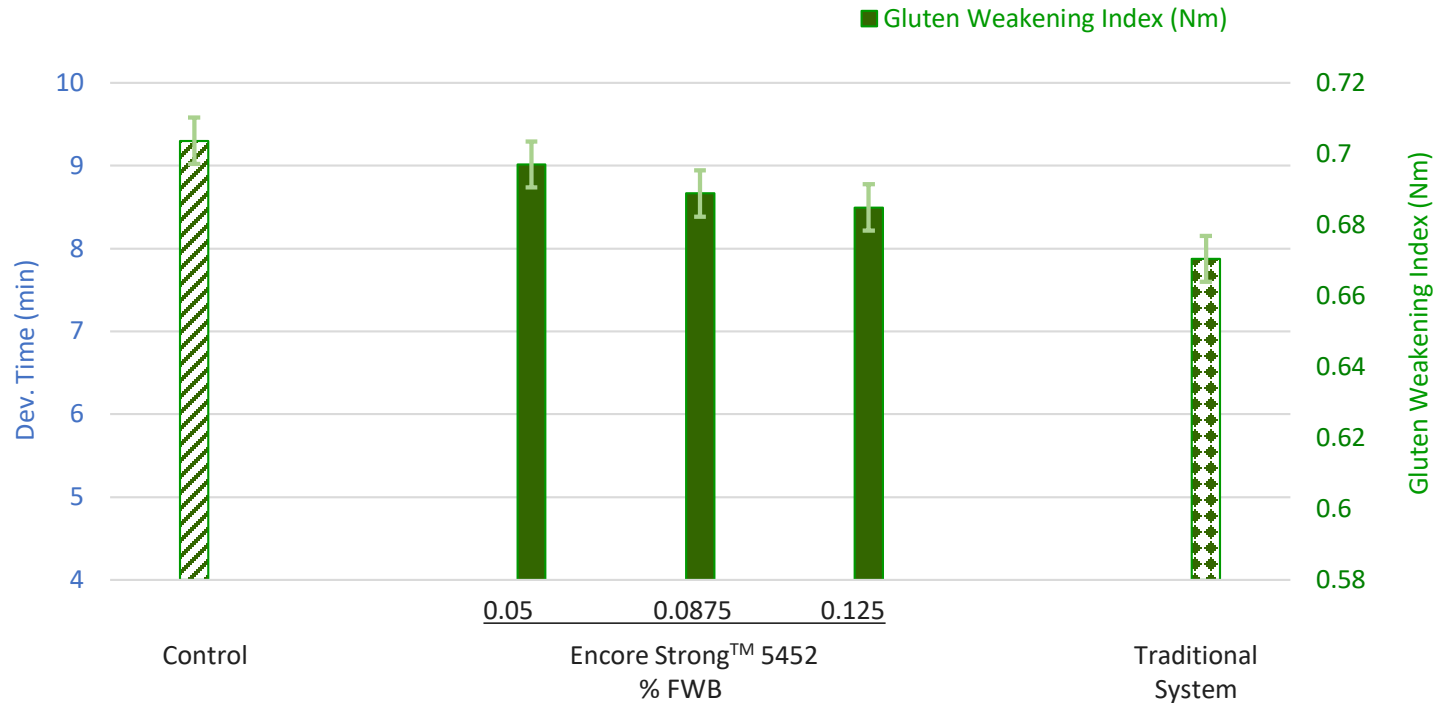
Encore Strong™ 5452



- The strengthening systems increase Development Time in line with a stronger gluten structure

Optimized Dough Conditioner Systems

Encore Strong™ 5452









- The strengthening systems decrease GWI indicating a stronger gluten structure

Optimized Dough Conditioner Systems

Encore Strong™ 5452

- A drop-tray abuse test was developed to simulate dough handing and conveying
- The strengthening systems provided tolerance against abuse

	Not dropped	Dropped after proof	Height loss % *
Control			26% ^a
Encore Strong™ 5452			9% ^b
Traditional System			12% ^b

*p =0.05

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Delavau's Approach

- This methodology of dough rheology data collection and analysis allows directional predictions of bake performance, enabling faster product development and less bake line trials
- Optimized CL conditioners perform as effectively as traditional ones to modify dough rheology and bake performance