



## Application Note # AN-212E FT-NIR Analysis of Milk Powder

NIR is a well-established method for the analysis of milk powder online as well as at-line and in the laboratory. Absolute moisture, fat and protein determination in whole milk powder can be easily and precisely performed using Bruker Optics Fourier-Transform Near Infrared spectrometers. Moreover, the lactose as well as the ash content can be determined with just one measurement

In the laboratory, the samples are measured in reflection on the integrating sphere (see picture on the right) of the MPA. FT-NIR spectrometer. To carry out the measurement, the milk powder sample is simply filled into a cup with quartz glass bottom. No further sample preparation is required.

For the online process analysis, a fiber optic reflectance probe can be used, together with the MATRIX-F process spectrometer.



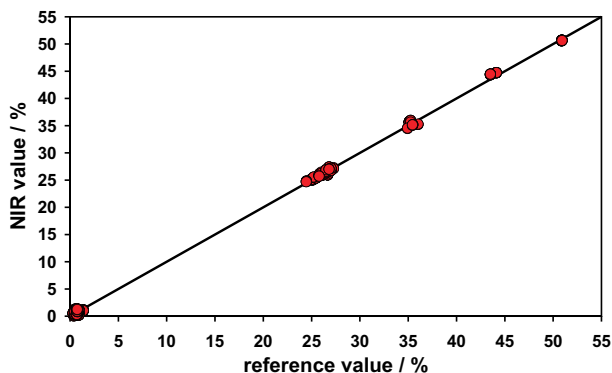
### It is important to monitor moisture, fat and protein to:

- maximize the moisture content
- increase product consistency
- more efficiently utilize energy (e.g. drier optimisation)
- reduce final product testing costs

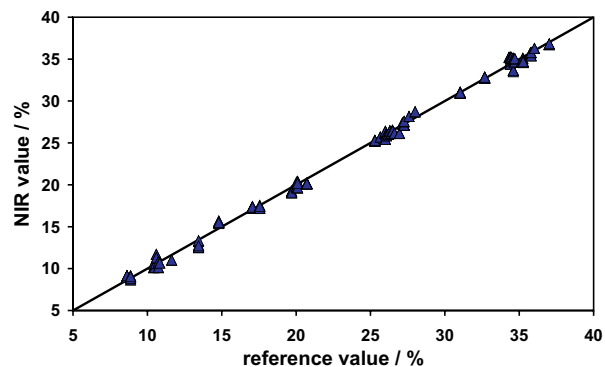
### Calibration Results:

■ Moisture	1.3 - 3.9 ± 0.4 %
■ Fat	0.3 - 51.0 ± 0.4 %
■ Protein	8.6 - 37.0 ± 0.4 %
■ Lactose	28.2 - 77.3 ± 1.1 %
■ Ash	3.7 - 8.3 ± 0.2 %

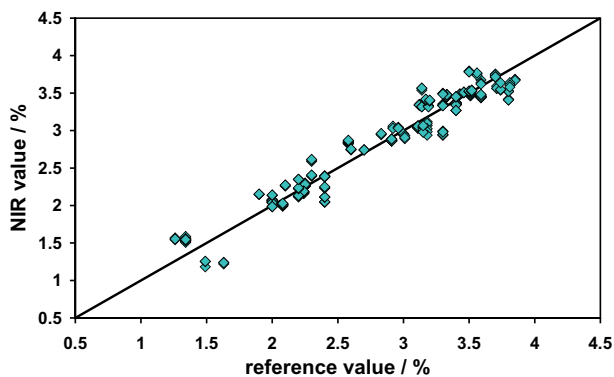
Fat in Milkpowder



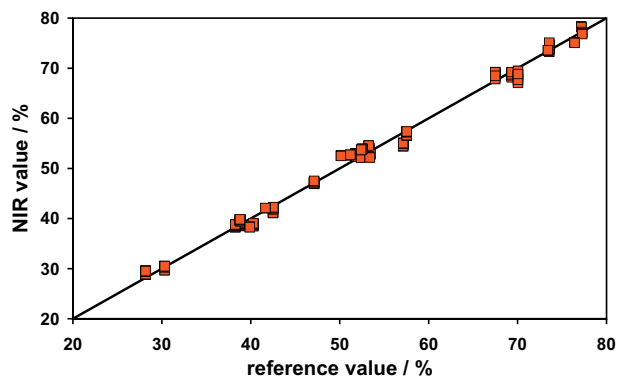
Protein in Milkpowder



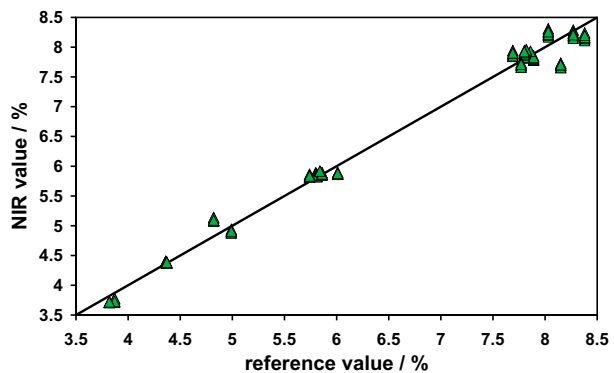
Moisture in Milkpowder



Lactose in Milkpowder



Ash in Milkpowder



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