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RAISING THE STANDARD IN DAIRY ANALYSIS

LactoScope™ 500

Built for Accuracy and Insights. Trusted for Confidence and Control.

Introducing LactoScope™ 500: The Future of FT-IR Dairy Analysis

In dairy processing, every compositional decision carries financial weight. Small deviations in fat, protein, or solids can quietly erode margins or compromise product consistency. The LactoScope 500 is designed to give laboratories and production teams confidence in every result, combining advanced FT-IR technology with practical features built for real-world dairy environments. By addressing the four priorities that matter most to processors—accuracy, versatility, uptime, and ease of use—the LactoScope 500 helps transform routine testing into a strategic advantage for quality, efficiency, and profitability.

ACCURACY ASSURED.

Integrated high-pressure homogenization minimizes fat globule variability and light scattering, delivering highly accurate and repeatable fat, protein, lactose, and solids measurements you can trust for **tighter standardization and reduced product giveaway.**

EFFORTLESS VERSATILITY.

From raw milk to cream, whey, yogurt, and high-protein beverages, the LactoScope 500 handles **low and high viscosity samples on a single platform**, supporting evolving product portfolios without added complexity.

BUILT FOR UPTIME WHEN PRODUCTION CANNOT STOP.

Built for routine production environments, with robust optics, stable calibrations, and remote diagnostics, the **system keeps your lab running with minimal maintenance and consistent performance** across shifts and sites.

SIMPLE WORKFLOWS. CONFIDENT RESULTS.

Intuitive touchscreen workflows, automated cleaning cycles, and integrated homogenization simplify sample handling and reduce operator variability, so teams **achieve laboratory-grade results without specialized spectroscopy expertise.**

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Expect More from Your Dairy Analyzer: Accuracy, Insights, and Control

The LactoScope 500 is designed to deliver consistent, high-confidence results across the full spectrum of dairy applications. Leveraging advanced mid-infrared optics and robust calibration models, it enables rapid, multi-component analysis of fat, protein, lactose, casein, and solids, helping processors control variability and operate closer to target specifications.

Optimized to handle challenging matrices such as high-fat and viscous products, the system reduces the impact of spectral noise and sample variability to support more stable, repeatable measurements. A rugged, vibration-resistant design ensures dependable performance in demanding environments, while intuitive software streamlines workflows and minimizes operator influence. Compact and built for continuous use, the LactoScope 500 delivers reliable operation with minimal downtime and a low total cost of ownership, translating analytical performance into measurable gains in efficiency, consistency, and profitability.

KEY FEATURES

- Fourier Transform Infrared (FT-IR) technology
- Analysis in less than 30 seconds
- Typical accuracy 0.8% CV for milk and cream
- Full spectrum analysis
- Integrated dual homogenizer
- Software-enabled de-airing
- Automatic clean and zero cycles
- All calibrations included
- 10-year Spectrometer Warranty

VALUE DELIVERED

- Reduce safety margins with accurate compositional testing.
- Test throughout the production process, from raw milk receipt to finished product, with the same instrument.
- Limit operational stress with easy workflows that don't require skilled labor.
- Decrease overhead and indirect costs with actionable data to feed forward into plant systems.
- Reduce product giveaway, ensure label compliance, and improve yield optimization for fat and protein.

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Next-Generation Testing: Powerful Analysis, Effortless Operation

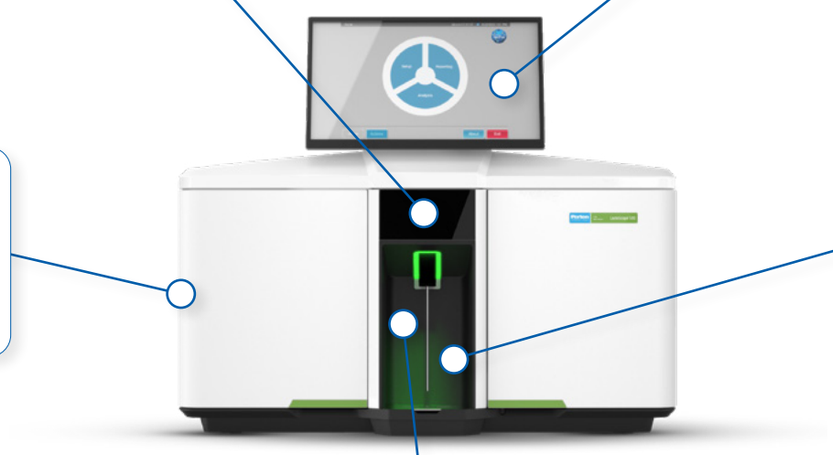
Engineered for the demands of modern dairy laboratories, the LactoScope 500 delivers fast, reliable, and user-friendly performance every day. Its smart design and seamless integration with essential lab tools help streamline workflows and make the most of your available space.

