Research institute:

PTS Heidenau
Pirnaer Str. 37
01809 Heidenau

Internet: www.ptspaper.de

Head of the research institute:

Dr. Frank Miletzky

Project leader:

Sabine Hottmann
Tel: +49(0)3529 / 551-663
Fax: +49(0)3529 / 551-899
E-mail: sabine.hottmann@ptspaper.de

Research area: Product aims

Paper, paperboard and board // Graphic papers

Key words

Folding, fibre treatment, base paper composition, fibre types

TITLE:

Development of fibre-based concepts to control folding properties of coated graphic papers

Background/Problem area

Coated graphic papers usually are subjected to an intensive converting process after printing. Especially the folding properties of the papers are important to guarantee an immaculate converting process and therefore to supply a product with high practical value.

The printability of graphic paper was and is further optimised during the last years. This is primarily achieved by increasing the amount of mineral pigments on the paper. These stiff and incompressible coatings cause additional forces to occur on the surface of the papers during folding that may lead to cracks in the paper surface due to – amongst others – insufficient energy uptake of the base paper.

The physical processes during folding in the composite “graphic paper” are very complex. Experience shows that the mechanical strength and compressibility properties of papers highly differ over the paper cross section and exceedingly depend on the fibre type. These complex interactions are until now not extensively examined and are only handled empirical.

Objectives/Research results

The project aims to investigate the correlation of fibre selection, fibre treatment and resulting structural strength for optimised folding properties of the base papers and therefore of coated papers by derivation of the treatment methods in stock preparation and sheet formation.

For the precise understanding of the correlation of base paper composition / properties and its folding properties different fibre types (long / short, sulphate / sulphite / BCTMP) are to be examined. The fibres will be impinged with different refining intensities (e.g. different plate design). The thus prepared fibres are to be examined regarding their fibre flexibility, fibre elasticity and resulting structural strength and energy uptake of the sheet. Furthermore the parameters due to different fibre mixtures and compositions (base paper formulations) influencing the folding properties will be determined. In the field of sheet formation high attention will be paid to the process control. This should help to determine the influence on folding and creasing properties due to sheet formation and fibre orientation as well as fines and filler distribution. .

The exact design of experiments and the selection of the fibres, fillers, additives and process parameters (sheet formation) as well as the parameters and physical properties to be determined are carried out in close coordination with the members of the project committee.

Application/Economic benefits

The project results will help to produce cost effective products by using the mill-specific facilities regarding the selection of raw materials, fibre treatment and process control (sheet formation) for a cost effective base paper with good folding and creasing properties.

Project period: 01.01.2011 – 31.12.2011

Remarks

The project (INFOR Nr. 152) is being funded by the curatorship of research and technique of the pulp and paper industry within VDP e. V.