

# Dairy Products Analysis

Instrumentation and Analyzers



Laboratory and Process Instruments and Support



DELTA INSTRUMENTS IS NOW A PART OF PERTENT INSTRUMENTS

# Complete analysis solutions for milk and dairy products



**Perten Instruments and Delta Instruments** are now one and the same organization. Together we offer the widest range of analyzers for the dairy

industry – from milk analysis, through the production process, to your finished products.

The performance of our instruments match or exceed the industry standards. Our milk analyzers all work according to internationally recognized standards like *IDE, ISO and ICAR*. Delta Instruments is also member of *Fepale*.

You can rely on our experience and expertise which comes from more than 30 years in the industry and thousands of instruments sold worldwide.

## Functional and 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 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:** Lactose, Fat, Total Solids, Protein, Moisture etc. is required for formulation and nutritional information.

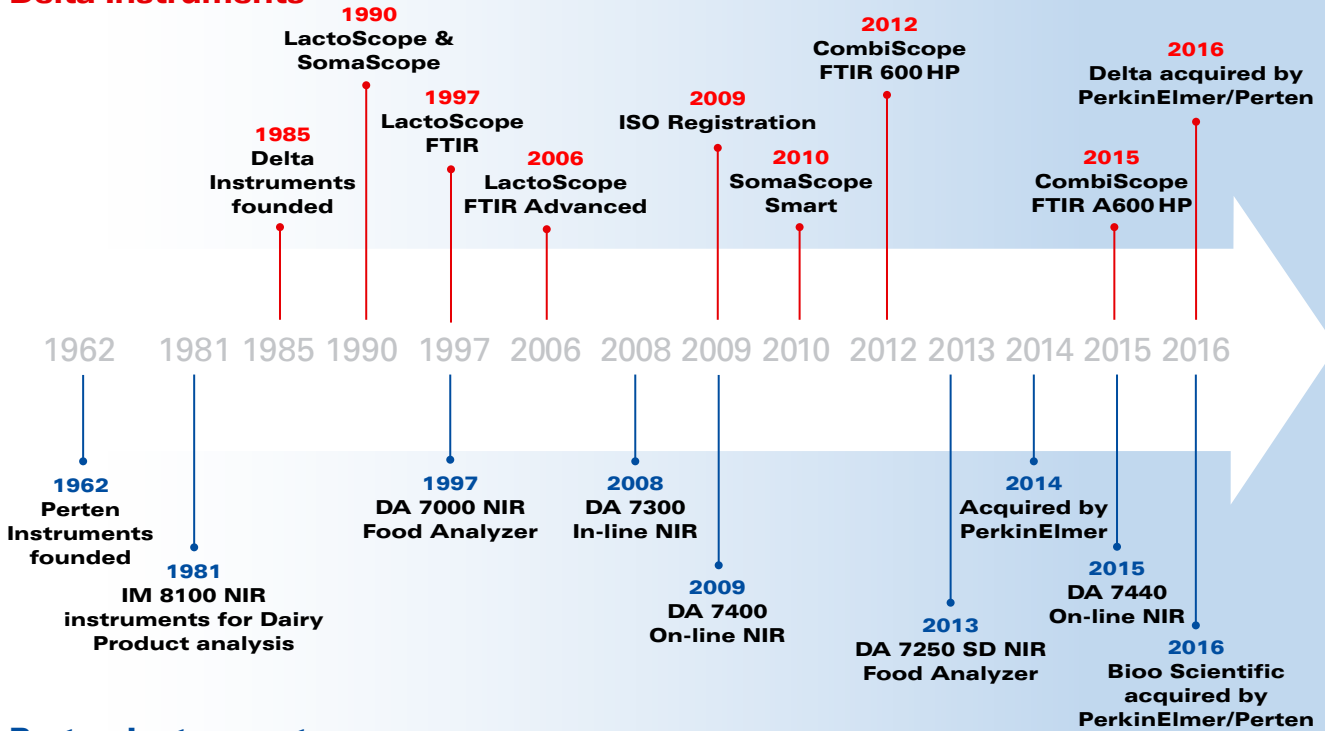
**Functional Information:** How the product will perform – melt, flow, stick, etc. – under specific conditions in a specific formulation or matrix.

Perten and Delta are uniquely equipped to measure both of these important sets of attributes.



## TIMELINE 1962-2016

### Delta Instruments



### Perten Instruments

## 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.



# Milk Analysis

COMPOSITIONAL AND SAFETY ANALYSIS



## Delta LactoScope FTIR

The LactoScope™ FTIR Milk Analyzer is AOAC and IDF compliant for the analysis of fat, protein, lactose, and total solids in milk. It's a state-of-the-art instrument, with modern FTIR optics, and simple to use but powerful software. The LactoScope FTIR can test other products such as cream, yogurt and whey thereby increasing its value and versatility. Ideal for checking incoming milk and end products, this instrument offers low cost of ownership, modular design, low reagent expense, and 30-second response time. It's the ideal component analysis tool for busy dairy laboratories. The LactoScope FTIR is chosen for its excellent accuracy and versatility for dairy products such as yoghurt and ice cream mixes and concentrates.



