

GET IT RIGHT:

The "GUARD LEG" Can Make A Difference

Viscosity testing is sometimes performed to evaluate food materials in the mixing process. The objective is to understand how the viscosity changes as the mixing action progresses. This can affect the choice of mixing blades and power requirements for the mixer.

The standard benchtop viscometer easily performs the relevant test. (See Figure 1) A spindle is immersed in the liquid to be tested and then attached to the viscometer. The spindle rotates at different speeds and the corresponding viscosity values are measured and recorded.



Figure 1:
Rotational Benchtop
Viscometer: Brookfield
DV-II+Pro EXTRA

Protecting the spindle and sensing shaft is a band of metal in the shape of a "U" which attaches to the back side of the viscometer "pivot cup". Its shape is designed to accommodate the spindles that come with the instrument. By its very design, it protects the spindle, and in turn the sensing system, from accidental bumps that can occur in a busy lab environment.

For medium viscosity food items (sauces, creams, dips, yogurts), the RV spindle set is most commonly used. For low viscosity liquids (soups, broths, beverages), the LV spindle set is appropriate. (See Figure 2) The different shapes are historical with the RV spindles



RV Spindle Set



LV Spindle Set

Figure 2: Brookfield's RV and
LV Spindle Sets

were introduced originally, and the LV spindles came some time later. HA and HB torque were developed later still and are strong enough that the guard leg protection is not necessary.

The width of the RV Guard Leg is greater than the LV Guard Leg because of the large diameter of the largest RV spindle, #1RV. (See Figure 3)

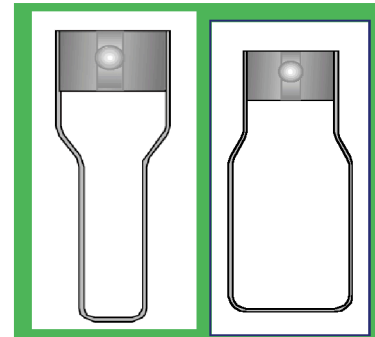


Figure 3: RV and LV Guard Legs
for Brookfield Viscometer

The proper calibration of the instrument de-

depends on the use of the Guard Leg, especially for the larger spindles. The Guard Leg provides an outer boundary condition for the shearing action imparted to the fluid by the rotating spindle. For the #1RV and the #1LV spindles, the measured viscosity value can be lower by more than 15% when the Guard Leg is not used. Sometimes when customers report viscosity values that are lower than what might normally be expected, the reason is the absence of the Guard Leg.

Correct viscosity measurements depend on following a properly documented test procedure. One of the minor details that is sometimes overlooked is the complete specification of the equipment system. In this case, it's obvious that a rotational viscometer is needed. Also included should be a statement about whether the Guard Leg is required, along with choice of spindle, rotational speed, and time of spindle rotation.

Save time and money by doing it right the first time and every time. Best results come from a consistent and thorough approach to test methodology.