DESIGNED FOR DAIRY LABS

Conveniently located stop/start button and LED status display above the pipette allows you to start analyses with a single touch, while monitoring consumables levels from anywhere in the lab.

SIMPLE, INTUITIVE OPERATION

Responsive and robust 15-inch touchscreen and integrated computer reduce bench space requirements up to 50% versus other brands, while also simplifying operation for novice and expert users alike.



FLEXIBLE CONNECTIVITY

Experience the convenience of multiple USB and HDMI ports, enabling you to plug in additional devices like barcode scanners, keyboards, and secondary monitors.

OPTIMIZED FLUIDICS

Streamline workflows with an ergonomic pipette and optimized fluidics system featuring shortened, user-replaceable tubing for easier routine maintenance and reduced instrument downtime.

EASY STATUS ALERTS

Convenient color status indicators on the pipette and sample introduction area allow for visual confirmation of instrument status, while at the instrument or the opposite side of the laboratory.

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CONVENIENT CONSUMABLES TANKS

Simplify processes with front accessible 4L clean and zero tanks, twice the size of leading brands, with an extra-wide opening for quick and easy refilling and cleaning.

ENHANCED PERFORMANCE

ResultsPlus software goes beyond facilitating intuitive workflows and easy calibration management. With features such as software-enabled automatic system de-airing, ResultsPlus increases instrument uptime and reduces the need for manual intervention.

REDUCED LIQUID CONSUMPTION

Aiding in the achievement of both sustainability and cost-savings goals, the LactoScope 500 consumes at least 20% less volume than earlier versions, reducing your impact on waste streams and your bottom line.

DIVERSE SAMPLE ACCURACY

Achieve precise results with a user-replaceable integrated dual stage homogenizer featuring a fixed alignment design that requires no torque wrench, reducing the potential for operator error and variability.

INCREASED STABILITY AND LONGEVITY

Analyze with confidence using our patented, innovative Dynascan™ interferometer, featuring a fixed mirror design that reduces maintenance and the need for frequent realignments. By eliminating moving parts in the spectrometer, maintenance requirements are reduced, part lifetimes are increased, and overall instrument longevity is boosted.

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Versatility Across Every Dairy Matrix

Whether you're analyzing raw milk, high-fat creams, yoghurts, or whey, the LactoScope 500 delivers unmatched accuracy and precision for all liquid and semi-solid dairy products, helping you reach your processing goals day-after-day on a single platform. Further, the versatility of the LactoScope 500, with all calibrations included in the initial purchase of the instrument, ensures your investment is future-proofed if your operations expand to include additional products.

- Raw, Processed and Pasteurized UHT Milk
- Cream, including high-fat varieties
- Yoghurt With and Without Fruit Flavoring
- Flavored and Sugar-added Milk
- Ice Cream Mixes
- Whey and Whey Protein Concentrate

CLICK THE LINKS BELOW TO LEARN MORE ABOUT HOW THE LACTOSCOPE 500 CAN HELP YOUR OPERATIONS BY READING OUR APPLICATION NOTES.

Milk Analysis

Achieve rapid, accurate analysis of milk composition, enabling consistent standardization, improved quality control, and confident decision-making in dairy processing operations.

Cream Analysis

Deliver precise, reliable analysis of high-fat cream, even at elevated viscosities, enabling accurate fat standardization, tighter control of separation processes, and consistent product quality across batches.

Whey and Protein Retentate Analysis

Provide rapid, dependable measurement of whey and protein retentate streams to optimize separation efficiency, maximize protein recovery, and ensure consistent performance across filtration and concentration processes.