## Delta SomaScope Smart

The Delta SomaScope™ Smart incorporates the latest in LED and Flow Cell Cytometry. It provides fast, accurate and easy to use information at the touch of a button. Whether testing individual cow samples to improve herd health and yield, or bulk tank milk samples to improve shelf-life and quality, the SomaScope Smart provides the most accurate and affordable solution for your facility. The integrated design makes operation and maintenance simple. The intuitive software allows the operator to analyze easily while managing calibration and data sharing capabilities.

## Bio Antibiotic Screening

The AuroFlow™ lateral flow test strips are designed for the detection of a broad range of antibiotics in raw, commingled cow's milk. These rapid tests detect antibiotics at or below the sensitivities required to adhere to EU and CODEX standards for 14 beta-lactam antibiotics, major tetracyclines and 11 major sulfonamides.



# Dairy Products Analyzers

## 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 7300 In-line NIR

USDA approved NIR process sensor to provide continuous real-time control. The instrument and results are readily integrated into process control systems for automated or manual adjustment. Connect to butter churns and control butter fat to <math><0.2\%</math> of target while monitoring salt levels. Mount on dryers for moisture optimization.

## DA 7440 On-line NIR

The DA 7440 On-line offers real-time analysis over a moving conveyor belt. It measures fat, moisture and more in for example sliced or grated cheese and cheese products.

## The Rapid Visco Analyser

A flexible heating, cooling and variable shear viscometer for process simulation of recombined products such as sweetened condensed milk, yoghurt, cream cheese and ice cream. Assess batch differences in skim milk powders, whey protein concentrates and protein isolates that affect fitness for purpose. Assess the rehydration rate of rennet caseinate. Use the RVA as a "Miniature Pilot Plant" for processed cheese manufacture and meltability.

## The TVT

The TVT measures various textural properties of dairy products by cutting, pulling, pushing, and poking samples and measuring force response over time. The TVT is used in R&D/Product Development to test effects of new ingredients or suppliers and used in Production/Quality Control to ensure consistent quality. Use the TVT to measure properties such as cutting force, gel strength, springiness, gumminess, extensibility and much more.



COMPOSITIONAL ANALYSIS

FUNCTIONAL ANALYSIS



# Milk Analysis



**Efficient production** of quality dairy products require full control of incoming milk quality. This puts high demands on milk analyzers as they need to meet multiple seemingly conflicting criteria. Accuracy, rapid analysis, ease of use and robustness all need to be there. The Delta range of analyzers is the result of more than 30 years' experience of milk testing technology.

## Analysis for Payment and Acceptance

The **Delta LactoScope** is widely used by dairy companies to determine quality of incoming milk for pricing purposes. Accurate analysis is key for trust between buyer and seller. The LactoScope uses patented mid-IR technology which follows AOAC and IDF approved methods for the analysis of butterfat and protein in milk. In addition, it determines a range of other parameters including lactose, total solids, SNE, added water and more.

Using the **Delta SomaScope Smart** for rapid somatic cell testing you can ensure that incoming milk meets standards, and that your end products will have the expected shelf-life.

## Milk Standardization

When producing **consumer milk** great savings can be made through standardization. Monitoring seasonal variation in composition and variation between suppliers give you the opportunity to adjust the composition and produce milk which is closer to targets. Rapid analysis of fat content in skimmed milk and cream after the separator enables you to adjust the blending back of cream to reach your exact target. The **Delta LactoScope** makes it easy to test fat content of milk as well as cream samples, providing you with accurate results for optimal standardization.

**Cheese producers** can optimize the casein content, and the ratio between fat and casein in the milk, to increase cheese yield. The **Delta LactoScope** accurately determines casein and makes it possible to optimize the milk composition for the specific cheese type to be produced.



