The use and mis-use of dyestuffs and fluorescent whitening agents

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8.1 Introduction

Dyestuffs and Fluorescent Whitening Agents (FWAs) in the Paper Industry have been used and abused throughout all the years that paper has been made. Until the advent of continuous dyeing, along with other continuous chemical additions, dyestuffs were just something extra to be added to the system. Everything that was added to the system (dyestuffs, fillers, starches, size and alum) went directly into the beater, pulper or chest. All the additions were originally made in a regular and controlled order. As machine speeds increased so the time available for these products to be added, decreased. This meant there was no time for one additive to mix into the stock before the next addition and therefore interaction between them was quite common. This created chemical reactions which frequently showed up as variations in shade. The dyestuffs were always blamed, not the practices within the mill.

The production of coloured papers was considered to be an interference to good, long production runs, therefore all kinds of malpractices were allowed to creep in. With the advent of continuous addition more consistent procedures were achieved, even if they were not technically correct.

The use of coloured papers helps to brighten our lives and ease our work. In this respect coloured papers fall into three main categories:

1. Identification
2. Decoration
3. Obliteration

If we take the three categories in turn we have:

8.1.1 Identification

Papers used for continuous stationery, e.g. multicopy documents where each copy is distributed by colour. This ensures that each department receives its own copy unless, of course, the distributor happens to be colour blind.

8.1.2 Decoration

This class of coloured paper has, in recent years, become more important. We have bookbinding papers, wallpapers, packaging papers and domestic papers.
Nowadays we have toilet tissue that matches our bathroom and kitchen towel to match our kitchen, all helping to brighten our lives.

8.1.3 Obliteration

In these times of recycling, which is not the answer to all our hopes, we tend to use more and more waste papers. Much of this is dyed to disguise the fact that 'rubbish' has been used to produce the paper. Whereas the fibre is suitable for the product's end use it will look better for aesthetic reasons if dyestuff is added, e.g. mixed waste is often dyed brown to look like a kraft paper (this is designated imitation kraft).

Once we have decided that we want a coloured paper we now have the task of selecting the right dyestuff for the job. It is not simply a case of adding large quantities of dyestuff and hoping it will be suitable. We have to take into account the end use of the paper and the fibre from which it is to be manufactured.

Training of staff can go a long way towards reducing broke levels in mills. It is a well known fact that it can be difficult to train the older employees in mills. We all, with age, become set in our ways and try to avoid change, but training is possible and will be cost effective. Additionally it will make life easier for the mill operatives, be it the men adding the dyestuff or those who have to cut up the broke.

The selection of the correct dyestuff for a specific paper is essential. It is of little use to produce a quality paper with a high mechanical fibre content dyed with basic dyestuffs. The depth of shade will be satisfactory, the brightness will be very good, but the colour will fade very quickly and the paper itself will deteriorate almost as quickly.

Equally it is poor economics to use an expensive direct dyestuff to tint newsprint which can have a useful life from manufacturer to final customer of two to three days. Most of that time the paper is stored out of direct daylight.

Once the paper's specifications have been established it is then possible to select the correct class of dyestuff to be used and proceed to match the shade. This is carried out in the laboratory under controlled conditions, either within the mill or at the laboratories of the dyestuff supplier. The major suppliers within the United Kingdom give a very good, reliable service.

The first objective should be to use products which are already in use within the mill. It is very easy to increase the range of colours available by using more than one supplier. Many companies supply the same product under different trade names. These are listed in the Colour Index which is available to everyone (usually in the public library). This lists all dyestuffs by Colour Index (CI) number, supplier and trade name e.g.:

Direct Yellow 11
Carta Yellow G (Sandoz Chemicals)