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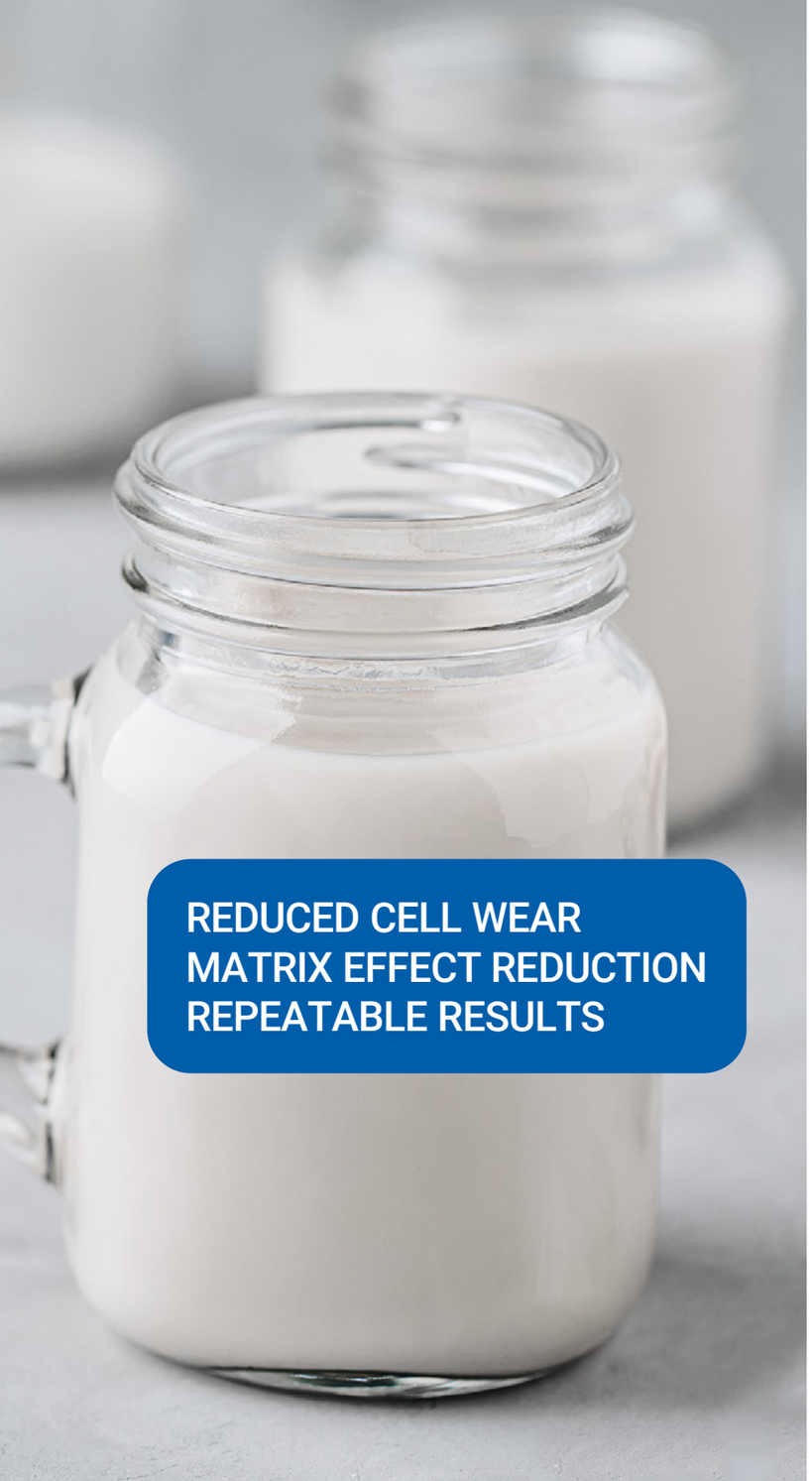

Homogenized for Accuracy

The LactoScope 500 integrates a **dual-stage high-pressure homogenizer** directly into its workflow, minimizing operator input, reducing risk, and saving valuable time. By reducing fat globules to less than one micron and distributing them evenly throughout the sample, the system **minimizes light scattering** and spectral distortion, delivering greater accuracy and repeatability.

By **homogenizing before analysis**, the LactoScope 500 delivers precise results with fewer scans across the spectrometer cell, unlike workflows that rely on averaging a high number of replicates to produce an accurate result. This not only reduces wear on the cell, extending part lifetimes, but also lowers the overall cost of ownership.

READ MORE ▶

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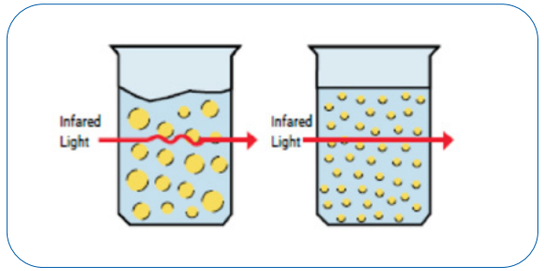
Breaking Down Homogenization

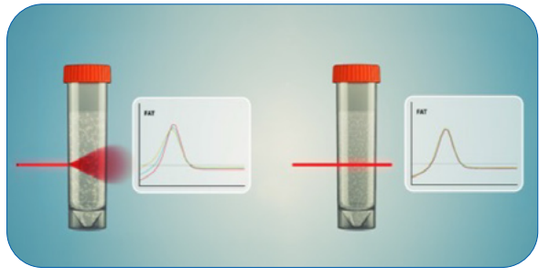
Fat drives both product value and analytical complexity. Variations in fat globule size can introduce light scattering and matrix effects that reduce FT-IR accuracy when samples are not properly homogenized. Inconsistent preparation leads to variability, wider standardization buffers, and potential product giveaway.

