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Research area: Product aims

Paper, paperboard and board // Technical specialty papers

Key words:

Cross-linking, coating, inkjet

Title: Development of a new cationic coating colour enabling the cross-linking of polyvinyl alcohol (PVA) without boric acid**Background/Problem area**

The polyvinyl alcohol used as a binder in photo inkjet paper coatings is cured today by means of boric acid or borate. The boron compounds make it almost impossible to control the cross-linking reaction. Cracking or coat defects occur, and deposit formation leads to high broke rates, causing production costs to rise.

Furthermore, boric acid and its salts have been classified as hazardous substances since August 2008. This means they must be labelled accordingly and are subject to certain conditions regarding handling, storage, shipment, distribution, tracking etc.

Consequently, boric acid is to be eliminated from the formulations and PVA curing is to be achieved by means of alternative curing agents or new methods.

Objectives/Research results

The research project aims to develop new, feasible solutions enabling the cross-linking of polyvinyl alcohol binder in the production of photo inkjet papers. Project aims achieved so far include:

- examining cross-linking using boric acid
- examining other chemical crosslinkers
- developing new coatings with other crosslinking agents
- testing the properties of these new coated surfaces,
- finding crosslinking agents with better properties such as coatings with boric acid
- improving the printability of layers as indicated by tests
- conducting practical tests of radiation crosslinking
- determining that some layers did not show cracking due to shrinkage

This feasibility study of UV curing of paper coatings produced good results. This explains why these activities will continue in the future.

Application/Economic benefits

Initial applications of the project results are expected in the segment of high-quality coated inkjet papers, but producers of conventional photo papers, their suppliers as well as printers / photo service providers can be acquired as initial users in the course of the project work as well. According to market investigations, inkjet prints have taken over increasing market shares from traditional photo products since the year 2000. Assuming a relatively constant global paper demand for high-quality prints and continued positive development of the inkjet market, their share is estimated to reach 20% in 2010.

The project results can also be used for further work in the fields of material coating of plastic, textile and glass surfaces or polymer production. The implementation of new methods will make manufacturers of machinery and plant systems a potential target group as well.

Period of time: 01.01.2010 - 30.6.2012

Remarks

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