



# Retouching, ultraviolet marking and labelling of fabric

It comes as a surprise to find that hardly any textbook for textile engineers deals with this subject at a length adequate to its significance. Institutes of textile technology either fail to handle this topic altogether, or they check it off by a few subordinate sentences. This is astonishing because every manufacturer of textile products is confronted with one of these problems day by day. In other countries such as Italy, Netherlands, Belgium, overseas countries and even in the Russia and in China this subject is handled with much greater attention, and with considerable success. Numerous textile manufacturers, who have transferred their production into other countries were surprised to find that the goods arriving from these areas are not only cheap, but meet highest quality standards. Our firm have made efforts to interest the textile technical colleges for these subjects, however without much success. It is obvious that this paper can only give a short overview of this complex topic.

## **Retouching of fabrics**

According to experience, faults in fabrics are detected only during final inspection, for instance small stripes, dichroism of stonewash jeans fabric, small dots on printed goods or stripiness of tufting carpets and other floorcoverings. Even though it is important to find such faults during final inspection routines, there remains the crucial question whether to sell the product at lower price (as seconds), or to try to eliminate the fault in some way or other. Both manners of dealing with this problem are feasible, if however, the ultimate buyer insists on the delivery of faultless good (of first class quality), problems can arise. It is true that some firms have specialized in the retouching of faulty fabrics, but the price for this service is high, and it will usually be necessary to bring the goods in question to the retoucher and to collect it after having waited for some time. This is a cost- and time-intensive process. It is the cheapest and best solution to have the fault remedied in one's own plant if one has decided for this option.



## **Retouching agents and fastness properties**

Some people try to use objects available in the plant such as ball pens, felt-tipped pens or even tailor's chalk which can be removed by washing. It is obvious that such methods cannot result in satisfactory results. Either the matching colour is not available, the fastness of the colour may not suffice and there remains the risk that the final buyer detects this primitive retouching method. The good reputation of the supplier may be endangered.

It is an additional shortcoming of all retouching work that the touched up spot will never attain the fastness properties of the original goods.

## **Special retouching aids**

Our company has specialised in the manufacture of efficient retouching aids. It goes without saying that even these products cannot perform miracles, but the products in question have sufficient fastness properties that no problems are likely to occur during practical application. The better the fastness properties of a retouching aid, the greater - it is true - are the problems for a wrongly retouched spot cannot be levelled out afterwards. Bearing this in mind, it is obvious that retouching aids with outstanding fastness properties should only be applied by skilled persons.

## **Application and technical hints**

### **Darkening of pale faults**

It is comparatively easy to darken a pale spot. This can be accomplished by a Textilan pencil, an utensil which resembles a felt-tipped pen. It is recommended to begin with a Textilan pencil with fine tip. 150 different shades are available. In addition, it is possible to produce special colours. The retoucher should have good handicraft skills and an excellent sense of colour for selecting the correct shade. Specialists will cleverly achieve the desired effect by lightly applying a comparatively dark colour. According to the slogan of these specialists, the best retoucher needs a minimum of colours.



It is recommended to carry out an initial test. Small dots are carefully applied to the fault, spreading the dye by rubbing in order to obtain a good shading-off against the surrounding fabric. If necessary, the shade can be corrected later on. Retouching will then be comparatively easy. In the case of continuous stripes it is not advisable to retouch transition into the adjacent fabric areas. The Textilan pencil can be refilled with Textilan tincture. All Textilan tinctures are miscible with each other so that intermediate colours can be easily produced at the spot. The Textilan diluting agent the whole stripe as this would inevitably produce a second stripe defect. In such a case, the pale stripe will have to be "broken" so as to obtain an optimal shading off effect. It is important to spread the dye by rubbing either with the hand or with a rag after retouching so as to obtain a gradual V3 can be used to dilute the Textilan tinctures. It is, for instance, possible to change a medium blue shade into a light blue by adding the V3 diluting agent.

Also the wearing parts of the Textilan pencil, such as the writing head, the filter and filling pipettes for refilling/subsequent mixing can be individually supplied. A skilled person will thus be able to use a few basic colours, unfilled Textilan pencils and spare parts and the textilan diluting agent V3 to produce a large gamut of different colours and to carry out retouching work with ease and at low cost.

