

# IMPROVING VISCOSITY CHECKS IN THE FOOD QC LAB

**S**afety is paramount in the Food QC Lab and one precaution that many observe is to avoid the use of glass whenever possible. The calibration check procedure for rotational viscometers requires the use of a 600 mL beaker containing a viscosity standard fluid of known cP value. Preferably, this beaker is made of plastic or some other non-glass material. (See Figure 1) Best practice also recommends the use of a temperature bath to control the viscosity standard fluid temperature to 25°C. (See Figure 2)



Figure 1: Brookfield Plastic Vis-Cal Kit with 600mL Beaker



Figure 2: Rotational Viscometer Performing Calibration Check

One of the little problems sometimes encountered is the flotation of the beaker in the bath due to buoyancy. A novel aid to keep the beaker in place is a custom-designed clamshell weight that neatly fits around the lip of the beaker. (See Figure 3) There are openings in the weight that allow the spindle on the viscometer and the protective bracket (Guard Leg) to fit through so that the viscosity measurements are readily accomplished.



Figure 3: Custom-Design Clamshell Weight That Fits on 600mL Beaker

The calibration check of the viscometer should be done on a periodic basis. Some QC managers in busy labs which perform dozens of viscosity measurements every day require a calibration check before each shift. Others may call for a weekly check or some longer time interval that suits the frequency with which the viscometer is used. In any event, it is important to check the calibration whenever there is doubt about the validity of the viscosity readings obtained on your sample material.

To make things easier when performing a calibration check, make use of the calibration template at <http://www.brookfieldengineering.com/support/videos.asp> which systematically guides the user through the procedure. (See Figure 4) All you have to do is plug in the viscosity measurements from your cal check test and the template tells you whether you pass or fail. Another useful tool on the same website is a series of videos which show how a cal check is performed. In today's visual world, this can provide ideal, low-cost training for your instrument operators.

**CALIBRATION TEMPLATE FOR ANALYZING CALIBRATION RESULTS**

**INSTRUCTIONS:** ENTER VALUES IN BOLD FIELDS ONLY. Enter instrument model: LV  
Enter value of Calibration fluid in column A. Enter spindle code in column D. Enter temperature under the RPM used in column E. Enter viscosity reading in column H.

A	B	C	D	E	F	G	H	I
Calibration Fluid (cP)	Spindle Code	Temperature (°C)	Spindle Code	RPM	RV UP	% Error UP	Viscosity Reading (cP)	Pass/Fail
<b>400</b>	RV	15	<b>62</b>	<b>12</b>	2,250 RPM	2.5%	400.0	<b>4.98E+02</b>
400	RV	15	62	30	1,000 RPM	10.0%	400.0	<b>4.98E+02</b>
400	RV	15	62	60	500 RPM	5.0%	400.0	<b>4.98E+02</b>
400	RV	15	62	10	1,000 RPM	10.0%	400.0	<b>4.98E+02</b>
400	RV	15	62	12	1,500 RPM	15.0%	400.0	<b>4.98E+02</b>

2010

RV	Spindle Code	Temp (°C)	RPM	RV UP	% Error UP	Viscosity Reading (cP)	Pass/Fail
12	62	15	12	2,250	2.5%	400.0	TRUE
30	62	15	30	1,000	10.0%	400.0	TRUE
60	62	15	60	500	5.0%	400.0	TRUE
10	62	15	10	1,000	10.0%	400.0	TRUE
12	62	15	12	1,500	15.0%	400.0	TRUE

Figure 4: Calibration Template for Checking your Viscometer

In summary, Food QC Labs have plenty of opportunity to improve their practices by adhering to the helpful tips explained above.