

# Dairy Product Analysis



Laboratory and Process Instruments and Support

# Functional & Compositional Analysis

*Our instruments are extremely versatile. Use them to aid in product development, formulation, and optimization. Use them to measure ingredients before they enter your process. Use them to improve efficiency, productivity and reduce costs – while improving quality.*

## Dairy Analysis and Perten Instruments

Dairy Products are versatile materials that require many different analyses dependent upon the material in question and its use. The information required falls into two general groupings:

**Compositional Information:** Moisture, Total Solids, Protein, Fat etc. is required for formulation and nutritional information.

**Functional Information:** How the product will perform – melt, flow, stick, etc. – under specific conditions in a specific formulation or matrix.

Perten Instruments is uniquely equipped to measure both of these important sets of attributes.

## Benefits of Partnering with Perten Instruments

You are more than just a customer when you purchase an instrument from Perten Instruments. We take our goal of offering the best instrumentation and support in the industry very seriously. You can reduce costs and improve product quality by using our instruments to:

- Monitor incoming ingredients
- Optimize production processes
- Verify finished product quality
- Improve formulations and develop new products

We provide you access to our more than 50 years of analysis capabilities and expertise. We provide installation, training, maintenance and complete service.



## The Rapid Visco Analyser

The Rapid Visco Analyser (RVA) measures viscosity, but is more than just an advanced viscometer. It ramps temperature up and down and can vary the shear force to extract information on how your product will behave under different conditions. Use standard test configurations or create your own profiles. The RVA has applications in cheese, dairy powders, mixes, starches, proteins and many other uses.



**RVA 4500**

## DA 7250 SD At-line NIR

The DA 7250 SD is an IP65 certified sanitary design NIR instrument for use in production areas or the lab.

- 6-second analysis
- No sample preparation or cleaning required
- Flexible and easy to use

Analyze all types of dairy products with accuracy similar to reference methods. Liquids, slurries, powder, pastes and solids – all in one instrument.



**DA 7250 SD**

## DA 7300 In-line NIR

The DA 7300 In-line offers continuous NIR measurements directly in the process stream. It is designed for use in food production, and installation examples include analysis of butter in pipes, and milk powder in separators.



**DA 7300**

## DA 7400 On-line NIR

The DA 7400 On-line offers real-time analysis over a moving conveyor belt. It can be used in a wide range of applications including analysis of sliced cheese or cheese products.



**DA 7400**

### NIR Analysis Capabilities

**Suitable for** cheeses, butter, dairy powders, cream, yoghurts and various other dairy products.

**All relevant parameters** such as moisture, protein, fat, salt, dry matter, ash, pH, lactose, color by L, a and b values.

# Cheese Powders

## Important ingredient



Cheese powders are used in many packaged and instant foods including macaroni and cheese, rice dishes, snackfoods, soups and sauces. It is almost always a very important functional component of the meal and serves as the primary thickening agent in macaroni and cheese dishes for instance.

If the cheese powder is not formulated properly, the customer will be dissatisfied as the end result will be a soupy mac and cheese or a chunky mac and cheese. Cheese powders must also adhere to materials when applied to foods such as chips.



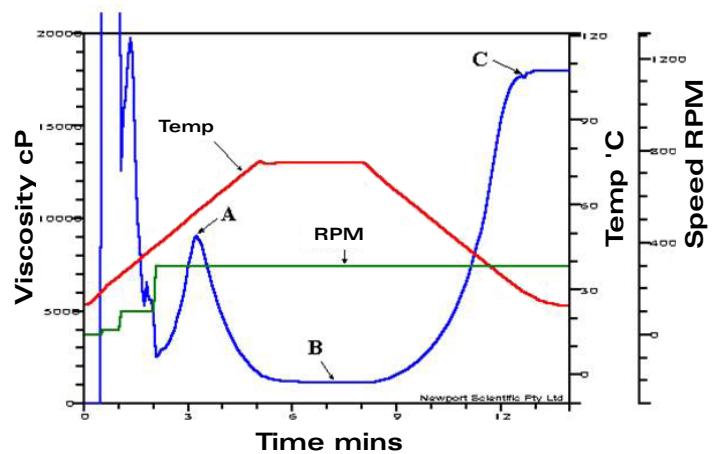
## Check product performance

The RVA allows you to measure your product's functionality before it leaves your facility. Your customers therefore can rest assured that your product will meet their use demands. Cook up cheese powders and monitor gelling and pasting properties just as the customer will use it. Record the results and "fingerprints" for comparison and verification.

The DA 7250 SD NIR instrument determines moisture, fat, salt and color (L, a, b) in cheese powders in only 6 seconds.

### Uses and benefits:

- Optimize use of ingredients
- Monitor cheese powder quality quickly and accurately
- Save money by reducing re-work
- Improve customer retention through delivery of consistent quality products
- Use the RVA as a miniature pilot plant to optimize cost use of ingredients while maintaining desired functionality
- Use the RVA to "cook" the cheese powder using package instructions





Put sample in a disposable dish



Select product



Results in 6 seconds

## Cheese Analysis

### 6-sec compositional analysis



Using the DA 7250 SD you can measure multiple components in cheese in just 6 seconds. Analyze grated, blocks, slices, or core samples. Samples are analyzed in open faced dishes minimizing sample prep and there is no clean-up. Analyze large volumes of samples to ensure the sample is representative of an entire batch. Typical parameters include Moisture, Fat, pH, and Salt.

