

rva

the

new



standard

september 1997

special edition

A. E. Staley Methods - Launched at IFT '97

Newport Scientific Pty Ltd and Foss North America, Inc. chose the 1997 Institute of Food Technologists Annual Meeting and Food Expo to launch their new standard methods for testing starch pasting qualities using the **Rapid Visco Analyser (RVA)**.

A joint project combining the expertise of Newport Scientific Pty Ltd, Foss North America, Inc., and A. E. Staley produced this suite of accurate standard methods for the food industry. They were developed in A. E. Staley Manufacturing Co.'s research and development laboratories by experts in the field of starch assessment and research.

This suite of five simple methods can be used to determine the cooked viscous qualities of cook-up waxy food starches, cook-up dent food starches, ethylated starches, cationic starches, and acid thinned starches - covering the complete range of food applications.

The methods developed by A. E. Staley offer a number of advantages previously unavailable to the food and starch industries - a clear demonstration of starch functionality, easy-to-interpret analysis, reliable, repeatable results, and consistent results between test sites.

The Rapid Visco Analyser was a featured instrument at the Foss North America, Inc.

booth at the IFT Food Expo in Orlando, Sunday June 15 through Wednesday June 18. Visitors, too, had an opportunity to see the new starch pasting methods running on an RVA-4 and RVA-3D+, and to collect their free copies of the methods.

If you would like a copy of A. E. Staley's revolutionary food starch pasting test methods, visit the Foss North America booth at:

Worldwide Food Expo '97,
Chicago, IL, October 30 to
November 2, 1997.

**American Association of Cereal
Chemists Annual Meeting**,
San Diego, CA, October 12 to 16, 1997.

Or you can contact:
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A

GLOBAL

REVOLUTION

IN

FOOD STARCH

QUALITY

ANALYSIS.



"Starch and viscosity go hand in hand. Staying on top of current technologies used to test our starches for viscosity is expected in an industry leader.

This is why we are providing methods for testing starches on the RVA".

Gary Augustine
Product Manager - Food Ingredients
A. E. Staley



The A.E. Staley Methods have been designed for use on the Newport Scientific RVA-3D+ and RVA-4 instruments. To obtain a copy of the Methods contact the RVA Product Manager at:

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RVA at AACC San Diego

Newport Scientific researchers, Mark Bason and Natalie Turner will be on hand at AACC 1997, San Diego, CA, to present: "Assessing the Functional Properties of Wheat Flour Proteins".

The **Rapid Visco Analyser** has conventionally been used to analyse starch quality and amylase activity but recent work in plasticising gluten proteins has provided an opportunity for a more general viscometric test for bread-making quality of gluten. Natalie and Mark will be pleased to answer your questions about the effect of cooking and shear on the rheology of gluten using the **RVA**.



Customised Test Methods for Starch Applications

S. Purkayastha¹ and M. L. Bason²

The wide diversity of starches available today reflects the ever-increasing range of applications that these starches are finding in the food, paper and adhesive industries. With increased applications comes a concomitant need for relevant testing methods.

Methods to measure the quality of starch must reflect its suitability for the intended application. Further, the methods must provide good repeatability and be able to discriminate well between samples. They should also provide results in standard and traceable units, to promote agreement on traded specifications. Simplicity and speed of the method are additional considerations.

The A. E. Staley methods using the **RVA** were developed with these objectives in mind. The methods reflect typical processing conditions of time, temperature, and shear for the corresponding starch type. In doing this, the suitability of a starch for an application, or its quality, is revealed.

To illustrate, the method for cook-up waxy starches ([method ST-01](#)) may be considered.

This method employs a relatively extended period where the starch is exposed to high temperature (95°C) under low/moderate shear. This reflects the typical cooking parameters used in many food manufacturing processes. The key starch qualities of thickening and stabilisation are revealed in this test.

The quality of two starches under these conditions, an unmodified Waxy and a crosslinked Rezista sample, is shown in **Figure 1**. The ability of Rezista to withstand the cooking conditions is displayed by its increase in viscosity during the test. By contrast, the unmodified starch suffers a breakdown in consistency and results in a much thinner product.

These trends would have been masked in a shorter test, given the originally higher peak viscosity of the unmodified starch and the time required to swell the crosslinked starch granules.

The crosslinked starch is more suitable in extended cooking conditions where good viscosity development and maintenance are required. Testing at low pH could easily be

incorporated into this test to further reveal acid stability where acid conditions are encountered in manufacturing.

Viscosity is reported in centipoise, a standard and traceable unit of measurement. Automation of testing and data analysis in the **RVA** contribute to the simplicity of the method.

These results indicate the suitability of the A. E. Staley methods for measuring starch quality as dictated by the application in question.

1 A. E. Staley Manufacturing Co., Decatur, IL, USA.
2 Newport Scientific Pty Ltd, Sydney, NSW, Australia.

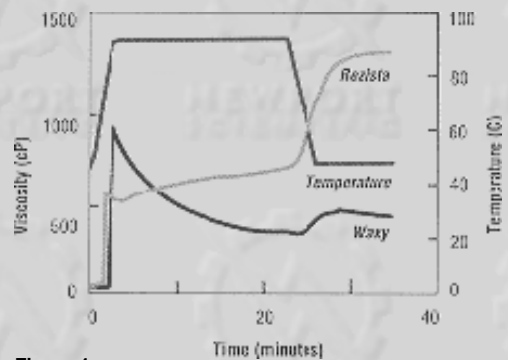


Figure 1.
RVA viscosity traces of a crosslinked (Rezista) and unmodified (Waxy) starch tested using [method ST-01](#).

