Custard Powder Method

Scope

- Assess pasting properties of starch-based custard powders.
- Compare competitive products.
- Quality control.

Rapid Visco Analyser

The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision, flexibility and automation, the RVA is a unique tool for product development, quality and process control and quality assurance.

Description

The RVA can be used to assess the cooked viscosity of various products. The precise heating and cooling abilities of the RVA allow careful control of the cooking environment. Custard quality is dependent upon cooked custard viscosity. The pasting properties of starch based custard powders are readily assessed in the RVA.

During the test, the starch in the custard is gelatinized with a consequent rise in viscosity, and then cooled to provide an indication of the final viscosity that would be expected with cooking. Samples can be assessed for pasting temperature, temperature at peak and hot or cold paste viscosity using milk or water. Peak viscosity is a useful indicator of product quality.

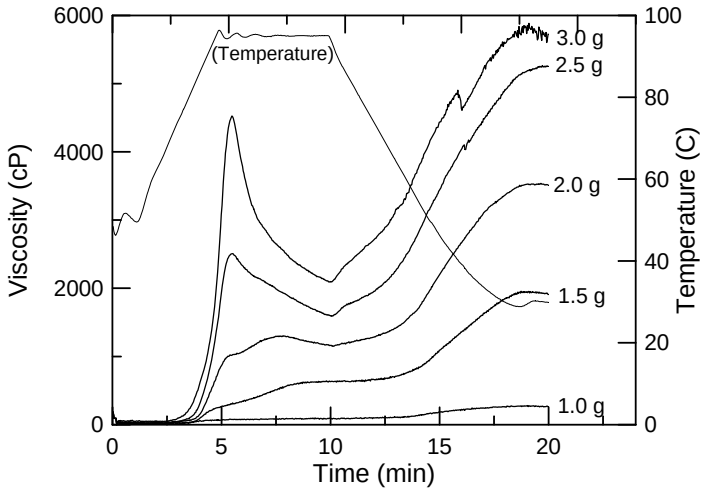

Fig. 1. Pasting curves of various amounts of custard powder in water.

Method
Thirteen-minute pasting profile.

Sample Preparation
2.25 g custard powder (14% mb) and 25.0 ml distilled water.

Profile

Time	Type	Value
00:00:00	Temp	50°C
00:00:00	Speed	960 rpm
00:00:10	Speed	160 rpm
00:01:00	Temp	50°C
00:04:42	Temp	95°C
00:09:42	Temp	95°C
00:15:30	Temp	30°C
00:20:00	End	
Idle Temperature: 50 ± 1°C Time Between Readings: 4 s		

Measure
PV: Peak viscosity (cP)
PT: Pasting temperature (°C)
TV: Trough viscosity (cP)
BD: Breakdown (BD)
FV: Final viscosity (cP)
SB: Setback (cP)

The PV is the RVA Custard Index. The above method can be used to determine custard viscosity using water instead of milk.

The effect of custard powder concentration, and comparison of viscosities using milk or water, can be determined as follows. First, a standard curve should be developed using the above method. To do this, a number of custard samples should be tested at various concentrations of water (e.g. at 4, 6, 8, 10 and 12% solids). From the viscograms, the peak viscosity is fitted as a dependant variable against concentration using standard regression techniques. The $\log_e$ transformation can be used as appropriate. The regression equation can then be used to predict viscosity at various concentrations.

Similarly, a standard curve can be developed for predicting milk behavior from results in water. The above method is used with varying concentrations of custard in both water and milk. The final viscosity for milk samples are fitted as dependant variables against final viscosity for water samples using standard regression techniques. The regression equation can then be used to predict viscosity of custard in milk for a given viscosity in water.