

### Fungal Amylase Method

#### Scope

- Assess the fungal amylase activity of supplemented flours.
- Compare the quality/activity of fungal amylase premixes and concentrates.

#### 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

Addition of a low level of amylase activity in wheat flour actually improves the quality of traditional raised (pan) bread. Commonly the diastatic power of wheat is low and it is thus enhanced by addition of either malt flours or fungal amylase (FA). Fungal amylase is rapidly denatured at high temperature and cannot be assessed using the Stirring Number method. See separate method (Method 03 – Malt Flour Method) for assessing malt flour amylase activity.

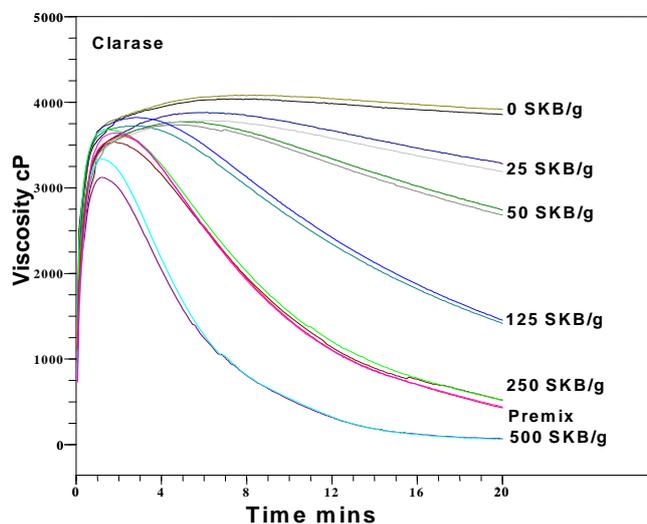


Fig. 1. Effect of aqueous extracts of fungal amylase (Clarase 5000) on starch substrate.

## Method

Test substrate added to sample in water or buffer, and tested using profile below.

## Sample Preparation

Baker's flour supplemented with FA: 2.00 g, 1.70 g substrate available from Perten Instruments of Australia, and 25.0 ml distilled water

FA premixes and concentrates: 1.0 ml extract, 24.0 ml Buffer B, and 1.70 g substrate

### Preparation of extracts

*Premix:* 1.00 g in 100 ml Buffer B, extracted over 10 min at room temperature

*Concentrate:* 1.00 g in 100 ml Buffer B, extracted over 10 min at room temperature. 1.0 ml extract diluted to 1000 ml in Buffer B.

### Preparation of Buffer B

Glacial acetic (5.9 ml, 1.05 g/ml) added to 900 ml distilled water. pH adjusted to 4.4 with 1M sodium hydroxide solution. Calcium chloride dihydrate (0.74 g) and sodium azide (0.2 g) added, pH readjusted to 4.4. Volume adjusted to 1000 ml. Store at room temperature.

## Profile

Time	Type	Value
00:00:00	Temp	50°C
00:00:00	Speed	160 rpm
00:20:00	End	
Idle Temperature: 50 ± 1°C		
Time Between Readings: 4 s		

## Measure

V20: Viscosity at 20 min (cP)

The viscosity at 20 min is the RVA Fungal Amylase Index. Lower values indicate higher amylase activities. The RVA Fungal Amylase Index may be converted to a SKB or similar value using calibration curves (contact Perten Instruments for more details).

The test substrate has a low pasting temperature, which allows gelatinization and amylase attack at a temperature that does not denature the fungal amylase. The substrate will also be hydrolyzed by any cereal amylase present, thus total amylase activity is measured, relevant for processing.