Fast fashion needs fast colours

Colour is important. It does more than highlight fashion, it expresses mood, image and creates atmosphere. For two centuries the world was jealous of Spain since it had a monopoly over the brilliant red dye cochineal, made from a little insect found nibbling a Mexican cactus. The ecologies of both India and Australia were hit as other countries tried to break this domination and introduce both the cactus and insect. New South Wales still has problems with cactus today.

Celebrating 150 years of synthetic dyestuffs

Rich red colours were for the rich and famous, controlled over the centuries by a mix of high prices and legislation. The poorer folk were left with the dull tans and browns available from simpler vegetable materials. Consequently it was a big day for colour and the ordinary people when the son of a leather merchant, William Perkins, started trying to produce quinine from aniline in 1856. He failed, but like all good inventors he came out with something better – synthetic dyestuffs. The black tar he produced released a purple liquid which gave a beautiful result when applied to silk. This was mauve dye and was to be followed quickly by other colours such as magenta and aniline blue.

A dye dissolves in solvents or binding agents, as opposed to pigments that are generally insoluble. In developing a colour the chemist has to consider how the dye performs in light and its absorption characteristics. Dyes are sensitive to light and colours can look very different in shade as opposed to sunlight. Added to this is the complexity of metameric matches when two colours look identical in one light but quite different in another, which is an issue for retailers as much as consumers.

Today the consumer expects colours that will not fade, wash out or rub off on skin or clothes. So the dyestuff industry, albeit greatly helped by the discoveries set off by Perkins 150 years ago, has to work with a wide variety of natural and synthetic materials –



Pompea's Varsity sportswear range involves a long standing partnership with Hyosung.

Creora

from wool to cotton, polyesters to polyamides, as well as meet all the physical and chemical tests required. Dyestuff makers will look at fibres such as cellulosics (cotton, viscose), wool, polyamide (nylon), acrylic, polyester and acetate/triacetate. Some of the tests involved will include light fastness using a xenon light, perspiration fastness, colour fastness to washing using a strip of a variety of materials to check colour transfer, fastness to sea water, to rubbing (wet and dry) as well as to dry cleaning and to steaming and ironing.

For the last few decades environmental considerations have put a profound overlay on dyestuff use and development as problems have arisen with many of the chemicals involved at all stages of production. All sorts of issues are involved from azo dyes that are capable of releasing carcinogenic amines as a result of reductive azo cleavage, dyestuffs with a history of causing dermatitis, avoiding dyeing or finishing carriers based on halogenated aromatic hydrocarbons, biphenyl or orthophenyl-phenol, ensuring that any chrome mordants used cannot develop hexavalent chrome, which is toxic.

Dye company DyStar had 26 of the 32 World Cup national championship teams playing in their colours engineered to the high fastness specifications by their subsidiary Color Solutions International. Its Dianix disperse dyes and Sera process auxiliaries made sure that top quality and fastness specifications were met. They look at sport in rough terms and break down the areas as cotton/cotton blends (e.g. polo shirts, T-shirts, jogging suits), polyester (e.g. football jerseys, tracksuits) and polyamide (e.g. skiwear, swimwear). Trends in the sportswear sector include increasingly complex garment design, fibre blends and higher fastness requirements. Dyeing fibre blends, e.g. polyester/elastane or cotton/polyamide microfibres, requires skill and experience. Reactive, Disperse, Metal Complex, Acid, Cationic and Vat dyes will all be used as appropriate, some suited to the material and others to achieve special properties.

Black is still the new black

Getting a true black can be a nightmare. Just take a treasured garment in to be redyed to black and you could get the message "Garments for this service must be received by the 23rd of each month or they will be held until the following month. We do not offer rush service for dyeing black. Polyester and polyester blended garments will not be able to go a true black as polyester does not dye. Polyester thread will not dye. Garments may shrink due to the amount of time they need to be in the vat to go black. We do not dye wool coats or garments black due to shrinkage. We cannot guarantee



Jacket made in Super Black fabric from Lauffenmühle.

Lauffenmühle

the darkest purest black on any items for any number of reasons." In the fifteenth century the Duke of Burgundy chose to wear black in the finest materials, to emphasise his status. For most of his time as King Charles V of Spain he wore black, with a white neck ruff. When Philip II succeeded Charles in 1556, the Spanish Court became the example for all Europe. Even Henry II of France followed Spanish fashion and almost always wore black.

