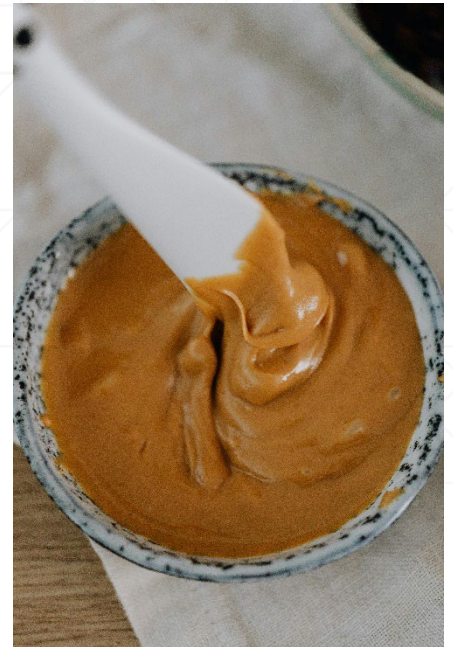


Peanut Butter Texture Analysis

Texture testing for peanut butter is essential to evaluate firmness, spreadability, and texture consistency. By measuring the yield value and modulus, manufacturers can differentiate between types (e.g., creamy vs. crunchy) and ensure each meets desired consumer preferences for application and mouthfeel.

Background:

- Peanut butter is widely used in sandwiches, desserts, and as a standalone snack. Testing its firmness and spreadability helps maintain quality and consistency.
- Key texture characteristics include:
 - Yield Value: Indicates the force required to initiate spreadability.
 - Modulus: Represents stiffness, useful for comparing different textures (e.g., creamy vs. crunchy).



Test Equipment:

- Rheometer: Brookfield RSX SST
- Vanes: VT-40-20 and VT-20-10 for varied sample interaction
- Software: Rheo3000
- Test Duration: 30 seconds at 0.5 RPM

Settings:

- Speed: 0.5 RPM
- Duration: 30 seconds

Procedure:

1. Mount the appropriate vane (VT-40-20 for firmer samples, VT-20-10 for softer).
2. Start the test at 0.5 RPM and record data for 30 seconds.
3. Observe the yield value and modulus for analysis.



Observations:

- Figure 1: Comparison of creamy and crunchy peanut butter.
 - The creamy sample has a yield value of 1,011 Pa, indicating lower initial resistance.
 - The crunchy sample, with its higher yield value of 12,301 Pa, demonstrates greater resistance to spreading due to solid peanut pieces.
 - Modulus values reveal the creamy peanut butter (~2800 Pa) is less stiff than the crunchy variant (~5800 Pa).

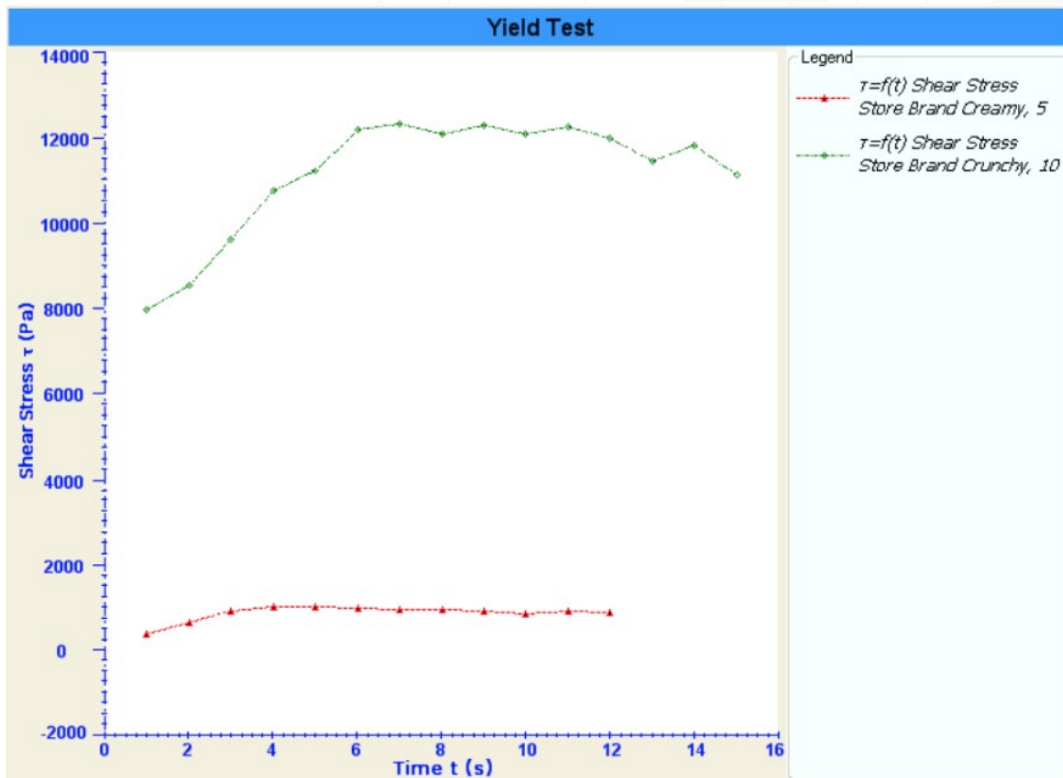


Figure 1

Results:

- Creamy Peanut Butter: Lower yield and modulus values, indicating smoother spreadability.
- Crunchy Peanut Butter: Higher yield and modulus values, reflecting firmer texture and increased resistance due to peanut pieces.

Discussion:

Yield value and modulus measurements allow for easy classification of peanut butter textures, aiding in quality control and product consistency. The RSX SST provides rapid and reliable texture analysis, essential for meeting consumer expectations in terms of spreadability and mouthfeel.