

### Sweet Potato Starch Method

#### Scope

- Assess starch quality of sweet potato.
- Compare starch quality of different varieties.

#### 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

Sweet potato is consumed widely in Japan and other Asian countries, with pigmented varieties having the additional reputed benefit of dietary antioxidants. Variety and growing conditions have been shown to affect starch pasting properties and digestibility. The RVA provides a method to index the starch quality.

#### Example

**Table 1.** RVA pasting properties of various cultivars of sweet potato grown at standard and high levels of fertilizer (Source: Noda *et al.*, (1996). Physicochemical properties of starches from purple and orange fleshed sweet potato roots at two levels of fertilizer). Starch 48 (11/12: 395-399).

Cultivar	Fertilizer level	Peak Viscosity (RVU)	Breakdown (RVU)	Setback (RVU)	Pasting Temp. (°C)
Ayamurasaki	Normal	509	326	88	73.9
	High	519	323	96	73.9
Kyushu No. 109	Normal	542	309	118	73.3
	High	579	309	99	73.3
Kyushu No. 120	Normal	548	411	118	71.1
	High	515	383	113	72.0
Kyushu No. 122	Normal	527	385	115	71.5
	High	516	373	114	70.8

## Method

Thirty-eight-minute profile.

## Sample Preparation

2.50 g starch (dwb) and 25.0 ml distilled water.

## Profile

Time	Type	Value
00:00:00	Temp	30°C
00:00:00	Speed	960 rpm
00:00:10	Speed	160 rpm
00:13:00	Temp	95°C
00:19:00	Temp	95°C
00:28:00	Temp	50°C
00:38:00	End	
Idle Temperature: 30 ± 1°C Time Between Readings: 4 s		

## Measure

PV: Peak viscosity (cP)

BD: Breakdown (cP)

PT: Pasting temperature (°C)

SB: Setback (cP)

The PV is the RVA Sweet Potato Starch Index. Starch with a high peak viscosity, above 6000 cP, is desirable for making food products and for use as a binder.