FT-NIR2500

Description

FT-NIR Integrating Sphere for measuring solids and semi-solids in diffuse reflection. An optional sample rotator assures a high reproducibility for heterogeneous samples.

It can meet the rapid detection requirements for the majority of food and agricultural products, and it can also be used for qualitative analysis of the properties of food raw materials such as origin, type, and quality.

Features

- **Intelligent Dynamic Interferometer:** DSP-ontrolled electromagnetic drive and permanently aligned optics ensure exceptional stability and precise spectral measurements, maximizing instrument uptime and minimizing maintenance requirements.
- **High-Stability Solid-State Laser:** Long-life, reliable solid-state laser source provides consistent and accurate spectral output for dependable performance.
- **Optimized CaF$_2$ Beamsplitter:** Multi-layer coated calcium fluoride (CaF$_2$) beamsplitter specifically designed for the near-infrared region delivers maximum throughput and optimal spectral performance.
- **Automatic Background Monitoring & Correction:** Intelligent system automatically scans the background when temperature or humidity fluctuations exceed predefined thresholds, eliminating environmental influences and ensuring accurate results.
- **Full cGMP and 21 CFR Part 11 compliance, Integrated IQ/OQ/PQ Validation:** Compliant with international standards, the built-in

IQ/OQ/PQ validation system ensures reliable instrument performance and simplifies regulatory compliance.

- **Automated Model Optimization:** Proprietary software automatically optimizes chemometric models, ranking results by RMSECV (Root Mean Square Error of Cross-Validation) for rapid and efficient method development.
- **Expanded Spectral Range:** Covers a broad spectral range from 12000～3800cm-1 (800～2600nm), enabling comprehensive analysis of diverse sample types.
- **High Spectral Resolution:** Achieves a resolution of ≤1cm-1, resolving fine spectral details for accurate material characterization.
- **Exceptional Wavenumber Accuracy:** Delivers wavenumber accuracy of ±0.02cm-1, ensuring reliable and traceable results.
- **Superior Wavenumber Precision:** Maintains wavenumber precision of ≤0.05cm-1, providing consistent and repeatable measurements.

Applications of FT‑NIR

- **Food Products**

1. Milk powders & dairy mixes
Measure: fat, protein, moisture, acidity, ash, sucrose, lactose
Suitable for: whole milk powder, skim milk powder, infant formulas, rice/soy powders, milk tea mixes

2. Ice cream & ingredients
Measure: fat, protein, total solids, sucrose

- **Feed & Animal Nutrition**

3. Feed raw materials
Applicable samples: rapeseed cake/meal, barley, rice protein powder, soybean meal, peanut meal, distillers grains (DDGS), wheat bran, rice bran, cottonseed meal, alfalfa, extruded soybean meal, meat meal, meat-and-bone meal, hydrolyzed feather meal, wheat middlings, fish meal, fish head meal, corn, corn gluten meal, corn germ cake, etc.
Measure: fat, protein, moisture, ash, calcium, phosphorus, salt
Amino acids: available for soybean meal, rapeseed meal, rice protein powder, wheat bran, rice bran cake, cottonseed meal, meat meal, fish meal, corn gluten meal, wheat, and corn

4. Finished feeds
Applicable samples: concentrates, compound feeds, specialty aquafeeds, fish feeds
Measure: fat, protein, moisture, ash, calcium, phosphorus, salt
Amino acids: available for compound feeds

● **Oils & Oilseeds**

Applicable samples: soybeans, soybean meal, rapeseed, rapeseed meal, cottonseed, cottonseed meal
Measure: moisture, protein, oil content, ash, calcium, phosphorus, salt

● **Grains & Agricultural Commodities**

5. Wheat
Measure: moisture, protein, sedimentation value, wet gluten, wet gluten index, stability time, water absorption, extensibility
6. Rice & paddy
Measure: moisture, protein, amylose (branch-chain starch)
7. Soybeans
Measure: moisture, protein, oil
8. Corn (maize)
Measure: moisture, protein, oil, starch

FT-NIR system Configuration

Items	Quantity
Sample Rotating System	1
Sample Cups	2
Sample Tubes	1 box
Transmissive/Reflective Accessory	1
Background Correction Accessory	1 set
Measurement & Analysis Software	1 se