While black is not a big sports colour it is important in work wear, for just the reason of the sharp and contemporary image that creates. Most work wear and much uniform wear is leased. Leasing contracts generally include washing in industrial laundries. Laundry methods vary according to how dirty the clothing is and tend to be far more aggressive than in normal domestic washing machines. High-quality dyes and production processes are therefore extremely important. Whether the garments are yarn-dyed or piece dyed, they have to look fresh and attractive even after heavy wear and repeated laundering.

The fully vertical textile company from southern Germany, Lauffenmühle, makes fabrics designed to withstand industrial laundry and keep their appearance; they are laundry processable to 95°C and tunnel drying to 150°C. Recognising that black is such a hot colour for corporate wear, but known to fade with wash and wear, Lauffenmühle has produced Super Black, a rich black created with new dyestuff technology that is fade resistant, and retains its blackness wash after wash.

Paint it black! Launch of absolute black

Hyosung has launched a new black elastane, Creora H-100D delivers a blacker black in garments and maintains the depth of colour. Created by the addition of black colouring in the phase of extrusion of the elastane, it is spun into the fibre to maintain the black colour longer. Creora H-100D ensures garments/fabrics deliver a luxurious black colour even when stretched, eliminating the grin-through effect. It also allows for creativity in the development of new styling and novelty effects such as stripes.

H-100D belongs to the Creora elastane product family that delivers an outstanding combination of stretch, power and recovery in fabrics to meet the performance needs of sportswear customers.

Seamless specialist Pompea has built a lasting partnership with Hyosung, and has been using Creora for its sports product lines. Andrea Albizzi from Pompea says": The Creora black H-100D has been used in the Gym line to create stretch garments in deep black colour, eliminating the 'grin through' of the common elastane." Pompea sees the benefits in terms of improving the appearance of Pompea sportswear and Albizzi states: "The added value is connected to the technical characteristics of Creora (elasticity, washing, light and perspiration resistance) and to the know-how of Pompea. The consumer benefits are stretch, long lasting and comfortable garments."

Low temperature dyeing

Black is only one colour, albeit important. Dacron Colourfast is a new family of polyester fibres from Advansa based on a specially modified copolymer of polyester. This means that, in addition to normal disperse dyeing, fibres can also be dyed at low temperature with cationic dyestuffs. The use of cationic dyestuffs means that Dacron Colourfast can be dyed to achieve deeper, more intense shades than is possible with normal polyester disperse dyes. What's more, unique design effects ranging from iridescent fabrics to checks or stripes can be achieved by cross-dyeing with standard polyester or other fibres. The potential for low temperature dyeing with Dacron Colourfast gives better protection for elastane when dyeing stretch fabrics as well as excellent colour fastness (up to level 5), even for dark and fluorescent colours.

PTT- polytrimethylene terephthalate

Current interest in the Corterra fibre (Royal Dutch-Shell Group) and in general for those fibres marked as PTT (polytrimethylene terephthalate) has been increasing. It is considered to be one of the most important fibres since the start of the polyester period. It is



Sweet Canyon Vee is a high colour fast workout tee in performance stretch fabric.

Columbia

easier to dye and holds it colour better than most other synthetic fibres. Shell has licensed a number of producers to develop fibres from the polymer in different geographical areas.

One of these is the yarn division of Miroglio SpA, one of Europe's largest integrated yarn to clothing companies. The Miroglio group sells polyester filament yarns and polyester plus cellulosic spun yarns and in 1999 Miroglio introduced its Corterra yarns as SENS standing for Soft, Easy-care, New and Stretch. With extra good dyefast properties SENS is targeted at fabrics for base layers, outerwear and sports wear markets.

Evolution Relax: state-of-the-art elastic fibre for work-wear fabrics

The innovative Lauffenmühle's developments also include a range of workwear fabrics, which are claimed to be technically superior. Evolution Relax with Dow XLA guarantees excellent stretch performance (20%) after continuous wear and repeated washing. The new EOL Dow fibre (olefinic-based) is the ideal solution for stretch work-wear fabrics in demanding occupations. It resists harsh chemicals, high heat and UV light. The transparent fibre virtually disappears into the fibre blend and provides a high performing and lasting stretch comfort – even in intensive high-temperature industrial laundering processes. Evolution Relax is available in a wide range of weights, from 285g twill and canvas for heavier weight work-wear, 245g-215g for mid weights, to 160g for Oxford shirting and 125g for work shirting.

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