Kappa number, density, and strength parameters in wood pulp

Fast and straightforward determination
by near-infrared spectroscopy

Metrohm

Near-infrared spectroscopy for routine analysis of wood pulp

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Metrohm offers a turnkey solution for routine analysis of various important quality parameters in wood pulp by near-infrared spectroscopy (NIRS). Based on a dedicated spectral database and a pre-calibration model, this turnkey solution enables manufacturers in the pulp & paper industry to reduce the cost of their daily routine analysis while improving the quality of their product.

The quality of paper depends strongly on physical and chemical properties of the wood pulp from which it is made. Relevant key parameters such as **kappa number, densitiy** etc. are still often determined in the laboratory by time consuming physical or wet chemical analysis involving complex sample preparation.

NIRS on the other hand requires neither chemicals nor hardly any sample preparation. It can can even be used by non-chemists and provides results in less than a minute. Furthermore, multiple chemical and physical parameters can be determined simultaneously with a single measurement. **The combined benefits of this technology make NIRS the ideal solution for a large number of daily QA/QC measurements or at-line process analysis.**

Easy-to-use

- Turnkey solution
- Measure at the push of a button
- No expertise required

Fast

- No sample preparation
- Analysis results within one minute
- More than 15 minutes time saving compared to reference methods

Cost minimizing

- No solvents, no reagents
- No waste disposal

Clean

- Non-destructive, chemical-free method
- Minimum of impact on health and environment

Turnkey solution for pulp analysis

The Metrohm solution for pulp analysis comes with a ready-to-use pre-calibration model for the determination of the kappa number, density, buckling strength, breaking strength, tensile strength, and pump freeness. Due to this pre-calibration, the Metrohm solution can be used as a starter model without any prior method development.

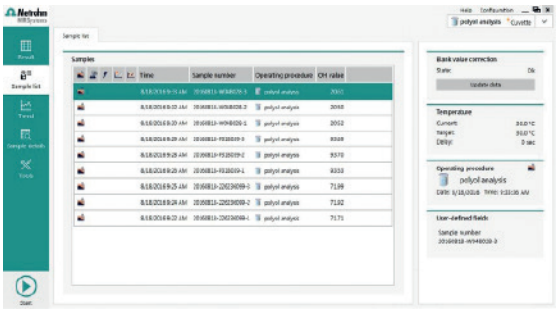
Reliable results from day one

The robust pre-calibration model allows precise and accurate determination of different parameters of wood pulp with excellent reproducibility. The performance of the pre-calibration can be improved even further, if a smaller calibration range is selected or if it is augmented with customer specific samples.

	Range	SECV	R^2
Applied density in g/cm³	0.2–0.65	0.039	0.855
Buckling strength in MPa	20–94	7.4	0.821
Breaking strength in MPa	6–32	2.6	0.828
Tensile strength in MPa	6–68	5	0.905
Kappa number	0–175	3.8	0.996
Pulp freeness in mL	130–800	72	0.766

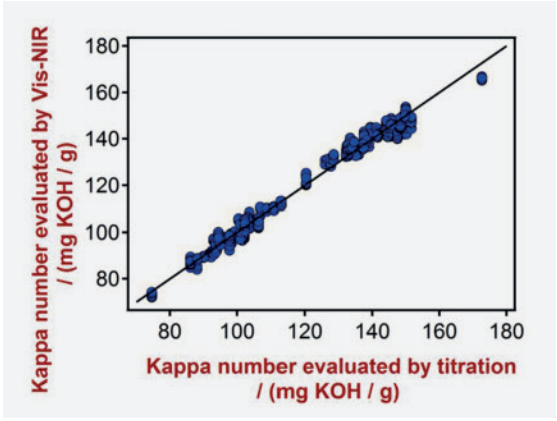
Straightforward and intuitive operation

Metrohm instruments for Vis-NIR are controlled by Vision Air software. Vision Air provides two environments tailored to different users' needs: **Vision Air routine** enables secure daily operation by routine users, while **Vision Air Manager** allows experienced and authorized users to control data and perform instrument configurations. For daily routine analysis, measurements can be performed with two simple clicks.



Customized service and support

Metrohm supports users by updating the default pre-calibration on demand with customer specific samples. This improves the performance of the method and/or extends it to new applications. Such updates are easily performed in the Vision Air Manager network mode. When using Vision Air Network, all instruments within a global customer network can be synchronized at the push of button. Customer specific calibrations can be easily developed for the determination of additional quality parameters of pulp e.g. **lignin or cellulose content.**



Ordering information

6.607.2300	**NIRS pre-calibration for pulp analysis**
	Requires hardware
2.922.0010	NIRS DS2500 Analyzer
	Comprised of:
1.922.0010	NIRS DS2500 Analyzer
6.7400.030	NIRS DS2500 accessory kit
6.7430.040	Mini sample cup holder
8.922.8001EN	NIRS DS2500 manual
	Requires software
6.6072.201	Vision Air 2.0
	Optional software
6.6072.204	Vision Air 2.0 Server
6.6072.206	Vision Air 2.0 Network
	Requires certified standards (select one of the following)
6.7450.000	NIRS reflection standard, set of 2
6.7450.010	NIRS reflection standard, set of 7 (for the regulated range)
	Accessories
6.7402.050	NIRS DS2500 large sample cup
6.7425.100	NIRS DS2500 Iris

www.metrohm.com

Subject to modifications
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