

Optimising fountain solution characteristics in offset printing by measuring the surface tension

Product: SITA science line t100
Industry: Surfactant chemistry
Measuring principle: Measurement of the dynamic surface tension

In offset printing processes, the printing plates are first covered with a fountain solution layer and then with an oily paint. Thereby, the grease repellent fountain solution wets the non-pictured areas of the printing plate in order to keep them uncoloured. All non-pictured areas have to be wetted completely with the fountain solution to increase the printing quality and edition. This requires an optimal adjustment of the surface tension.

A serious problem is to reduce the surface tension according to the operating conditions within a defined time (speed). Adapting the fountain solution formulation to the particular application requires knowledge of the dynamic surface tension value. Conventional static measurement methods such as the ring and plate method are not appropriate for measuring the dynamic surface tension. On one hand, those methods require a high input in time and on the other hand, they are only able to measure the static surface tension.

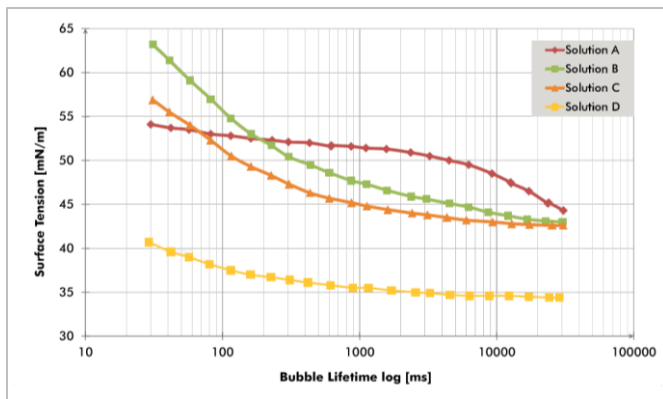


Figure 1: Measurement of different fountain solutions

● Measuring the dynamic surface tension with the SITA science line t100

The laboratory tensiometer SITA science line t100 is based on the innovative bubble pressure method. It is able to measure the dynamic surface tension of fountain solutions from a highly dynamic (wetting of printing plates) up to a quasi-static range (adjustment of a defined viscosity). Due to the fact that the SITA science line t100 measures the temperature automatically, temperature dependent effects can be analysed very well in order to adopt the product to the particular application.



Figure 2: Laboratory tensiometer SITA science line t100

A serial port on the device allows a comfortable evaluation of the test results at the PC. It is thus possible to receive valuable data for the product formulation as well as for the quality control. Provided that the surface tension is measured exactly, former studies have shown that an exact dosage of 2-propanol can save up to 50 % of alcohol in printing units.