

Automated Analysis of Nitrates & Nitrites in Milk and Milk Products

FOOD & BEVERAGE SERIES



Introduction

Though nitrate and nitrite occur naturally in plants and soil and are essential for good health, too much can cause methemoglobinemia (blue baby syndrome) and has been linked to birth defects. In the human body, nitrates found in vegetables and other foods are converted to nitrites and then into nitric oxide, which helps regulate blood pressure and supports the immune and nervous systems. However, nitrate is also found in fertilizer, which through run-off can contaminate drinking water supplies.

It is also possible for nitrate and nitrite to be introduced to milk and milk products (whey, powdered milk, infant formula, etc.) in the manufacturing process. Thus, dairy products should always be tested for these contaminants for QA/QC and for reporting values for exported products.

The Flow Solution™ 3700 Automated Chemistry Analyzer offers a safe, cost-effective alternative to labor-intensive traditional testing. The FS 3700 automates ISO Method 14673-3, offering accurate results while significantly increasing sample throughput.



Figure 1. OI Analytical Flow Solution™ 3700 Automated Chemistry Analyzer

Method Performance

Nitrate	
Range	0.5 mg/L - 5.0 mg/L
Rate	30 samples per hour
Precision	≤ 2% RSD at mid-range
Method Detection Limit (MDL)	0.016 mg/L

Nitrite	
Range	0.025 mg/L - 0.400 mg/L
Rate	30 samples per hour
Precision	≤ 2% RSD at mid-range
Method Detection Limit (MDL)	0.0016 mg/L

Analysis for Dairy Labs from the brands of Xylem Analytics

Salt, Total Acidity



Titraters

- Pre-programmed with Titratable Acidity, Salt, & other methods
- Easy-to-use & maintain
- User-friendly software
- More affordable than competitive models

Automated Acid Hydrolysis



Hydrotherm

- Reduces cost per sample by 80% compared to traditional methods
- Completely automated & easy to operate
- Analyze up to 6 samples simultaneously
- Meets requirements for international regulations

Total Fat



Soxtherm

- 4x faster than traditional Soxhlet
- Fast, accurate results
- Cost-effective
- Fully programmable with automatic start-up and shut-down

Protein



Dumatherm

- Fast combustion analyzer for protein analysis
- Accurate results within 3 minutes
- Fully automated - Rapidly analyze a variety of sample matrices including liquids
- Efficient, residue-free combustion

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