

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

# Module **HVL** High Viscous Liquid

Special Tester for the Determination of  
the Reaction of Paper and Board Surfaces  
with Highly Viscous and Contaminating Liquids (Adhesives, Printing Ink)  
to Predict the Converting Properties



### Application areas:

- Simple, efficient and accurate surface testing of paper and board with higher and highly viscous standard test liquids
- Determination of higher and highly viscous process liquids with standard testing papers
- Investigation of the interaction of real process liquids with paper and board surfaces

### Prediction of converting properties:

- Printability
- Glueability
- Dynamic water retention of coating colors

### Test and process liquids with low to high viscosity as well as contaminating liquids such as:

- |                |                |              |                 |
|----------------|----------------|--------------|-----------------|
| ■ Adhesives    | ■ Ink jet inks | ■ Offset ink | ■ Coating color |
| ■ Printing ink | ■ Flexo ink    | ■ Oil        | ■ Gypsum paste  |

### Main user:

- |                            |                             |
|----------------------------|-----------------------------|
| ■ Paper / board producers  | ■ Chemical suppliers        |
| ■ Paper / board converters | ■ Universities / Institutes |

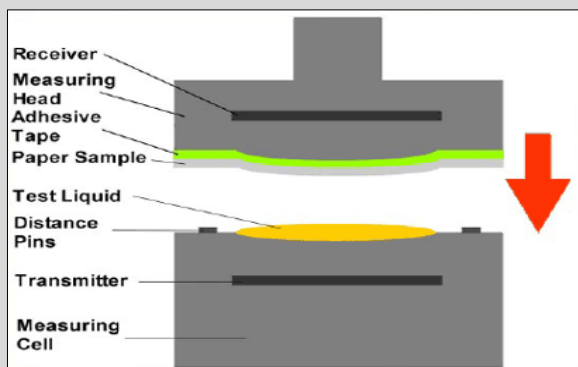
→ Prediction of converting problems,  
which are not detectable with standard testing devices.

## Features

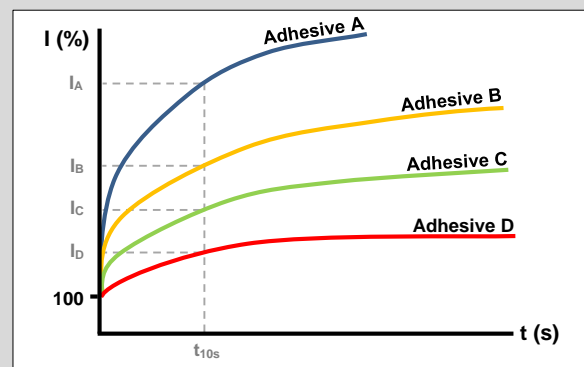
The **PDA.C 02 Module HVL High Viscous Liquid** has been specially developed for penetration measurements of highly viscous and contaminating liquids, using the ultrasonic measuring principle. The module HVL enables to characterize the reaction between real process liquids and paper/board surfaces.

Advantages of this module are the small sample volumes of only 3.5 ml and no cleaning effort after measurements. Moreover, a liquid penetration into the cut edges of samples is not possible.

### Measuring principle



### Example: Absorption of adhesive of board



The paper sample is applied by means of double-sided adhesive tape at the measuring head, which contains ultrasound receiver.

The test liquid is applied on the horizontal area of the measuring cell, which contains the ultrasound transmitter. If it is used together with a protection foil, the cleaning of the measuring cell is not required.

For a measurement the measuring head of the basic device is lowered together with the paper sample until it is contacted with the test liquid.

The liquid penetrating into the test piece changes the ultrasonic transparency of the test piece. The reaction between the test liquid and the test piece can be gathered from the change of the transparency.

The change of the ultrasonic transparency over time is shown as I [%]-t-diagram.

### Main Application

Testing of uncoated respectively coated paper and board with test and process liquids for prediction of printability and glueability (grammages up to 600 g/m<sup>2</sup>, liquid viscosities up to 150.000 mPa.s)

### Measuring results

**Intensity at a defined time I(t)**

### Advantages

- **Modular system**
- **Easy handling**
- **High-performance, very user-friendly PC software with automatic computation of application-specific parameters**
- **Analysis of the reaction of highly viscous and contaminating liquids with paper and board**
- **Especially for R&D / product development, customer support, troubleshooting**

### Technical data

Sample dimension: approx. 100x100 mm  
 Measuring frequency: 1 MHz  
 Amount of test liquid: 3.5 ml  
 Sensor diameter: approx. 35 mm  
 Data structure: ASCII file  
 Dimensions: Basic Device 420x160x320 mm, MCU 110x160x240 mm (HxWxD)  
 Weight: ca. 17 kg  
 Supply voltage: 115-230 VAC, 50-60 Hz