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Research area: Product aims

Paper, paperboard and board // Graphic papers

Key words:

fixation of pigments, high speed inkjet, optimization of paper

Title:
Optimization of systems for fixation of pigments controlling the migration of pigments in high speed inkjet printing

Background/Problem area

The surface treatment of paper with multivalent salts to control the fixation of pigments is an established procedure to improve the quality in inkjet printing. In particular the inkjet print on uncoated paper with surface treatment can be improved significantly. However, there is much for optimization in the field of multicolor printing. Various colors are processed by mixing of black, cyan, magenta, and yellow. According to the multiple application of drops on one spot of the paper, the pigments are observed in different vertical positions due to consumption of multivalent cations. The last color (often yellow) printed on the paper migrates very deep into the surface resulting also in a lateral shift of pigment. This results in an incorrect mixing of colors. The obstacle is often suppressed by a large amount of salt, which leads to uneven coagulation of the color printed at first (often black). The printed image has a lack of quality due to mottling.

Objectives/Research results

The aim of the project is the investigation and optimization of systems for fixation of pigments. The penetration of all processed colors will be controlled to enable fixation on the surface including improvement of images and further processing of inkjet products. This work is focused on optimization of surface-treated paper for high speed inkjet printing applying pigment-based inks. The influence of the type and amount of fixation agent on the migration of single pigments, i.e. the inkjet print quality, is of particular interest and will be investigated in detail. The most important parameter for evaluation of the surface treatment of inkjet paper is the solubility of fixation agent in the ink formulation including kinetics. Based on the findings, systems for fixation of pigments will be developed and optimized. Therefore, a reliable procedure for analyzing of microscopic cross sections is required. The qualitative and quantitative evaluation of pigment migration is aimed. This includes the development of methods to prepare cross sections without artefacts. Moreover, the processiblity of the fixation agent is a very important issue. The choice of the coating device and the formulation of the system is of crucial importance for the printability.

Application/Economic benefits

The intention of the project is to extent the market of high speed inkjet papers, which is increasing but still small at the moment. An inexpensive surface treatment of paper may enable products with intermediate price level between natural paper and photo inkjet products.

Period of time: 01.05.2017 – 30.04.2019

Remarks

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