



● the minispec Oil & Moisture in Seeds and Nuts

TD-NMR combines rapid, simultaneous analysis of oil and moisture, with simple calibration.

Oil & Moisture Analysis

- Oil and moisture on all types of seeds, residues and nuts
- Official International Standard Methods supported
- Easy calibration with a small number of samples
- Fast, accurate and reproducible, superior to wet chemistry
- No sample grinding
- Analysis of large amounts, inhomogeneities are averaged
- Independent of surface, texture and colour
- Integral measurement, also through a thick outer sample shell

The minispec benchtop Time Domain NMR (TD-NMR) analyzer is a proven performer for measurement of oil and moisture in oilseeds, residues and nuts. Due to the different relaxation decays of the various sample components, moisture and oil can be easily detected and clearly distinguished. Bruker Optics' minispec product line offers the ideal solution for any type of seeds/nuts. Both QC/QA (bulk screening) as well as R&D (seed breeding programs) purposes can be perfectly addressed.

Bulk Screening

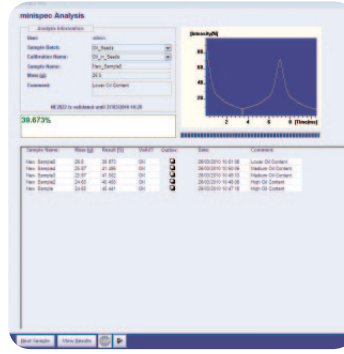
If bulk screening for commercial purposes is the task, seeds (e.g. canola, sunflower or soybean) must be analyzed in large samples so that a representative amount is tested. Large samples can be accommodated in the mq-one Seed Analyzer or the mq-one XL Seed Analyzer, in 40 mm and 50 mm compartments, respectively.

Seed Breeding Programs

For the smallest samples, e.g. measurements on a single canola seed, the mq40 with a 10 mm sample compartment provides excellent sensitivity.



Oil and Moisture Determination by minispec on various Types of Samples



minispec Plus Software for classic applications (mq-one Seed Analyzer and mq-one XL Seed Analyzer)

When the task is to analyze the seeds from a single plant (e.g. canola, flax), or measure single corn, soy, or sunflower seed, the mq20 (20 MHz NMR) provides excellent performance.

The Method of Choice

The minispec NMR analyzer provides a spectroscopic approach, but differs from chemometric techniques: the calibration is very simple and robust. Sample preparation for the minispec method is kept to a minimum. The only steps are: fill the sample into a tube, record the weight, and insert the sample tube into your minispec. The whole analysis takes less than one minute - even by untrained personnel. Daily Check routines are in place, which launch an automated series of system tests. Successfully passed instrument tests assure the system conforms with international GLP regulations.

Ideal Technology for any Type of Seeds

The minispec TD-NMR spectrometer allows simultaneous determination of oil and moisture in oilseeds, including:

- Canola
- Sunflower
- Flax
- Soya
- Hemp
- Corn
- Cotton
- Poppy
- Mustard

Official Methods

Only use of the International Standard methods with the genuine Bruker minispec guarantees best possible performance for oilseed operations. Bruker's minispec has been proven by international ring tests, which are the basis for the Oilseed Standard Methods:

- AOCS Ak4-95
- ISO 10565
- ISO 10632
- USDA GIPSA approved

Calibration of the minispec:

A simple and fast procedure, only few samples are required.

Calibration is possible in different ways:

- By using real seed samples that were previously analysed by a wet-chemical method.
- By using 3 - 5 different amounts of oil, just filled into the NMR tube.
- By using standards as supplied by e.g. IRMM (EU) or USDA/GIPSA (USA).

minispec Configurations: mq-one XL Seed Analyzer

- 7.5 MHz NMR system
- Sample volume: ~ 100 ml
- Tube diameter: ~ 50 mm
- Included in a package with tubes and calibration standards
- Recommended for the most inhomogenous samples

mq-one Seed Analyzer

- 10 MHz NMR system
- Sample volume: ~ 40 ml
- Tube diameter: ~ 40 mm
- Included in a package with tubes, aluminium block and calibration standards
- Recommended for seeds such as rape or semi-homogenized materials

mq20

- 20 MHz NMR system
- Sample volume: ~ 8 ml
- Tube diameter: ~ 18 mm or others
- Recommended for little amounts of seeds down to a single seed

mq40

- 40 MHz NMR system
- Sample volume: ~ 0.75 ml
- Tube diameter: ~ 10 mm
- Recommended for single seed analysis

Bruker BioSpin is ISO 9001 certified.

Magnetic safety measures apply to the operation of the minispec.