



Stability and use properties of pigment based inks

Application

Ink

Objective

Details various applications of Turbiscan for printing products

Device

TURBISCAN® LAB



INTRODUCTION

Most of the inkjet inks are now a dispersion of pigments in a water base, as they give more environmentally friendly products that have also a better durability and compatibility with the packaging. However, with going away from dye solutions, the ink industry faces stability issues such as sedimentation and aggregation that can have a great impact on the quality of the finished product. Concentration gradients and blocking of the jet leading to inconsistency of the colour through the cartridge life can appear. A typical example of inks causing problem are the yellow inks that are known for being the most difficult to formulate. Moreover, in some cases foam is created when the ink is jetted on the substrate, leading also to bad quality printing.

APPLICATION 1: STABILITY OF INKJET INKS

1. Common method

Visual observation is usually used to control the stability of inkjet inks. However, depending on the colour of the ink, it can be quite difficult to assess sedimentation phenomenon. These measurements are usually done during 2 months, with storing samples at 50°C. Moreover, particle size increase due to flocculation and/or aggregation are tricky to measure as a particle size analyser requires high dilution that can modify the colloidal properties of the system.

The visual observation for stability tests of inks is tedious, subjective and time consuming. Moreover the results are only partial (no information on flocculation and kinetics).

2. Turbiscan® method

The analyses performed with the Turbiscan LAB enable to monitor both migration and particle size increase without doing any dilution. The sedimentation is quantified through migration velocity so that formulations can be easily compared. Packing of the sediment is also monitored. The analyses can be done at high temperature (up to 60°C) and automated via a fully automated ageing station (Turbiscan AGS). The stability measurements are done in only a couple of days, they are objective and traceable.

By using the Turbiscan LAB the stability tests of inkjet inks are accelerated by 20, enabling to increase the development capacities for new products and to improve the reliability of the batches produced.