

The influence of Intact Casein in Processed Cheese

- the next step in quality control, and cost reduction.



How does Intact Casein contribute to the finished product quality of processed cheese?

In follow up to customer questions on scientific evidence around the role of Intact Casein in processed cheese manufacture, Gold Peg have conducted scientific analysis at a Fonterra Research Centre to verify the contribution Intact Casein plays in controlling the quality of processed cheese products.

It is well known that ingredient variability is a major factor in the quality and cost of processed cheese.

For processed cheese makers, quality and efficiency are keys to profitability and the ability to compete. The biggest challenge to these is managing the variability of natural cheese.

The evidence below highlights that the 'maturity', or more specifically the '**intact casein**' (IC) content of the **natural cheese** used, **contributes significantly to finished product quality**.

Influence of Intact Casein on Finished Product Quality

Caseus Pro™ was used to create a range of formulations. Cheeses of various maturities were used to create formulations over a range of intact casein with consistent composition.

Viscosity and finished product functionality was measured for each formulation. Figure 1 shows how IC influences the viscosity of processed cheese during manufacture (post cooking).

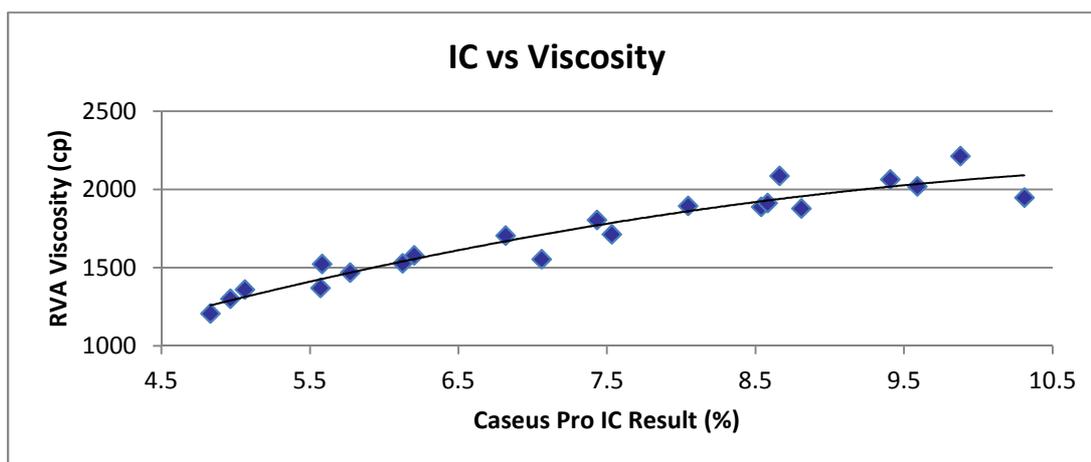


Figure 1: Relationship between IC percentage and product viscosity during manufacture (post cooking).

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The finished product textures were measured using the Texture Analyser (Firmness) and Brookfield Vane (Fracture Stress), the results are presented in Figure 2.

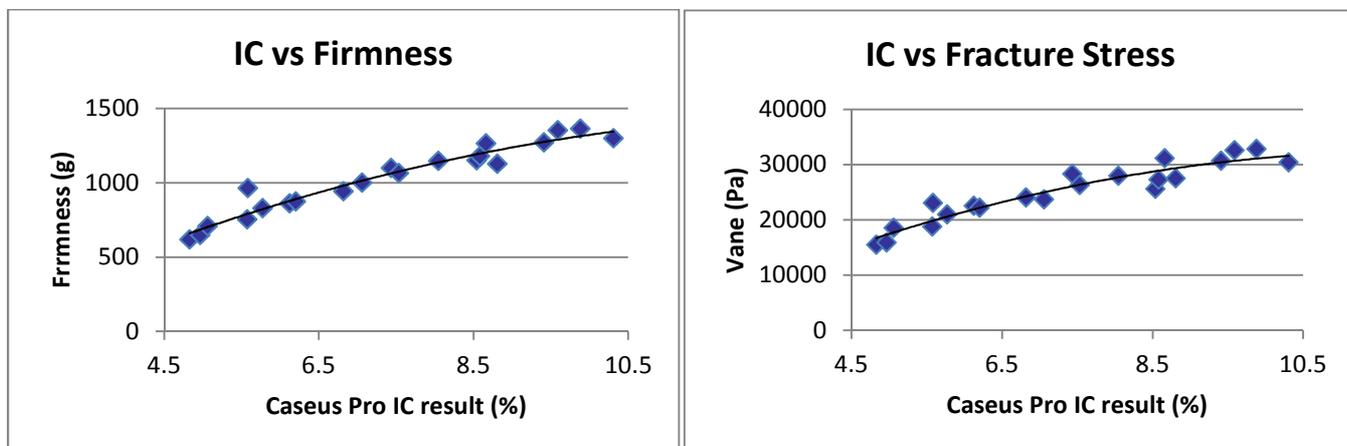


Figure 2: Relationship between intact casein percentage and finished product functionality

These results show that the percentage of intact casein strongly influences the behaviour of processed cheese during manufacture and the quality of the finished product.

Controlling Intact Casein

The IC% of natural cheese is generally between 0 - 18%, splitting the cheese into three categories e.g. 'Young', 'Medium' and 'Mature' gives you an IC range of approximately 6% in each category.

Table 1 shows how a small change in the IC can lead to significant variability in your finished product quality.

Table 1: Quantifying the influence of IC on physical properties of processed cheese.

Change in IC%	Change in Viscosity	Change in Firmness	Change in Fracture Stress
7.5% - 8.5% (1%)	154cp (~8%)	126g (~11%)	2754Pa (~10%)

Gold Peg's formulation package 'Caseus Pro™' combines a unique intact casein calibration with purpose designed processed cheese formulation software.

The calibration works with a FOSS FoodScan to accurately measure the percentage of intact casein (specifically un-hydrolysed casein) of natural cheese - in just 50sec.

Compared to subjective sensory analysis, the Caseus Pro™ calibration provides an unbiased result with greater accuracy –

Standard Error:

- ± 0.13% (typical 3 cheese formulation).

