

Curd Texture Analysis

Understanding the strength of curd is crucial for grading the quality of tofu and other curd-based products. Curd strength directly affects texture, which is a key quality attribute influencing consumer satisfaction, production consistency, and product grading standards.

Test Objective:

- Determine the strength of curd to aid in grading the quality of tofu and other curd products.

Test Principle:

- The curd sample is placed on a test table and compressed using one of three probes (Figure I: TA46, TA47, TA48) until rupture occurs. The curd strength is defined as the peak load at rupture.



Background:

- Traditional testing involved lifting the curd sample towards a test probe to measure force using a mechanical scale (0-100), which correlated to the strength of the curd at rupture. The CTX Texture Analyzer with a 1000 g load cell can now test all types of curd with a single instrument, providing a modern, reliable alternative that maintains correlation with historical data.
- Three probe sizes (5 mm, 8 mm, 10 mm) are used to test different curd types:
- 5 mm Probe (TA46): For extra firm curd.
- 8 mm Probe (TA47): For firm curd.
- 10 mm Probe (TA48): For soft curd.

Empirical Factors:

- Trigger Value: The minimum load (3 g) that must be exceeded to begin the test, indicating the position of the sample surface.
- Target Distance: The distance the probe travels after triggering, set higher than the expected deformation for rupture.



Figure I: TA46, TA47 and TA48 Probes

Equipment:

- Instrument: CTX Texture Analyzer with 1000 g Load Cell
- Probes: TA46 (5 mm), TA47 (8 mm), TA48 (10 mm)

Settings:

- Test Type: Normal
- Trigger: 3 g
- Distance: 40 mm (varies by sample)
- Speed: 4 mm/s



Results:

- Traditional mechanical scale readings (0-100) correspond to CTX readings in grams (e.g., 100 on the scale = 207 g on the CTX).

Mechanical Scale	10	20	30	40	50	60	70	80	90	100
CTX in grams	21	41	52	83	104	124	145	166	186	207

Discussion:

- Accurate curd strength measurements require probes of specific geometry and dimensions (Figure I).
- The CTX Texture Analyzer provides results equivalent to traditional mechanical methods, with direct readings in grams, enhancing accuracy and consistency.

Conclusion:

- The CTX Texture Analyzer offers a modern, cost-effective solution for quality control testing of tofu and other curd products, maintaining continuity with traditional methods while providing enhanced user experience and reliable results.