

Penetration Dynamics Analyzer **emtec PDA.C 02**

Module **MSC** Module Standard Coating

with **CMA** Coating Measurement Accessories

Special Tester for the Determination of

- Coating Color and Base Paper Interactions
- Surface Porosity/Sizing
- Coating Quality of Paper/Board



Application areas:

- Characterization of the coating base paper surface and the coated paper
- Simulation of the coating machine applicator at the time the coating color and the coating base paper are contacted:
 - Simulation of the shearing history of the coating color in the coater
 - Dynamical contacting coating color / coating base paper
 - High shear – impulse and pressure pulse

Characterization of the three phases of the coating process:

- Base paper
 - Assessing surface porosity, surface sizing
- Coating color in contact with base paper
 - Reducing the need of pilot coater/ machine trials via simulation of the coater in the measuring device
 - Evaluation of the changes in runnability, coating hold out
- Coated paper
 - Identifying smallest changes in the coating quality by comparing measurement results of liquid penetration with suitable test liquids (water, water+IPA-mixture, acetic acid)
 - Determining and predicting the properties such as printability, glueability or barrier effects

Main user:

- Paper / board producers
- Chemical suppliers
- Universities / Institutes

→ Prediction of converting problems,
which are not detectable with standard testing devices.

Features

The **PDA.C 02 modules MSC Standard Coating & CMA Coating Measurement Accessories** enable to detect differences in base papers, coating colors, and coated papers, which would lead to quality changes during converting process but which are not or only insufficiently detected by classical measuring methods.

The contact between coating color and base coating paper takes place under high shear and pressure pulse, leading to a good simulation of the coating machine applicator. Pilot coater and machine trials indicate the effects of coating color and base paper variations. The PDA.C 02 provides a tool to explore the causes.

Measuring method

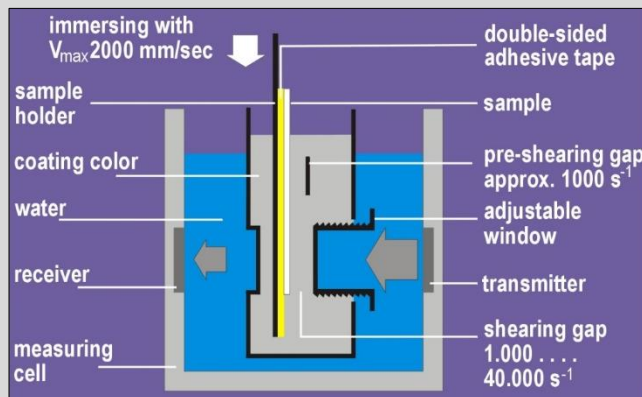
A base paper sample is fixed on a sample holder and injected into an adjustable measuring gap filled with coating color. This causes dynamic contact between coating color and base paper, as well as a high-shear and pressure impulse.

As the sample reaches its final position, high frequency ultrasound is transmitted through the paper in Z-direction.

The liquid, penetrating into the paper, alters the paper's ultrasound transmission in a characteristic manner.

This ultrasound alteration is recorded as an intensity-time diagram, using a PC.

Additionally, the penetration of other liquids into base paper or coated paper can be measured in a standard measuring cell without the shear gap, applying the same measuring principle.



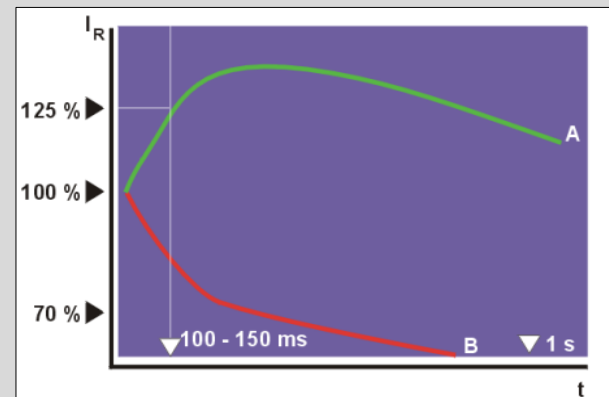
Evaluation of measurement results

- Calculation of the immobilization time (t)
- Determining the curve gradient signs +/-
- Determining the gradient magnitude until FC
- Noting the curve shape after DWRV

Information is provided concerning the homogeneity, structure, thickness, density of the immobilized filter cake, runnability of the coating color, coating hold out, and covering.

Example: LWC – Offset

Coating color A and B in contact with coating base paper



Advantages

- **Modular system**
- Easy handling
- High-performance, very user-friendly PC software with automatic computation of application-specific parameters
- **Measurement in the ultra-short time range**
- **Coating color/base paper contact under high shear and pressure pulse**
- **Especially for R&D / product development, quality assurance, customer support, troubleshooting**

Technical data

Sample dimension: ca. 75x50 mm

Measurement frequency: 1 MHz, 2 MHz

Data structure: ASCII file

Dimensions: Basic Device 420x160x320 mm, MCU 110x160x240 mm (HxWxD)

Weight: approx. 19 kg

Supply voltage: 115-230 VAC, 50-60 Hz

Special accessories for coating color processing:

CDM Coating Color Deaeration and Mixing System

CDA Coating Color Deaeration System