

FISH CAKE PATTIE HARDNESS TESTING

A method to measure the hardness of fish cake patties was developed and applied as a predictor of process behaviour.

Requirement

A major customer identified the texture of fish cakes during manufacture as a critical quality point (CQP) within the production process. Problems had been observed during the forming stage of the production where:

- product that was too soft produced irregular shaped cakes
- product that was too hard became brittle and broke on the production line

A method was needed to measure objectively the texture of the fish cake mix before reaching the forming stage - the critical point for optimum processing texture.

Solution

FTC technologists worked with the customer to identify key CQP's and variables within the production process. It was established that the best point to control the physical texture of the finished cakes would be at mixing when water was added to the cake blend.

The FMBRA dough pot set traditionally used in the preparation of biscuit dough for instrumental texture measurements was used to standardise the pre-mix sample and form a dummy cake. A large compressing plunger replicated the forming process where the cake was produced. A ball probe was penetrated in to the 'dummy cake' to represent squeezing in the hand and measure sample firmness.

Benefits

Firmness

- Optimisation of formulation to incorporate maximum water content but maintain consistent product texture.

Consistency

- Reduce down time in production caused by poor consistency of fish meat mix at point of forming.

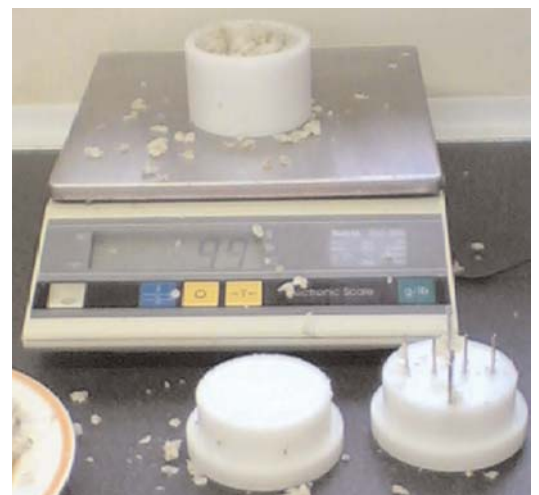
Elasticity

Yield Point

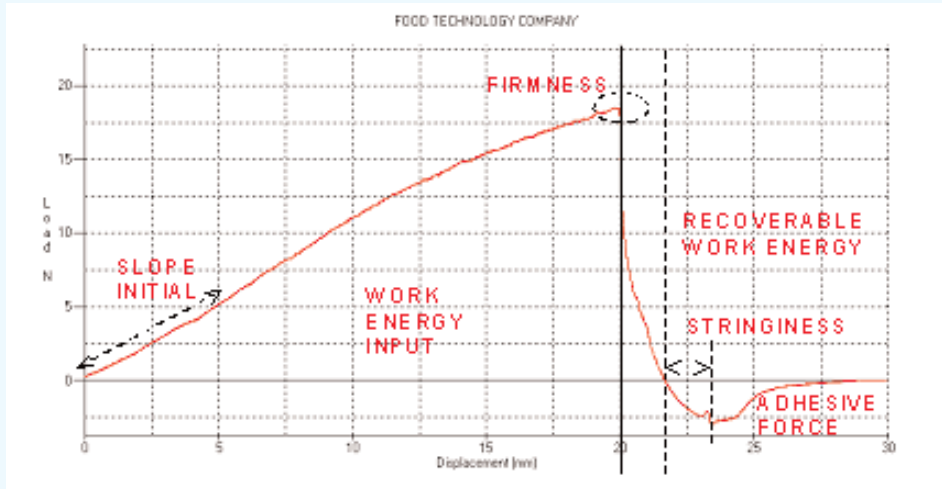
- Improve finished product quality in line with consumer requirements and sensory perception.



Penetration of prepared sample in duplicate.



Sample preparation of mix is critical for reproducible and representative texture measurements.



Characteristics			
Parameter			
	TMS-Pro	TMS-Console	Manual Stand
Max Peak Load Firmness	✓	✓	✓
Adhesive Force	✓	✓	✓
Work Energy Input	✓		
Recoverable Work Energy	✓		
Stringiness	✓		

Conclusions

The method developed is quick, simple to follow, and, most importantly, representative of the production conditions imposed during manufacture. Reproducible sample preparation and selection is critical if accurate tolerance bands are to be applied in relation to moisture addition during mixing.

Texture data are of greatest value when combined with a good historical knowledge of the manufacturing process. A preliminary detailed study monitoring the effect of moisture variation at all stages of production is essential. Knowledge must be generated relating to sample temperature and hydration times of potato starch so that tolerances can be set to accommodate all eventualities.

The method developed is ready to be applied within a historical investigation. Full assessment of the process should be made and tolerances applied at each relevant CQP.

Food Technology Company Ltd
 Newton House
 Spring Copse Business Park
 Slinfold, Nr Horsham
 West Sussex, UK
 RH13 0SZ
 T +44 (0) 1403 799979
 F +44 (0) 1403 799975
 E jon@foodtechcorp.com

Food Technology Corporation
 45921 Maries Road
 Suite 120
 Sterling
 Virginia 20166
 U.S.A.
 T: +1 703 444 1870
 F: +1 703 444 9860
 E info@foodtechcorp.com