Knowing paper better!

Since 1992 Partner of Paper Industry
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Innovation and Competence
Development, Manufacturing and Sales

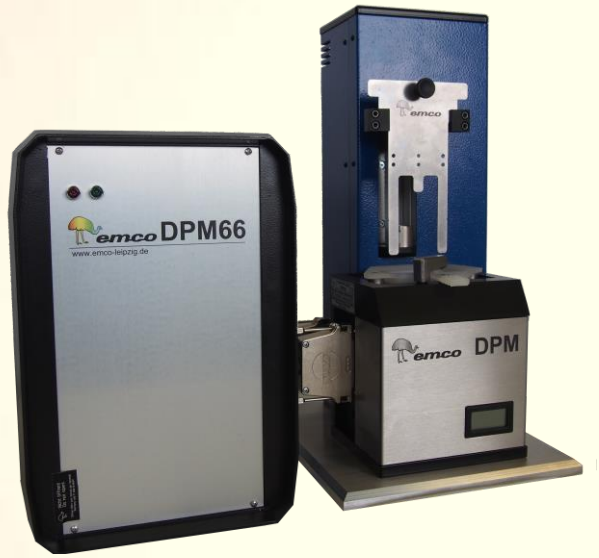
emco DPM 66

Ultrasonic Transmission Measurement

Measuring systems and methods for testing paper, foils and composite materials

A method for studying the composition of paper and other materials, liquids and the dynamics of their interaction

Measuring systems and methods



***emco* DPM66 - Dynamic Penetration Measurement**

Methods for the process relevant evaluation of hygroscopic materials:

- dynamics of behaviour in comparison with water
- dynamics of capillary absorption
- dynamics of expansion and shrinkage
- evaluation of sizing

Areas of application:

- research, development and training
- quality assurance and control
- objective examination of complaints
- evaluation of reference offers in purchasing

Technical data

Measuring frequency:	1 and 2 MHz - standard
Measuring area:	each frequency 2 x 10 mm Ø
Measuring range:	0 to - 60 dB
Measuring duration:	up to 24 h
Measuring beginning:	approx. 8 ms
Test liquid:	distilled water *)
Power supply:	100/240 VAC, 50/60 Hz
Software:	*emco* DPM66 and *emco*DPM66 Viewer
PC-interface:	USB 3.0

*) standard test liquid; other liquids, solvents, printing inks, coating colours etc. can be used with a cell insert

Automatic measuring sequence with 2 frequencies, transmission from both sides.

Accessories for special applications:

- heatable measuring cell up to 90 °C
- cell insert for special test liquids
- sample holder for different applications

Extended accessories:

- dynamic expansion module ***emco* DDPM** for the simultaneous determination of the wet expansion
- ***emco* DPM** Interpreter - Sizing to determine the sizing of a paper

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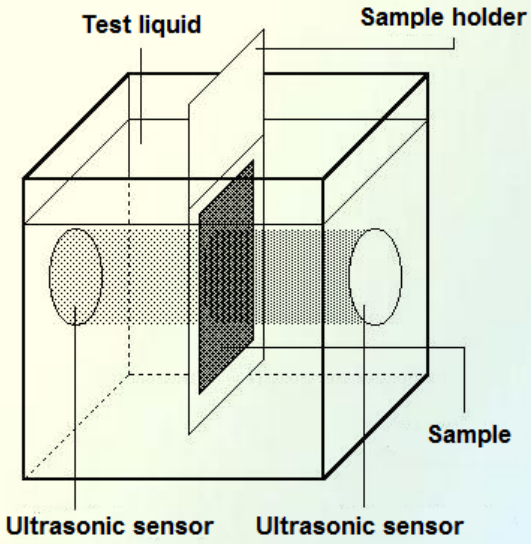
Measuring principle

Ultrasonic – Transmission Measurement: The ultrasound sensors are arranged in a measuring cell in such a way that the material sample to be tested is irradiated directly by the sound wave. As a result of a measurement, the ultrasonic intensity is measured at the receiver in millisecond intervals and displayed in a transmission-time diagram.

Ultrasonic – Reflexion Measurement: The change of the surface is analysed by the reflected wave during the liquid penetration. The sensors are installed in such a way that a measurement can be made from both sides simultaneously.

Physical basics: Ultrasound requires a medium for transmission. When transmitted through this medium, the sound wave experiences a constant attenuation. If the medium changes, the sound intensity also changes.



Technical basics: In the measurement procedure, the material sample is fixed on a sample holder and contacted with the test liquid. The dynamics of the interaction between the test liquid and the sample characterise its fibre and capillary absorption.
Sample holders for different applications are available. Both the properties of the front and the back of the sample as well as the dimensional change (dynamics of wet expansion) can be measured independently of each other and simultaneously.

Methods – applications

***emco* DPMprint** - for the assessment of the printing process relevant characteristics and its sidedness of a printing substrate:

- dynamics of the behaviour in comparison to water, dampener additives and solvents
- capillary absorption regarding to colour absorption and colour drying
- dynamics of expansion and shrinkage according to changing of climate and moisture

***emco* DPM Sizing** - for the assessment of the sizing degree of a paper and characterization of the surface sizing, internal sizing and starch based on the *emco* DPM - basis curve:

- dynamics of the wetting phase of the paper surface
- dynamics of the capillary absorption
- dynamics of the fibre absorption

Coating papers / coating base papers

- examination of coating base papers, coating papers and various liquids
- examination of water absorption of base papers consisting of coating colour

Decor papers and laminating papers

- examinations at decor papers and laminating papers, impregnating resin absorption and testing

Label papers

- label papers (all preliminary and intermediate stages), analysis of printed labels, verification of embossing, alkaline penetration, detachment with caustic soda lye up to 90 °C.

Further examinations of special papers, felts, cigarette papers, filter papers, thin wood plates, cardboard, textiles, plastic films, etc. with liquids like coating colours, printing colours, varnishes, oils, starch, solvents, acids, impregnating resins, adhesives etc.

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