## Technical hints

Unskilled people should begin with a pen with a fine tip. Skilled retouchers frequently use the thick (coarse) tip which allows faster working. Specialists employ brooms, brushes or even spraying guns. "Brush method": Saturate a good, absorbent carton with Textilan tincture until it is completely soaked. Then wet a brush with the carton. The dye will be uniformly absorbed by the brush. Even wide stripes can be effectively and quickly levelled out.

The Textilan tinctures cover virtually all usually occurring faults on wool, cotton, staple fibre, wood synthetics etc. Naturally, it should be duly remembered that the dye will look different on different materials. In fact, the hand of the retoucher and the selected shade are crucially influencing the result. It is relatively easy to retouch patterned fabrics, whereas it may pose problems to touch up dyed goods, especially if they have been printed as well.

After all, retouching is the work of an artist which if it is well done is worth a reward. It should be borne in mind that the work of the retoucher may save the company large sums of money if the goods can afterwards be sold at the full price for first class fabrics.

### Brightening of dark faults

In former times, it was deemed impossible to do this, but there are now chances to solve this problem.

The utensil to be used in this case is a white valve pen containing pigment dyestuffs which are conveyed to the tip by means of a pump system. Having pumped until the dye has reached the tip, one can begin with the retouching work.

Black dots on a light-grey flannel fabric, dark spots on stoned wash jeans fabrics are touched up in the conventional manner. It is in this case important to carefully level out the dye by hand so as to obtain a good feathering.

Problems may be encountered in the case of particularly dark barrè effects, or if, for instance, individual black dots are found on eggshell-coloured floor-covering material, faults which gave to be removed. This can only be done in the following manner: The dark stripe will have to be brightened with a white pencil until a lighter stripe is obtained and black dots on the floor-covering material will have to be initially touched up with a white dye, thus producing a white dot. Following a short drying period, the white spot in an eggshell-coloured carpeting is retouched with an eggshell-coloured textilan-pen in order to match it to the rest of the material. This is a toilsome job, but it is usually worth the trouble.

### Black fibres, dark spots on solid-shade, white fabrics

Up till now, this fault could not be remedied by retouching. White is not the same as white.

The white colour of the valve pen will never match the white which has been spoiled by black fibres or dirty spots. This would call for the development of hundreds of different white shades and – if one would be able to find the correct shade – one could solve even this problem.

## Other retouching aids

There exist other, traditional retouching aids which are being used besides the Textilan pens described above in details.

### Fast-to-pressing-Burling- pens

These are wax pencils which can even be used by unskilled hands. Their advantage is to be seen in the possibility of rubbing off a wrongly retouched spot with a suitable spotting agent. The required fastness properties will only be obtained following a passage of the goods through a rotary pressing machine as an effect of pressure and heat.



### Polyester cartridges and holders

These cartridges have been developed during the period when synthetics gained importance in the textile industry. Their advantage is to be seen in the fact that they are very fast to pressing. Their shortcomings are low fastness to rubbing and to washing. In addition, only a limited colour range of shades is available.

## Ultraviolet fault marking



It has always been customary for cloth defects to be marked with small ribbons, and the garment manufacturer is entitled to a small allowance for faults marked in this manner either in the form of 10 to 10 cm of cloth to be supplied free of charge or he was granted a discount on the invoice. In return, the marker-up had to undertake to cut the goods in a manner that the fault ended in a hidden position such as in the lapel of a coat or at the inside of a sleeve. Unfortunately, not all garment manufacturers conformed to this their duty and if happened that the weaver was suddenly confronted with a sports coat where a fault was found on a clearly visible part. At the same time, he was sent a letter saying that he had omitted to mark this particular spot as faulty. As a consequence of this "omission", the weaver was charged the value of the completed spots coat.

Nowadays, faults are, as usual, marked by a small ribbon, the respective spot is, however, in addition marked directly with a Textilan fluorescent (ultraviolet) dye pen. These pens look similar to the pens used for retouching of faults, they are, however, filled with a fluorescent dyestuff which can be made visible under ultraviolet light. In normal daylight, these colours remain invisible. An ultraviolet lamp with a wave length of about 366nm (long-wave ultraviolet light) is required to make them visible. If the sports coat in question would be presented to the weaver, he would only need an infrared lamp to prove that the complaint was unfounded if the spot in question had been marked with fluorescent dye.