**LactoScope FTIR**



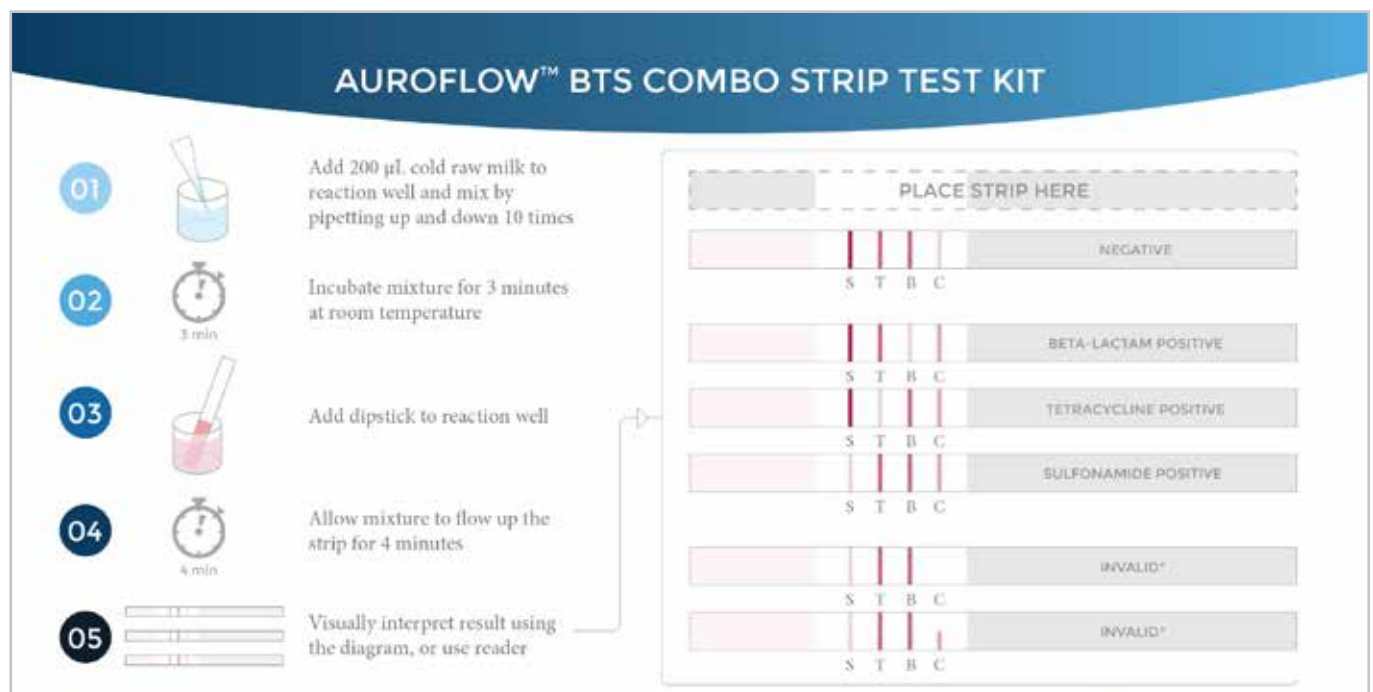
**Milk powder** producers can tailor the ratio between fat and protein in the end product by standardizing the milk. Several techniques are available to either increase or decrease the milk protein content, but they all depend on rapid and accurate analysis of milk composition. The **Delta LactoScope** is widely used for this purpose and is an excellent investment with a typical payback of 6-12 months.

## Rapid Screening for Antibiotic Residues in Milk

The AuroFlow™ lateral flow test strips are designed for the detection of a broad range of antibiotics in raw, commingled cow's milk. These rapid tests detect 14 beta-lactam antibiotics, major tetracyclines, and 11 major sulfonamides in milk at or below EU and CODEX Maximum Residue Limits (MRL). The combo kits allow simultaneous detection of different classes of antibiotic residues. The AuroFlow™ BTS Combo Kit can detect more antibiotics at or below the MRL, compared to any available competitor kit. These state-of-the-art tests also use novel binding proteins which eliminate the need for a heating block. Validation reports are available showing the efficacy of the tests in both room temperature and cold milk.



**SomaScope Smart**



# Ingredient Performance Analysis

## Important ingredients



**Dairy stabilizers** are used to keep semi-gelled dairy products like yogurt and sour cream from separating after packaging, or to improve the texture of a reduced-fat product. Common components of dairy stabilizer blends are: carageenan, gums, other hydrocolloids, and starch. For organic dairy products, there are strict rules governing the stabilizer components, making them subject to greater variability than non-organic stabilizer blends.

## Verify product performance

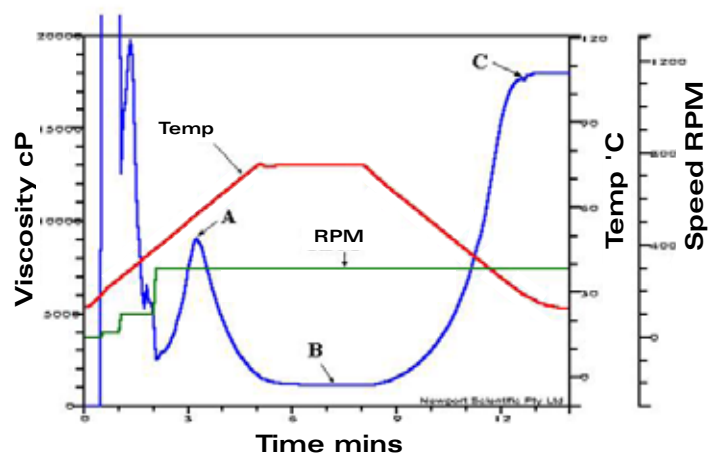
The **RVA** allows you to measure your product's functionality before it leaves your facility. Your customers therefore can rest assured that your product will meet their use demands. Cook up

cheese powders and monitor gelling and pasting properties just as the customer will use it. Record the results and “fingerprints” for comparison and verification.

