

## Viscosity of Ethylated Starches Method

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### Scope

- Assess cooked viscosity of unmodified/modified 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

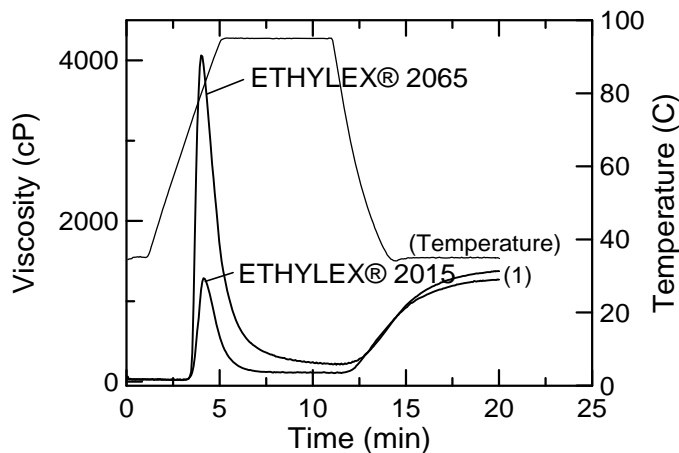
The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision,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



### Description

This method is applicable to dent corn starch that has been both hydroxyethyl-substituted and acid thinned. These industrial starches are used widely in sizing and coating paper. The final temperature of 35°C (95°F) differentiates the product by amount of substitution as it affects retrogradation.

### 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 ethylated dent corn starches using the ST-03 Method, showing the commonly measured parameters.

## Method

Twenty-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	7.5	ETHYLEX® 2095
Medium-High	10.0	ETHYLEX® 2075
Medium	15.0	ETHYLEX® 2065
Low-Medium	17.5	ETHYLEX® 2040
Low	22.5	ETHYLEX® 2025
Very Low	27.5	ETHYLEX® 2015

## Profile

Time	Type	Value
00:00:00	Temp	35°C
00:00:00	Speed	960 rpm
00:00:10	Speed	160 rpm
00:01:00	Temp	35°C
00:05:00	Temp	95°C
00:11:00	Temp	95°C
00:13:00	Temp	35°C
00:20:00	End	
Idle Temperature: 35 ± 1°C Time Between Readings: 4 s		

## Measure

FV: Final viscosity (cP)\*

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