Research Institute:

PTS Heidenau
Pirnaer Straße 37
01809 Heidenau

Internet: www.ptspaper.de

Head of the research institute:

Dr. F. Miletzky

Project leader:

Nicole Brandt
Tel: +49(0)3529 / 551-670
Fax: +49(0)3529 / 551-899
E-Mail: nicole.brandt@ptspaper.de

Research area: Product aims

End products made of paper, paperboard and board // Print products

Key words:

Optical brightening agents, ageing, light fastness, fluorescence

Title:

Stability against UV light of optically brightened papers for offset printing

Background/Problem area

In the last decades an increasing need for optically brightened papers and boards could be detected, because most European costumers prefer bright white papers. Desired whiteness and chromaticity coordinates can not be achieved with bleaching within an adequate budget. Therefore optical brightening agents and dyestuffs are widely used.

Optical brightened papers are often not stable against light; in particular the UV light initiates the decomposition of the brightener. On a scale of 1 to 8, standard papers achieve a moderate light fastness of 3 (stock application), respectively a very poor 1-1.5 (used in coatings).

However, for many applications it is necessary that paper and printed product have a good stability in whiteness and colour.

In excessive solar radiation for instance posters must not age. Also sales packaging are exposed to sunlight over a long period, partly many months. Costumers rightly expect long lasting of packaging and no difference between a newly printed and an older packaging. Additionally, in archives and libraries light fastness plays an important role.

Objectives/Research results

In this research project the ageing behaviour of optically brightened offset printing papers and prints on it shall be determined.

At the end of the project one may estimate the consequences of light ageing onto the optical properties of papers and resulting from that the optical appearance of prints.

Moreover the basic information for a tool to minimise costs for paper and board manufacturers will be collected to reach optimal whiteness and UV stability with the optimum usage of optical brightening agents.

As a new method, fluorescence spectroscopy is used to quantify the optical brightening agents before, while and after ageing.

Application/Economic benefits

In Germany almost all printing papers are optically brightened. Every printing shop (about 10,000 in Germany, almost all SEM) has to deal with different brightened printing papers, which causes few problems in colour management. For planning the printing process and its materials it is very useful to know the content of optical brightener in the paper and the light fastness of the paper. Depending on the application the printer can choose out of a variation of different brightened and UV stable papers and avoids costumer complaints.

Paper and board manufacturers will get basic data for a tool to optimise the usage of optical brightening agents.

Project period: 01.10.2009 – 30.9.2011

Remarks

The research project IK-MF 090073 is being funded by the German Federal Ministry of Economics and Technology BMWi.