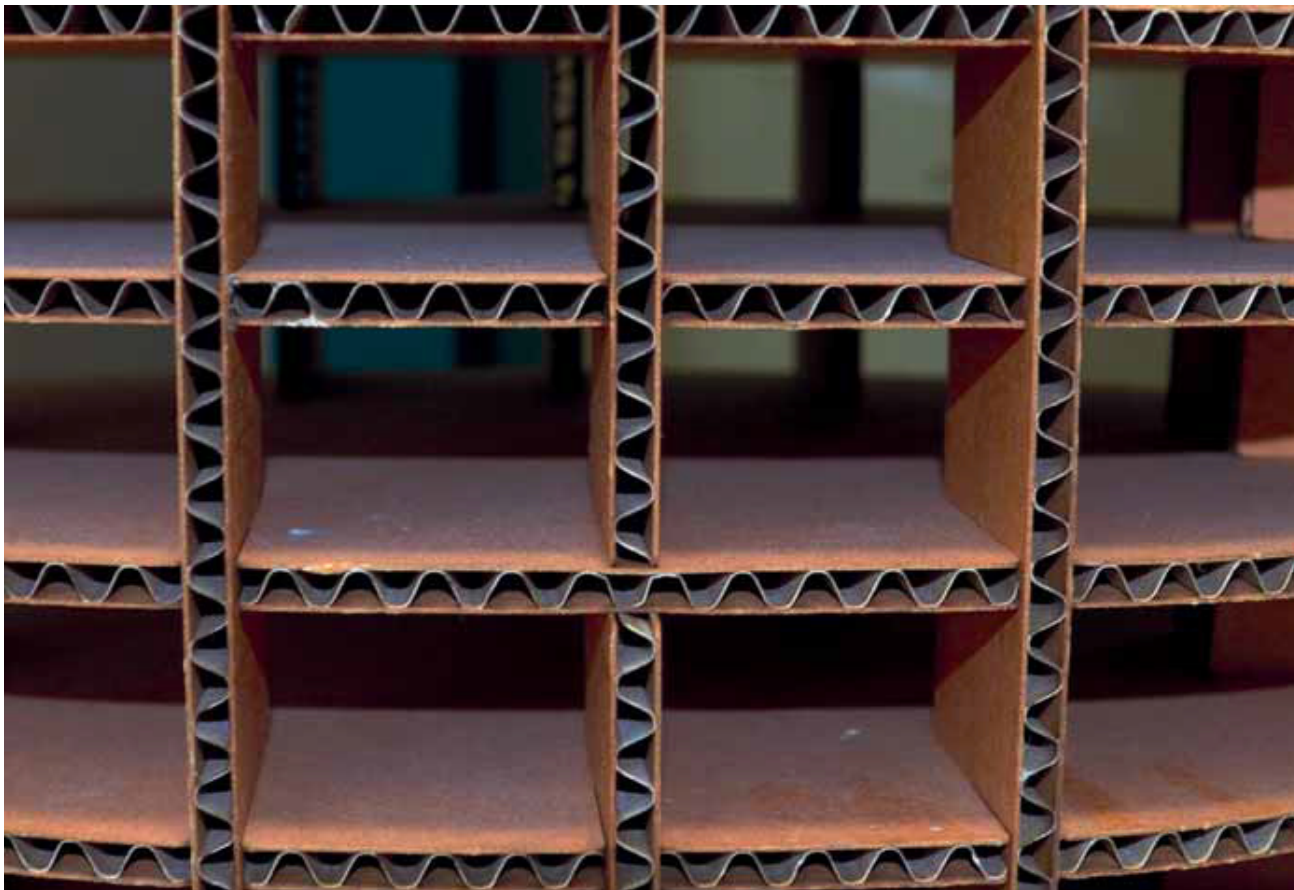


SUCCESSFUL DYE TRIALS IN SOUTH AFRICA



Stock dyeing, or internal dyeing in packaging grades is one of the biggest challenges that face papermakers today. Paper machines differ in the chemistry of the wet end. There are no two paper machines with identical chemistry. Because of that, the use of chemicals must be optimized individually for each paper machine. This is also true in conjunction with the application of dyes.

