

# APPLICATION NOTE

## Analysis of wheat using Finder SD Rotator

### Introduction

Wheat is one of the most grown crops and basis for diets all over the world. While traditional analytical methods take several hours, Near Infrared Spectroscopy (NIRS) can analyse the components of wheat samples within seconds.

### Instrumental

The HiperScan Finder SD is a thermally stabilised, MEMS based Scanning Grating Spectrometer which acquires spectra within the range of 1000 - 1900 nm. The samples are measured in open glas petri dishes (Ø 94 mm) which are placed in the rotator unit. This allows an easy measurement, requires minimal cleaning and minimises the risk of cross-contamination.

### Samples

At the moment the calibration includes around 300 samples of hard and soft wheat, but the database is continuously enhanced and extended.

The reference methodes include classical reference analysis like Kjeldahl for proteins, method T 5506.2-2008 (washing by water, Gluten machine (GM2100)), bulk density for volume weight and the farinograph for the water absorption rate.

### Sample preparation

For the test wheat samples were measured ungrinded at room temperature.

Component	N	Mean	Min	Max	Unit
Crude protein (dm)	294	13,7	9,7	18,0	% by mass
Wet gluten	292	28,5	15,9	36,8	% by protein mass
Volume weight	289	797	727	853	g/L
Water absorption rate	295	60,0	51,3	70,1	% by mass



### Performance

The calibration is developed using Partial Least Square (PLS) and an appropriate data pretreatment.

Component	Range	R2	RMSECV
Crude protein (dm)	9,5 - 18,0 %	0,95	0,58
Wet gluten	16,0 - 36,5 %	0,87	1,99
Volume weight	730 - 850 g/L	0,82	14,98
Water absorption rate	50 - 70 %	0,80	2,63

