

## Dynamic surface tension measurement of water-based coating colours for curtain coater

Product: SITA Tensiometer  
 Industry: Surfactant chemistry  
 Measuring principle: Measurement of the dynamic surface tension

The advantages of the curtain coating process over other processes as well as the very high coating quality are mainly dependent on the physical and chemical properties of the coating colours used. Various factors, such as surface tension, influence the quality of the coating colour and, in unfavourable cases, can lead to instable conditions such as the 'teapot effect' or parabolic paths in the curtain.



Figure 1: Curtain coating machine

The wetting quality also depends on the surface tension. In order to adapt the surface tension to the respective conditions and dynamic loads, additives are mixed into the coating colours.

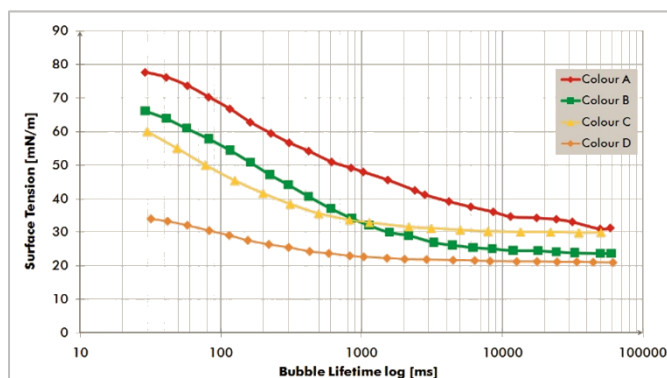


Figure 2: Measurement of water-based paints with additives

### ● SITA tensiometer for measuring the dynamic surface tension

One focus in coating colour formulation is on measuring the dynamic surface tension in order to draw conclusions about the wetting and flowout behaviour of the coating colour. Static measurement methods, such as the ring or plate method, are unsuitable for those analyses. The SITA tensiometers are based on the bubble pressure method,

which enables the measurement of surface tension from a highly dynamic to the quasi-static range.

### ● Laboratory tensiometer SITA science line t100

The SITA science line t100, especially designed for laboratory applications, can be used to measure bubble lifetimes from 30 ms on. This means that the complete relevant range for the time dependence of the surface tension in the coating colour can be measured in order to adapt it optimally to the requirements at the curtain and to the point of impact (wetting).



Figure 3: SITA science line t100

At the same time, the temperature is automatically recorded during each measurement with a tensiometer, so that temperature-dependent effects can also be analysed. It is therefore possible to develop an individual formulation for every application that meets the customer's requirements and minimises the risk of defects and unstable conditions. A serial interface on the measuring device allows the data to be conveniently analysed on a PC.