

Raspberry Preserves Texture Analysis

Testing the firmness and stickiness of raspberry preserves is essential for quality control, ensuring texture consistency for consumer satisfaction. Firmness measurements reflect how solid the preserves feel, while stickiness measures the adhesive quality when the probe is pulled away, both crucial for maintaining desirable product texture.

Background:

- Raspberry preserves, thicker and clumpier than typical jelly due to fruit and high-fructose corn syrup, are compressed to measure firmness and adhesive force. Firmness is the resistance encountered when biting, and stickiness reflects how the preserves adhere to surfaces.



Equipment and Settings:

- CTX Texture Analyzer with 5 kg load cell
- Probe: 40 mm 170° Shallow Conical Probe
- Texture Pro Software
- Test Parameters:
 - Test Type: Compression
 - Target Type: Distance
 - Target Value: 15 mm
 - Trigger Load: 10 g
 - Pre-Test Speed: 1 mm/s
 - Test Speed: 1 mm/s

Sample Preparation:

1. Store samples overnight at 4°C and smooth the surface with a flat-edged spatula before testing.
2. Keep preserves in their container to avoid inconsistencies.

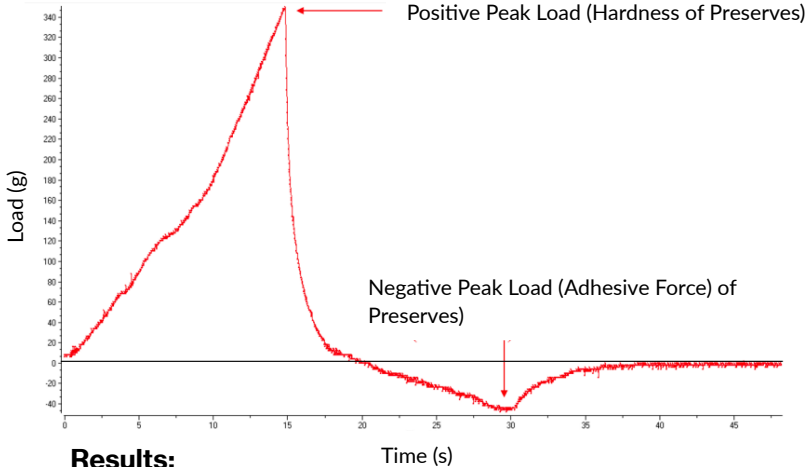
Procedure:

1. Attach the shallow-angle probe and secure the Fixture Base Table.
2. Place the sample on the table, aligning it under the probe.
3. Position the probe 5 mm above the sample and set test parameters.
4. Initiate the test, ensuring to wipe the probe between tests for accurate results.
5. Perform the test four times per sample to average the results.

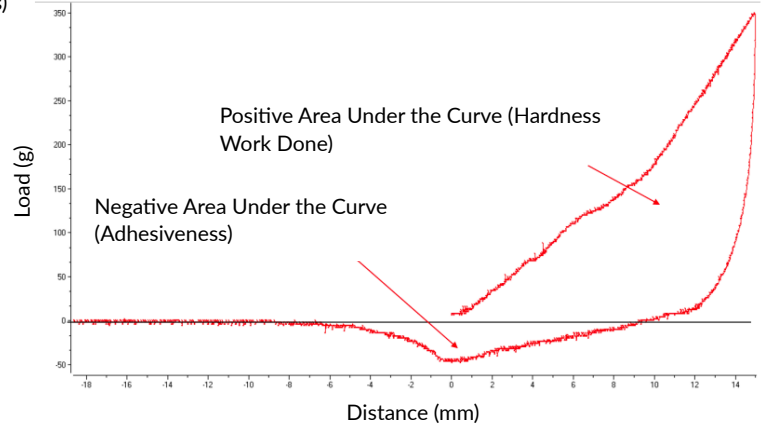
Observations:

- Load vs. Time Graph: Displays firmness (peak load) and stickiness as the probe compresses and retracts from the sample.
- Load vs. Distance Graph: Shows the work done to compress the preserves and the adhesive force during probe withdrawal.

Hardness and Adhesive Force of Raspberry Preserves



Hardness Work Done and Adhesiveness of Raspberry Preserves



Results:

- Hardness (Peak Load): 353 g (average across tests)
- Hardness Work Done: 20.5 mJ
- Adhesive Force: 49 g

#	Sample Description Product Name	Batch Name	Results Hardness Cycle 1 (g)	Hardness Work Done (mJ)	Adhesive Force (g)
1	Sample A	Raspberry Preserves	380.00	20.90	46.00
2	Sample A	Raspberry Preserves	350.00	21.40	48.00
3	Sample A	Raspberry Preserves	348.00	20.00	56.00
4	Sample A	Raspberry Preserves	332.00	19.90	46.00
Minimum:			332.00	19.90	46.00
Maximum:			380.00	21.40	56.00
Average:			353.00	20.50	49.00
Standard Deviation:			20.00	0.70	5.00

Discussion:

The peak load reflects the firmness of the preserves, indicating how solid the product is during consumption. The adhesive force measures the work required to separate the probe from the sample, revealing the preserves' stickiness. Consistent testing provides insights into optimal texture, supporting quality control for texture consistency.