Apart from Textilan pens containing fluorescent dye it is possible to use fluorescent marking pens on a wax basis. The marking applied with these "wax crayons" will, however, have to be "pressed" into the goods with a warm iron to become invisible to the eye.

Invisible fluorescent dyes are also used for many other purposes such as for imperceptible marking of buttonholes, for the control of production processes or as measure for protection against pilferage of valuable objects. If any such an item is stolen, the ultraviolet marking is the best evidence for one's ownership when negotiating with the criminal investigation department.

The latter is usually equipped with ultraviolet lamps.

## Labelling of fabrics

There are different methods to label cloth.

By sewing in of piece numbers, using a cotton/nylon or other threads

The disadvantage: A sewing machine and a seamstress are needed. The latter should be capable of quickly and clearly writing the numbers on to the cloth.

By pasting labels on to the cloth.

The disadvantage: An expensive gumming machine will be needed to paste the labels on to the goods. In addition, practical problems can arise by the labels which can become detached from the cloth when subjected to heat or chemicals.

## Labelling dyes Methods



**Labelling with a refillable plastic bottle** would be an ideal method if absolutely solvent-resisting plastic bottles were available. When using such bottles, one should make sure that as little as possible of the solvent evaporates through the bottle as this will increase the viscosity of the dye, because a viscous dye has poor fastness properties.

**Labelling of fabric with marking dyes in metal tubes** fitted with a suitable writing head has so far proved to be the cheapest, cleanest and most rational solution. The viscosity of the dye will always be maintained and cleaning problems will

not occur. A tube key can be used to roll up the tube until it is empty.

### Writing heads

It is important to observe the following hints:

The thinner the fabric, the finer the writing head, the thicker the fabric, the thicker the writing head.

The more man-made fibres are in a fabric (such as polyester etc.) the finer should be the writing head.

Polyester fibres do not absorb the dye. The latter is only spread over the surface. Pure wool or cotton fabrics will absorb the dye which will penetrate the fibres. The marking will, therefore, have good fastness properties.

### Metal writing heads



have been used for many years with good success. The disadvantage: If these writing heads fall to the floor, even a small defect can have the consequence that the dye flows out. If the tube is not used for any longer period, the dye will dry at the tip. It will cling to the metal and will have to be removed by means of acetone or a small wooden stick. Under no circumstances should the dried dye be removed by scratching off with a knife which would damage the writing head.

### Plastic writing heads



fitted with a sealing cap will probably replace metal writing heads. Their advantage: They are cheaper and lighter. They marking dye does not – or will only lightly – stick to the plastic writing head. Writing is easier and the risk of tearing out of fibres from the fabric by small burrs in the metal is eliminated. The sealing cap prevents the drying out of solvents. The writing ball is protected and the tube is, therefore, always ready for use.

### Use of different colour shades

The colours yellow, red, black, orange, white, green and blue are available. It is recommended to principally use “contrasting colours”, i.e. in the case of a fabric to be dyed in a dark shade for instance yellow or white, for white

fabrics yellow, red or black. The large number of alternative colours offer the chance of changing the shades at regular intervals, such as after three months, or to use specific colours for individual clients.

### Fastness properties

Almost none of the manufacturers of marking dyes disclose definite details of fastness properties. Only vague statements are being made such as “fast to washing, bleaching, over-dyeing”. The words “fast to ironing” of “temperature-resistant” are – for obvious reasons – not appearing in descriptive literature. Neither do these firms give any data on fastness to pressure, temperature or high-temperature treatments.

Such companies have no problems in rejecting claims, all the more so since the techniques used for scouring, bleaching, dyeing or finishing of cotton frequently differ greatly from the respective operations performed in the case of woollens.

It should, however, be made quite clear that it is virtually impossible to produce a marking dye which is absolutely fast to all the different finishing processes and fully absorbed by all types of fibres.

More information about fastness and test-methods you will find in our expert article about fabric marking dyes.

