

USE

Butter and margarine viscosity are extremely high. Force measurements can be used for these tests using a Texture Analyzer. Flow properties can also be measured using a Viscometer or Rheometer. The Brookfield RST-SST (Soft Solids Tester) can measure the flow properties with a test running under 60 seconds.

TEST EQUIPMENT

Instrument: RST-SST Rheometer

Geometries: VT-10-5 (10 mm long by 5 mm in diameter) and VT-20-20 (20 mm long by 20 mm in diameter) vane spindles

Test: Controlled shear rate (CSR) yield test:

Start: 0.5 RPM

End: 0.5 RPM

Length: 30 seconds to 60 seconds (depending on the sample)

Readings: 30 to 60 measuring points depending on the test length

Temperature: All samples (and the rheometer vane spindles) were conditioned in a refrigerator at 4.5°C prior to testing.



RESULTS

Figure 1 plots shear stress vs. time for 4 different samples. The yield value is described as the peak shear stress value (i.e., ~12,000 Pa for the sample labeled “spread”, or ~95,000 Pa for the sample labeled “Butter”). The test detects large differences between the samples.

We also calculate the modulus (slope of the stress/time curve) and again values show significant differences; ranging from 1,168,313 Pa for the butter (the highest) to 75,264 Pa for the spread (the lowest).

1. The combination of yield value and modulus correlate with butter “spreadability”.
2. The test is done at refrigeration temperatures, where consumers are using the product.
3. The test is fast; in all four tests run time was less than 30 seconds.
4. The SST is a very robust instrument, able to withstand constant use in a busy QC lab with very little service.

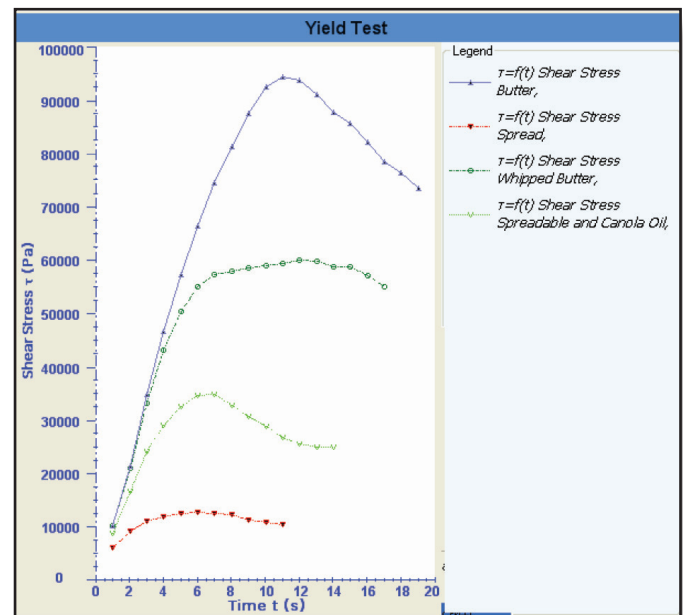


Figure 1