### Formulate processed cheeses using the RVA

Processed cheese is often a blend of natural cheeses. There are thirteen different choices for emulsifying salts and many other optional ingredients depending upon desired flavor and functional characteristics. During manufacture, the cheese and other ingredients are mixed and melted (usually 70-85°C) into a homogeneous mass. Formulation can therefore be quite difficult:

1. Selected blend of natural cheeses is variable and constantly changing.
2. Manufacturing system and parameters influence functionality.
3. Optional ingredients influence functionality and cost.
4. Cost of a formula is variable.

The different RVA parameters provide different information about the process cheese. Minimum viscosity is a measure of how flowable the cheese is when held at a fixed temperature. The melting and solidification temperatures indicate how soon a cheese begins melting when heated and how quickly a cheese solidifies on cooling. It is possible to use a combination of the minimum viscosity, melting temperature and solidification temperature to differentiate otherwise similar cheeses and determine the fitness of a batch of cheese for different food products such as pizza, sauces, dips or other uses.

#### Uses and benefits:

- Optimize use of ingredients
- Monitor cheese quality quickly and accurately
- Save money by reducing re-work
- Improve customer retention through delivery of consistent quality products
- Formulate processed cheeses to exact specifications
- Use the RVA as a miniature pilot plant to optimize cost of ingredients such as emulsifiers while maintaining desired functionality

On-line cheese analysis





DA 7250 SD

*In-line butter measurement*



# Yogurt, Cheese Spreads, Sauces

## Savings potential



The DA 7250 SD NIR instrument analyzes these types of samples in only 6 seconds. Thanks to disposable analysis cups there is no need for clean-up after analysis. Rapid analysis of moisture/solids, protein and fat provide the means to save money on ingredients while improving consistency.

## Improve product quality

The RVA provides unique opportunities to test these products where functional properties are key to quality.

**Yogurt** Extremely repeatable, user-friendly, rapid analysis of texture, viscosity, “mouth feel,” effects of shear, heat, cold and enzymatic activity.

**Cheese and processed cheese spreads** Analyze melting characteristics, viscosity of melted cheese, gelling characteristics of whey protein concentrates, and the hydration index of rennet caseinate.

**Sauces** Assess thickening, viscosity breakdown, melting, and starch pasting characteristics quickly.

# Butter

## Toe the line



Ensure that you meet the stringent regulations yet do so as profitably as possible. Our NIR instruments help you optimize production.

**DA 7300 In-line NIR** measures fat, moisture and salt in real-time in the process line, and can be integrated into various process control systems to feed results directly into them. You will be able to optimize production and minimize tolerances on butterfat while reducing re-work, product recalls and avoid penalties.

**DA 7250 SD At-line NIR** measures the same parameters at-line or in the lab, in only 6 seconds. It uses disposable cups and thus requires no clean-up after analysis. Results are nearly instantaneous and can be used for both production monitoring and verification of finished product quality.

# Dairy Powders

## Variety of uses



Dairy powders are used as ingredients in many different types of foods. The diversity of uses places stringent specifications – both nutritional and functional. The combination of NIR and the RVA will help you to meet all of your customers needs allowing you to customize products for specific uses – be it a milk powder for pudding production or a whey protein powder for protein supplements.

## Improve quality while optimizing profitability

**DA 7300 In-line NIR** measures moisture, fat, protein and more in real-time in your production process. Use it to optimize drying or verify conformity with specifications. The continuous measurement provides better information on your process than a grab sample does.

The **DA 7250 SD** analyzes all sorts of dairy powders for multiple parameters in just 6 seconds. The speed and ease-of-use allows even your plant operators to analyze all batches.

## Measurements of physical properties

The **RVA** provides valuable information as to how powders will perform under various conditions in various matrices. Test the dairy powder as it is and determine properties such as gelling temperature or detect heat damage due to processing or storage. You can also test it as a component within a given formulation, ramp the temperature and mixing speeds up and down, and measure responses to these stressors over time.

### Uses and benefits:

- Monitor quality and detect product variation such as gelling temperature
- Detect manufacturing variation
- Save money through moisture content optimization
- Save money by reducing re-work and scrap
- Use the RVA to ensure proper performance at customer site



DA 7300

*Milk powder monitoring*



## Specialists in quality control of grain, flour, food and feed

Our goal, to be Specialists in quality control of grain, flour, food and feed, has been driving us since Harald Perten founded the company in 1962.

Mr. Perten`s vision, to help customers improve product quality by providing analytical methods that are affordable and easy to use, is still inspiring us to new innovations.

Today, Perten Instruments is present in just about every part of the world. In some countries we serve you through our own companies, whereas in others we serve you through local distributors. Wherever you are, we are close to you. And we are all “Specialists in quality control of grain, flour, feed and food”.



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