

## Viscosity of Cationic Starches Method

- Developed by A.E. Staley Manufacturing Co., Decatur, IL 62525, USA.

### Scope

- Assess cooked viscosity of cationic dent corn starch.
- Differentiate starches with different degrees of modification.
- Quality control of the starch modification process.
- Quality control of starch used in the paper industry.

### Rapid Visco Analyser

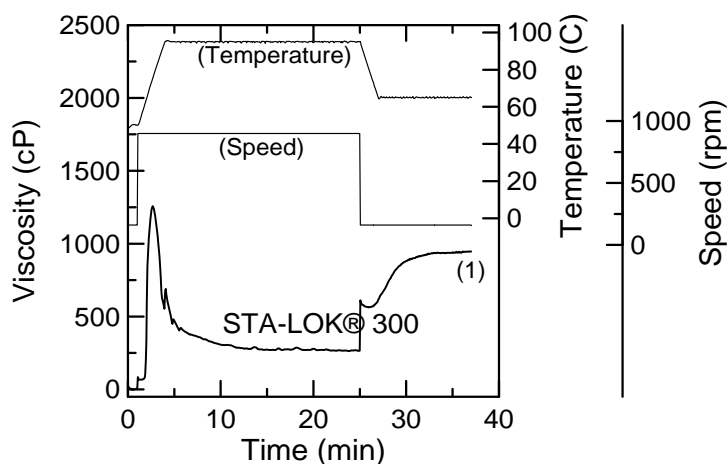
The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision,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



### Description

The method is applicable to cationic corn starches (waxy and dent), including those that have also been acid-thinned. These industrial starches are used widely for wet end, size press and coating applications in papermaking. High shear is used during cooking to approximate typical processing conditions for these starches.

### Example



Analysis	Starch Type
(1) Viscosity at end of test (cP)*	All
	✓

\*Subtract viscosity at 0.50 minutes from value to give final result.

**Fig. 1.** Pasting curve of cationic corn starch using the ST-04 Method, showing the commonly measured parameters.

## Method

Thirty-seven-minute pasting profile.

## Sample Preparation

Select starch concentration (in distilled water) based on starch viscosity from the relative viscosity table below, to give an end viscosity of 800-1500 cP.

Relative Viscosity	Starch Concentration (dry solids, % w/w)	Example of Starch
High	10	STA-LOK® 180, 300
Medium	20	LOK-SIZE® 30
Low	30	ELECTRA® 7458

## 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	Speed	900 rpm
00:01:00	Temp	50°C
00:03:00	Temp	95°C
00:25:00	Temp	95°C
00:25:00	Speed	160 rpm
00:27:00	Temp	65°C
00:37:00	End	
Idle Temperature: 50 ± 1°C Time Between Readings: 4 s		

## Measure

FV: Final viscosity (cP)\*

\*Subtract viscosity at 0.50 min from value to give final result.