



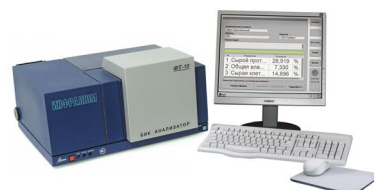
QUALITY CONTROL OF MILK PRODUCTS

INTRODUCTION

In order to maintain high quality of milk products, it is necessary to monitor process quality on-stream, so that a relevant technological process could be promptly corrected.

The most important quality factors of milk products are protein, moisture, fat, sugar, lactose and titrated acidity.

Commonly, it takes a few hours to make such type of analyses by traditional methods. The use of an "InfraLUM® FT-10" NIR analyzer reduces the analysis time to a couple of minutes.



MEASUREMENT METHOD

The method is based on measuring the transmission spectrum of a sample in the near-IR spectral region and subsequent determination of the analyzed parameters/constituents using a calibration model.

ANALYZED MILK PRODUCTS AND CONSTITUENTS DETERMINED

Product analyzed	Constituents						
	Protein, %	Moisture, %	Fat, %	Acidity, degree	Lactose, %	Sugar, %	SNF, %
Raw milk	+		+				+
Powdered milk	+	+	+				
Various curds	+	+	+	+	+		
Curd mix	+	+	+			+	
Yoghurts	+		+			+	+

These constituents can be determined within the whole possible range of content in the above dairy products. The validity of the calibration models listed in the table has been confirmed by joint tests carried out at «Wimm-Bill-Dann» Dairy Company's plants and by the successful operation of the "InfraLUM® FT-10" analyzers at other QA laboratories in dairy industry during past few years.

ADVANTAGES OF THE METHOD

- Rapid analysis (simultaneous determination of all parameters in less than 2 minutes)
- Simple measurement procedure
- No sample preparation needed
- Low cost per analysis (no reagents and consumables are needed)
- No special qualification of attending personnel is required

EQUIPMENT

- "InfraLUM® FT-10" NIR Analyzer (calibration models are developed at Customer's site by LUMEX service engineers with Customer's samples)
- Cells (18-, 20-, and 27-mm pathlengths)
- Licensed SpectraLUM/Pro® software operating under Windows® 2000/XP
- Personal computer



PREOPERATIONAL PROCEDURES

The following procedures should be performed before proceeding to the measurements:

Sampling and sample preparation

The samples should be used that are routinely analyzed in a laboratory for the quality control of a production process. The contents of the sample constituents should cover the whole measuring range.

Calibration of the analyzer

Calibration process involves the following steps:

- reference analysis made by standard chemical methods
- measurement of transmission spectra of the reference samples
- creation of a calibration model that establishes relation between the content of a constituent with the spectral data

As a rule, calibration is made by LUMEX specialists or authorized representative.

The measurement range of a calibration model depends directly on the range of the constituent content, and the measurement accuracy depends on the precision of analysis by standard chemical methods.

MEASUREMENT PROCEDURE

The sample is put in the cell of the "InfraLUM® FT-10" analyzer and the measurement is made automatically.

DATA PROCESSING

The measurement result (content of the constituents in the analyzed sample of a milk product) is calculated automatically by the "SpectraLUM/Pro®" software and is displayed on the PC screen.

Example of analysis of yoghurt:

Quantitative Analysis

Product: Yoghurt

Sample ID: 0015 Customer: _____

Additional information: Sample 15

#	Property / constituent	Result	
1	Protein	3,54	%
2	Fat	2,56	%
3	Total solids	21,20	%

Results are given on an "as is" moisture basis

Buttons: New Sample, Repeat and Average Out, Details >>

Buttons: HELP, REPORT, OPTIONS, EXIT

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The information in this leaflet is supplemental. To get more specific information on this method please refer to the developer of this method Lumex Ltd.

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