In order to get a uniform shade from reel to reel there are many factors that need to be taken into consideration, namely:

- Paper machine furnish (waste quality and variations)
- Dyeing conditions
- Correct choice of dyestuffs and Technology partner

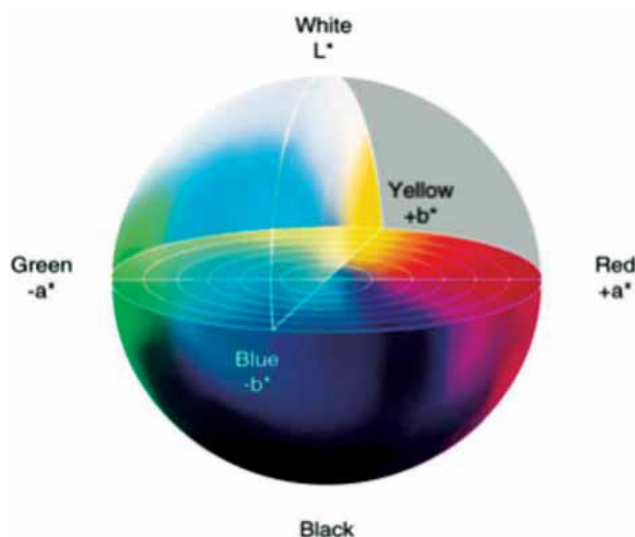
ROBAMA – ACAT Technology partner, dyestuffs

ROBAMA is a European manufacturer of dyes, optical brighteners and auxiliaries, mainly for paper, textile and leather industries with a range of over 150 brown liquid dyes (direct and

SUCCESSFUL DYE TRIALS IN SOUTH AFRICA

basic) which covers the most demands of the market.

Although ROBAMA has a wide extended range of over 150 brown liquid dyes (direct and basic) which covers the most demands of the market, their technical department developed new colors to meet with our customers specific requirements.



Correct selection of dyestuffs for successful trials is critical and particularly complicated.

The three coordinates of CIELAB represents the lightness of the color ($L^* = 0$ yields black and $L^* = 100$ indicates diffuse white; specular white may be higher), its position between red/magenta and green (a^* , negative values indicate green while positive values indicate magenta) and its position between yellow and blue (b^* , negative values indicate blue and positive values indicate yellow.) Robama were able to blend a brown dye to achieve the L^* , a^* and b^* values to meet our specific customer's requirements.

MPACT paper mill – Industrial trial

MPact Paper Mills manufacture recycled based Packaging and industrial paper grades. Fibre used in this process is a combination of recycled industrial waste and sugarcane bagasse. One of the biggest costs of producing quality packaging grades at any waste based operation is the shading requirements of their customers. This particular machine is a single ply fourdrinnier without a size press, hence internal dyeing of the sheet requires the addition of large amounts of brown and black dye.

Trial results:

Braune Farbe – kg/tonne Papier	1,5	1,7	1,2
Schwarze Farbe – kg/tonne Papier	1,0	1,7	1,12
L^* Wert (Durchschnitt)	54 – 57	56	55,8
a^* Wert (Durchschnitt)	5,8 – 6,5	6,2	6,0

SUCCESSFUL DYE TRIALS IN SOUTH AFRICA

Mpact management awarded ACAT a 7-day on-machine trial based on color matching and on-site laboratory analysis done using Robama Trupocor brown and black dye specifically blended to mill specification.

Summary:

- A significant overall reduction in brown dye consumption
- Very stable L* and a* values despite challenging changing conditions during the trial.
- Guaranteed future business and a first for supply of dyestuff into the paper industry.