

Application Note

Yellow Cheese



Introduction

One of the important constituents in cheese is Moisture, which should be controlled in the beginning of the process. Other parameters, which are important for regulations and taste, are Fat content, Salt and pH. Normally these measurements are done by external traditional laboratory methods, which are expensive and time consuming. Furthermore fat in dry matter is used for production control and is therefore an interesting parameter to analyse by FT-NIR.

Lately salt content has gained increased attention. So far NIR has not been able to supply results with good enough accuracy and hence traditional laboratory methods have been used. The cutting edge spectral performance of the DairyQuant B3 now enables the analysis of salt in grinded cheese with excellent results in less than a minute.

Analyser: DairyQuant B3

The DairyQuant B3 is based on the latest generation FT-NIR technology and has the following main features:

- Cutting edge spectral performance and best signal to noise ratio on the market
- Very easy to operate and maintain
- Optimised software suite with InfraQuant and Horizon QI
- Very low maintenance costs. The DairyQuant B3 has no scheduled maintenance

The sample is analyzed by reflection measurement in Petri dishes, which can be made of either glass, plastic or Teflon depending on local requirements. Teflon is especially suitable for production sites where glass and plastic are not allowed on site.

Analysis:

The cheese sample to be analysed is grinded and left in the refrigerator to obtain stable temperature. The cheese sample is loaded into a Petri dish, which is then placed on the DairyQuant B3. The analysis is initiated in the InfraQuant operator software and result obtained in less than a minute. The sample is spinning during analysis, ensuring that the analyzer is seeing a large part of the sample and reducing effects from product heterogeneity.

See a video presentation of the DairyQuant B3 on our homepage: www.q-interline.com and experience how easy it is to perform the analysis on the DairyQuant B3.

Calibration

The DairyQuant B3 is calibrated against laboratory reference analysis. The samples are grinded before analysis. The following laboratory reference analysis are used:

- Gravimetric method for moisture
- Röse-Gottlieb method for fat
- Potentiometric method for salt and pH

Calibrations are developed on cheese samples with fat content covering the range from 30+ to 55+.

Samples are scanned at resolution 32 cm⁻¹ using 128 co-added scans.

Calibration Performances, Example

In table 1 the accuracies and performance of the calibrations models is displayed.

Constituents	secv	Interval	Repeatability
Moisture	0.23	38.9 – 54.0	0.06
Fat	0.24	12.9 – 33.3	0.05
Salt	0.07	0.6 – 2.4	0.03
pH	0.07	5.1 – 5.8	0.02
Fat in dry matter	0.50	28.2 – 55.9	0.09

Table 1: Performance of the DairyQuant B3

Conclusion

The DairyQuant B3 is powerful tool for the fast analysis of cheese. It delivers analytical results for salt, pH, moisture, fat and fat in dry matter within less than a minute.

The DairyQuant B3 can be placed in the lab or in the production area. The intuitive InfraQuant software guides the plant personnel through the steps of the analysis and the results are displayed with easy to understand color codes.

Q-Interline has starter calibrations available for different types of cheeses which will enable a faster start-up for the DairyQuant B3 in your lab.