

Potato Starch Method

Scope

- Assess the cooked viscosity of potato starch.
- Quality control.
- Monitor consistency of starch quality between batches.

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

Potato starch is characterized by large granules and forms a very high peak viscosity during cooking which rapidly reduces. These properties are markedly different to the cereal starches and are more marked even than root starches such as from tapioca.

The Brabender ViscoAmyloGraph has often been used to estimate the performance characteristics of potato starches. However, the long slow heating and cooling protocol may not simulate actual production procedures and restricts the number of samples that can be analyzed to four or five a day.

A 13-minute test in the RVA provides a rapid yet accurate alternative to study the cooking properties of potato starch, making it suitable for both research and quality control applications.

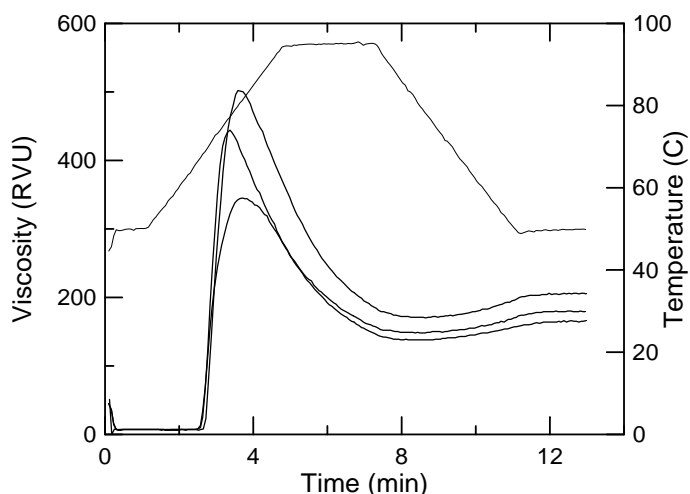


Fig. 1. Pasting curves of three potato starches (2.00 g sample).

Method

Thirteen-minute pasting profile.

Sample Preparation

2.00 g potato starch (1.20 g if the starch is a commercial source) at 14% moisture 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
00:07:12	Temp	95°C
00:11:00	Temp	50°C
00:13:00	End	
Idle Temperature: 50 ± 1°C Time Between Readings: 4 s		

Measure

PT: Pasting temperature (°C)

PV: Peak viscosity (cP)

PTi: Time to peak (min)

BD: Breakdown (cP)

TV: Trough/minimum viscosity (cP)

SB: Setback (cP)

FV: Final viscosity (cP)

The PV is the RVA Potato Starch Index. Potato starches often exhibit low pasting temperatures and minimal setback due to naturally substituted groups on the starch molecule. They also show strong water binding capacity but are highly susceptible to thinning at high temperature. Damage during commercial production can reduce peak viscosity and this is readily measured in the RVA.