## Uses and benefits:

Dairy product producers benefit in several ways by using the RVA for quality control of stabilizer blends and components:

- Reveals flaws in raw materials before an entire batch is put through the packaging process. Saves time and money through reduced packaging scrap and re-work
- Reveals flaws or sources of contamination in the large-scale finishing process
- The rapid tests available for yogurt viscosity allow facilities to test every batch that is produced, reducing manufacturer recalls of out-of-spec products
- Once an RVA test is initiated, the operator doesn't need to be present. The results are digitally archived and reported automatically. Eliminates sources of operator error, allows operators to be more efficient with their time



RVA 4500





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 quality depends on the performance of its components: natural cheese, dairy solids, and other functional ingredients. Because of the natural variability in component ingredient performance and the high cost of re-work, processed cheese manufacturers use the RVA to ensure optimal performance and drastically reduce re-work and waste:

- Ensure normal performance of incoming ingredients
- Measure cooking behavior of premix dough
- Quantify melting performance of finished processed cheese
- Make informed decisions about blending and re-work to minimize additional waste

Because RVA tests are infinitely customizable by the user, Perten's applications group works with clients to create the most descriptive, highest-throughput tests possible. RVA results are akin to a fingerprint for a given product's performance. Deviations from "normal" behavior are detected and dealt with at the source.

#### 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

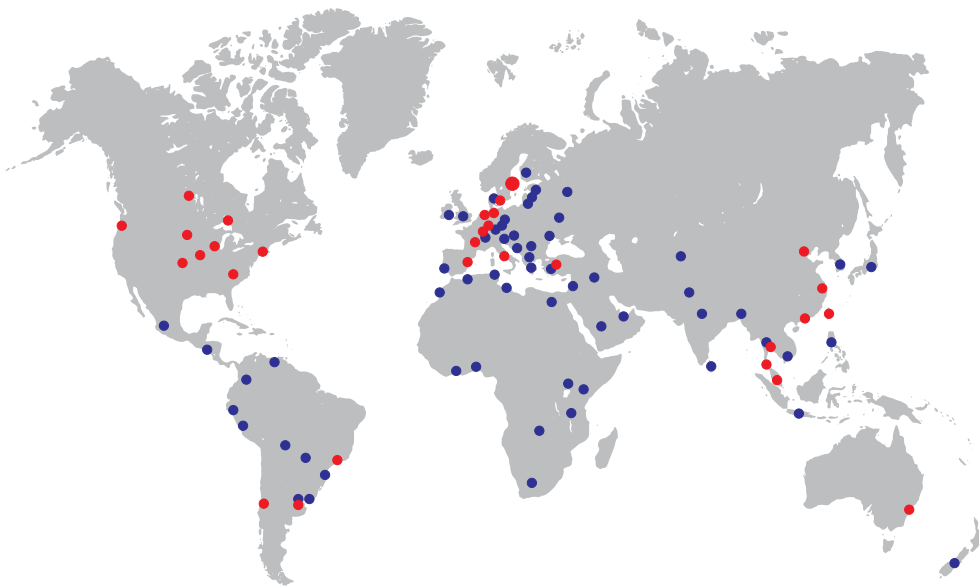
*Milk powder monitoring*



## Perten Instruments and Delta Instruments

**Perten Instruments** was founded in 1962 and is a leading supplier of analysis instruments for the food and agricultural industries. We invest heavily in R&D and over the years we have brought countless new products, and several completely new analysis methods to the industry. From the very beginning we have focused on customer support and take our goal of offering the best support in the industry seriously. In 2014 Perten was acquired by PerkinElmer and we are now part of a global company with more than 7,000 employees.

**Delta Instruments** is a well-established manufacturer of rapid, routine analytical instrumentation for the analysis of milk and milk derivatives. The product portfolio includes milk analyzers for dairy processing industries, payment laboratories, and dairy herd improvement laboratories. Delta was established in 1985 with the goal of supplying cost effective, accurate, and simple-to-use milk analyzers. The original LactoScope and SomaScope instruments were introduced in 1990 and have evolved into highly innovative instruments. Delta became part of Perten Instruments in February 2016.



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