With the LactoScope 500, homogenization is not an added manual step. Its integrated high-pressure dual stage homogenizer automatically prepares each sample within the measurement workflow, simplifying operation while enhancing accuracy. The result is more reliable fat and solids data, tighter process control, and the ability to standardize closer to target, protecting yield and strengthening margins.

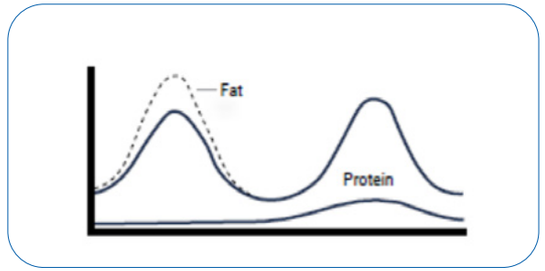
HIGH-PRESSURE HOMOGENIZATION IS THE GOLD STANDARD FOR FT-IR DAIRY TESTING, DELIVERING BOTH SCIENTIFIC PRECISION AND OPERATIONAL EFFICIENCY.



Non-Homogenized Homogenized



Non-Homogenized Homogenized



SAMPLE UNIFORMITY

Fat globules within milk emulsions can vary widely in size, even within the same sample aliquot, which can cause light scattering and distort the spectrum. Homogenization ensures uniformity within the sample, and clear, consistent light paths.

ANALYTICAL REPRODUCIBILITY

FT-IR calibrations depend on reproducible spectra, and fat particles of varying size will cause the instrument to “see” different spectra, even if the sample composition is the same. Homogenized samples reduce variability in the method.

IMPROVED ACCURACY

Fat is one of the most valuable measurements in dairy products, but light scattering from unhomogenized fat particles can cause under- or over-reported fat and protein levels. Uniformly dispersed fat particles allow for more accurate readings of the absorption bands for protein and fat.

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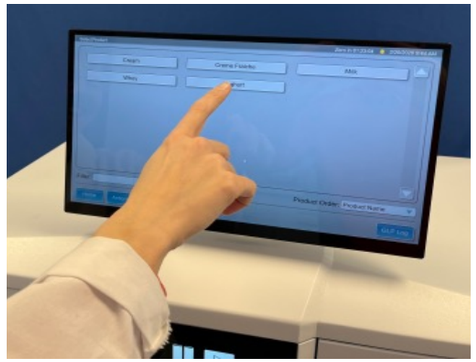
Powered by ResultsPlus

At the heart of any sophisticated hardware is the software that drives it. The LactoScope 500 leverages the intelligent ResultsPlus platform, a custom software package that operates on a familiar Windows-based operating system.

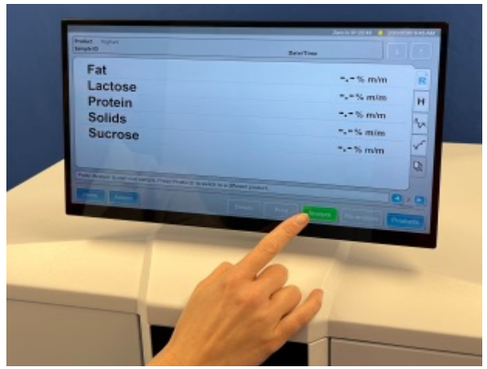
Intuitive, efficient, and powerful, ResultsPlus is easy to navigate for both beginner and expert users alike, empowering you to analyze samples, review results, and set up your instrument, all in one convenient place. Advanced users can utilize the straight forward calibration workflow process in ResultsPlus to validate the instrument, and to adjust slope and intercept when necessary.

INTUITIVE WORKFLOWS AND EASY-TO-UNDERSTAND RESULTS DRIVE PRODUCTIVITY AND OPERATIONAL AGILITY.

Choose the Sample Type



Press Analyze



Review Results

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Fleet Management and Remote Reporting Software

For dairy processors managing multiple instruments and locations, advanced software is essential for efficiency and consistency. Our optional NetPlus platform provides secure, real-time data access and centralized instrument management, enabling seamless scaling, reduced risk, and accurate, comparable results across every site. This ensures reliable quality control and optimized resource use throughout the entire dairy value chain.

