



Book review

G.B. Crosbie, A.S. Ross (Eds.), *The RVA Handbook*, AACC International, St. Paul, MN, USA, 2007 (vi + 152 pp., \$139.00, ISBN 1-891127-54-3)

The 'Rapid Visco Analyser' (RVA) is an increasingly popular and versatile instrument for determining the viscous properties of cereal and food products such as starch, grain or flour. It is a rapid and simple to perform viscometric data acquisition tool. The instrument requires only a small amount of sample for analysis, using tailor-made mixing, measuring, heating and cooling profiles. '*The RVA Handbook*' was written to provide practical support for RVA users. The chapters range from practical instruction on calibration techniques to provision of guidance on the use of the RVA for applications far removed from its original function, i.e. there is a wide diversity of subject matter.

The principles of operation and also key components of the RVA are introduced in Chapter 1. This section also provides indispensable information about controlling shear rate, determining torque, sample temperature control, and the software and procedures needed to run the tests. Chapter 2 assists with interpretation of time/viscosity curve outputs, and clearly explains the RVA test stages. Furthermore, the effect of other components except starch, like lipids or proteins which influence measured sample viscosity, are introduced. The RVA has also proved to be a very useful tool when investigating the quality of cereal grains and other grain products, such as rice, corn, barley, oats and rye (Chapter 3), and because of its simplicity, speed, and method flexibility, it is widely used in many industrial processes. The following three chapters (4–6) provide more information about application of the RVA to a variety of starch-rich materials both cereal and non-cereal sources. Aspects such as surveying biodiversity for starch physical properties in order to determine material for plant breeding, quality control including raw materials, and also starch-based products themselves are presented in Chapter 4. A wide range of starch-containing plants, including potatoes, *Amaranthus*, Sorghum and other species such as buckwheat are discussed. The next chapter (5) is concerned with certain diagnostic attributes of RVA pasting curves used to identify and quantify different

types of starch modification. Extruded products and degree of cook are also discussed (Chapter 6).

This volume is also a valuable source of information on numerous established non-starch RVA applications, especially analysis of hydrocolloids. Pure and mixed non-starch systems with carrageenan, locust bean gum, xanthan, pectin and Konjac glucomannan are reviewed (Chapter 7), along with characterisation of the properties of protein-rich ingredients and foods (Chapter 8), especially skimmed milk powders, milk protein concentrates, whey powders, soy proteins, gluten, gelatin and egg protein. Simulation of manufacturing processes, including stirred yoghurt, recombined sweetened condensed milk, soft cheese, and custard are also described, along with the analysis of cheese meltability and flow using RVA methods, instead of standard helical viscometry methods (Chapter 9). The penultimate chapter (10) deals with the application of RVA methods for assessing enzyme (α -amylase) activity in grains, in order to determine sprout damage. Such RVA methods have also been utilised for the assessment of storing, malting, brewing barley and detecting the effects of cereal and fungal amylases and proteases in flour. Finally, Chapter 11 focuses on calibrations and maintenance.

'*The RVA Handbook*' is highly recommended for all laboratory personnel and research professionals who use a 'Rapid Visco Analyzer' instrument as part of their work. It is a valuable and well-structured guidebook, which provides a lot of useful data in tables, schemes and RVA profiles throughout, and information on standard methods, definitions, and extracts on maintenance and troubleshooting from the 'RVA-4 Installation and Operation Manual' in the appendices. The only criticism is the use of the acronym RVA in the title without any reference to its definition, which conveys nothing to the general reader about the contents of the book! Consequently the title may be missed in literature searches.

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