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Research area: Product aims

Paper, paperboard and board // Graphic papers

Key words:

Bimodal grain size distribution, coating, offset paper

TITLE:**Printability improvement of coated offset printing papers by use of coating pigments with bimodal grain size distribution****Background/Problem area**

In 2008 the German pulp and paper industry produced 22.8bn tons of paper and paperboard, 37% of which were graphic papers. Nearly half of the graphic papers were coated.

Because offset printing accounts for approx. 50% of the three main printing technologies flexo, gravure, and offset printing, the project focuses on offset printing. Coated offset printing papers are used for many graphical products like books, brochures, catalogues, and magazines. Their surface properties are therefore important to achieve the desired quality in offset printing. To increase the productivity of printing shops, standardized surface properties are required regarding the absorption of ink solvents in the printing process. Until today no technically mature solution could be provided by the pulp and paper industry which permits the simple adjustment of absorption times.

Objectives/Research results

Objective of this project is to improve the absorption time of liquids in offset printing ink solutions through bimodal grain size distributions achieved by the admixture of pigments that have reduced grain sizes compared to the standard grain sizes used in coating colours.

Surface energy and pore structure are main properties of the coating influencing the absorption velocity.

Several different calcium carbonate and silicone dioxide pigments with grain size distributions of around 150 nm and below were selected and initially tested on their influence on absorption velocity. Other paper properties, for example all optical characteristics, were measured as well.

The results obtained on laboratory scale have been reproduced on the pilot coater, showing some differences due to a more equally distributed colour with less surface roughness on the paper surface. These differences may also be due to differences in the properties of the base paper, mainly paper weight, used on the pilot coater. The influence of pigment admixture with reduced grain size was able to be demonstrated.

All additional coatings will be made on the pilot coater and finally on our VESTRA together with printing tests on coated papers.

Application/Economic benefits

Up to now, coated papers have not been standardised with respect to the absorption time of the solvents used in offset printing inks for the offset printing industry. The project aims to improve the technological adjustment of coated papers to offset printing processes.

Cost benefits/ savings can be expected from productivity gains, faster production and waste reduction.

The research results to be achieved are mainly related to the field of materials with applications in the fields of chemistry, process engineering, and production of especially the paper, publishing and printing industries.

Period of time: 01.12.2010 – 30.11.2012

Remarks

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