New RVA Applications from Whalen Consulting - Corn and Wheat Flours, Malt Activity, Pasta

Paul J. Whalen has been busy with the **Rapid Visco Analyser**, focusing on a variety of new applications in ingredients and their functionality - brewing and malting, and pasta.

An ability sort to 'good' and 'poor' performing corn or wheat flours is important in maintaining quality product. Separation of corn or wheat flours can be made very distinct with the versatile methodology that the RVA-4 allows. The **RVA** allows distinct

performance criteria based on the transition phases of the material under certain conditions.

Further studies undertaken on screening of malt activity extend the Australian work on brewing and malting applications for the **RVA**. Barley growing areas of the USA have suffered from repeated wet years which have affected the crop with a *Fusarium* mold. A sensitive yet rapid six-minute procedure on the **RVA** has been developed to control the brewing process

Exciting applications in pasta are showing a high degree of differentiation between imported and domestic pasta, indicating that the **RVA** can be used to monitor the flour and the process.

Paul Whalen says: "The **RVA** continues to perform in accepted areas of viscosity testing, as well as in new and exciting applications."

For more information read **RVA World** or contact Paul J. Whalen at Whalen Consulting Inc., Elk River, MN.



RVA at University of Nebraska Workshop

"An Introduction to Ingredients and Ingredient Functionality" workshop sponsored by the Institute of Food Technologists' Continuing Education Committee was held for ingredient suppliers, marketing specialists and product development scientists in May at the Food Processing Center, University of Nebraska, Lincoln.

The RVA was featured in practical sessions with demonstrations of potential applications by Dr Paul Whalen of Whalen Consulting, and Dick Metzger of Foss North America, Inc.

For information about future workshops with the opportunity for hands-on experience with the RVA, contact Dick Metzger at Foss North America, Inc.

Foss Welcomes the Perstorp Analytical Team

Expanding and improving its services with the purchase of the analytical division of Perstorp, the 'new' Foss North America, Inc. now has three divisions - Food and Dairy, Agriculture and Meat, and Chemical Analysis - at head-quarters in Eden Prairie, MN.

In addition to all the existing Foss products and services, NIRSystems and Infratec brands will be supported, and Tecator brand products will continue to be supplied through current distribution channels.

The Foss commitment to customer service remains the primary focus of the organisation with the company welcoming new professional colleagues to provide the best service and support possible.

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Meet the People:

Kevin Albertson

RVA Customer Service Engineer, Foss North America, Inc.



Prior to working for Foss North America in 1989, Kevin worked for a satellite communications company in Sunnyvale, California. He was sitting in the front row in the Spring of '89 when Rod Booth, Newport Scientific's Managing Director, was introducing the **RVA** to Foss. Many things have changed over the years but one thing's the same - Kevin is still actively involved in the training and service of the **RVA** (as well as many other instruments). As the lead Customer Service Engineer for the **RVA**, he has spent literally thousands of hours helping to refine the design and operational aspects of the unit, software changes as well as service, routine maintenance, and customer training.

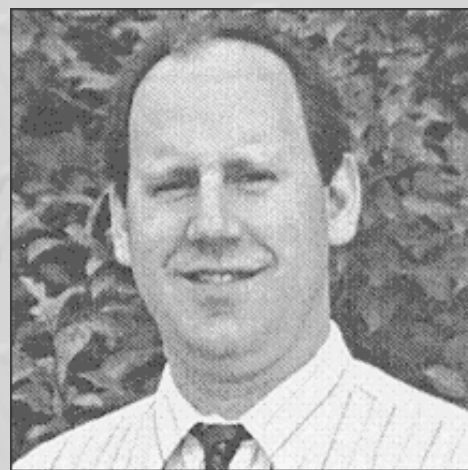
Customers routinely contact Kevin to resolve problems and questions, with 'fixes' often done over the phone or via modem. He travels through-out North America and is involved with installations, customer training and regularly schedules preventative maintenance visits. Every Spring, Kevin offers a three-day intensive service training course which covers such procedures as basic maintenance, software and calibration technique.

Kevin encourages **RVA** users to send him any thoughts they have on ways of improving either the **RVA** or his services.

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Dick Metzger

RVA Product Manager, Foss North America, Inc.



Dick has worked for Foss North America, Inc. as a Product Manager in Applications Engineering since 1990 and RVA Product Manager since 1991. With a Bachelor of Science in Dairy Manufacturing and a minor in Microbiology from South Dakota State University, Dick has experience as product manager in the dairy, grain, meat, starch, alcohol and general food industries. His specific work areas include applications development, sales and marketing, publishing literature and newsletters, public relations, product launches and official approvals.

Before joining Foss, Dick worked for the USDA (United States Department of Agriculture) Dairy Division as a Dairy Plant Inspector, Dairy Product Grader and a Regional Supervisor for an 11-state area, which included the supervision and scheduling of inspectors and graders, new equipment approvals and co-ordinating grade label programs. He is an AOAC Associate Referee for the raw milk sampling area.



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