Streamlined Quality Management Across Every Site

NetPlus Reports

NetPlus Reports delivers real-time access to instrument results anytime, anywhere, streamlining performance monitoring across the food value chain.

- View results instantly in tables or charts, with easy export to spreadsheets.
- Monitor production trends to ensure targets and limits are met.
- Verify product compliance with specifications before and after delivery.
- Filter data by product, parameter, or instrument for maximum flexibility.

NetPlus Remote enables secure, centralized management of one or many instruments, ensuring accuracy, consistency, and efficiency across operations.

- Perform remote updates, monitoring, and advanced administration without disrupting operators.
- Standardize instruments and manage calibrations to ensure consistent, comparable results across sites.
- Monitor instrument performance in real time to maintain accuracy in critical payment analyses.
- Streamline resources by appointing a single administrator instead of requiring local expertise at every facility.

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PROACTIVE PM
RAPID REPAIR RESPONSE
FLEXIBLE SERVICE PLANS

You can count on us to minimize downtime and protect your investment

Service and Support

Your lab's productivity depends on reliable instruments and responsive service. Our support starts before your LactoScope 500 runs its first samples, with expert installation and training of your staff to ensure a smooth implementation. To keep your instrument running at peak performance, we offer proactive preventive maintenance, rapid repair response, and flexible service plans. Our experts work with you to assess risk, recommend the right coverage, and tailor a service plan that matches your business priorities, ensuring long-term performance with flexible coverage and warranty options.

- Preventive Maintenance
- Emergency Breakdown Service
- Technical and Remote Support
- Software Updates
- Operational Qualification (OQ)
- User and Technical Training

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Specifications

Specifications LactoScope 500	
Technology	FT-IR
Wavelength Range	400 - 4000 cm^{-1}
Spectrometer	PerkinElmer Spectrum Two
Products	Raw Milk, Milk Products (Processed milk, UHT milk, skimmed milk, semi-skimmed milk), Milk with added sugar, Cream Products, Whey Products, Ice Cream Mix, Yoghurt, Plant based Milk
Available Calibrations	
Raw Milk	Fat, Protein, Lactose, Solids, SNF, True Protein, Tot Protein, Casein, Urea, Density, Citric acid, FFA, pH, FPD, HMT
Milk Products	Fat, Protein, Lactose, Solids, SNF, FPD
Milk with Added Sugar	Fat, Protein, Lactose, Sucrose, Tot sugar, Solids, SNF, Density
Cream Products	Fat, Protein, Lactose, Solids, SNF, FPD
Whey Products	Fat, Protein, Lactose, Solids, FPD
Ice Cream Mix	Fat, Protein, Solids, SNF
Yoghurt	Fat, Protein, Solids
Plant-based Drinks	Fat, Crude Protein, Total Sugars, Total Solids
Accuracy	Raw milk: Typical 0.8 % CV on major raw bulk tank cow milk components (Fat, Protein, Lactose, Total Solids, Solids nonfat) Cream: Typical 1.0% CV (Fat, Protein, Solids) Detailed information in Application Notes
Repeatability	Raw Milk: ≤ 0.25 % CV on major raw bulk tank cow milk components (Fat, Protein, Lactose, Total Solids, Solids nonfat) Cream: ≤ 0.25 % CV (Fat, Protein, Solids)
Adulteration Screening	Yes, targeted models and untargeted models
Sample Analysis Time	Milk: < 30 seconds per replicate

Specifications LactoScope 500	
Sample Temperature	5 - 40°C
Sample Treatment	Homogenize samples by inversion. Best performance on raw milk and cream achieved by pre-heating to 38 - 40 °C
Sample Volume	Milk: <8.0 mL Cream: <10 mL
Ambient Operating Temperature	15 - 30°C to be within performance range Instrument safe to operate 10-35 C°
Humidity	20-80% Non-condensing
Data Interface	4 x USB Ports (for printer, keyboard, mouse, or barcode reader) 1 x Ethernet port 1 x HDMI port
Operating System	Windows™
Remote Connection	NetPlus™
Display	15” color touchscreen 16:9 Full HD 1080p
Carry Over	Milk: typical <0.4%, Cream: typical <0.5%
Cleaning	Automatic and programmable
Power Supply	100/230 V, 50/60 Hz
Dimensions (W x D x H)	750 x 520 x 430 mm
Weight	72 kg
Compliance	LactoScope 500 in compliance with AOAC and IDF

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FOR MORE INFORMATION VISIT

www.perkinelmer.com/lactoscope500 PerkinElmer Food Safety and Quality www.perten.com

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