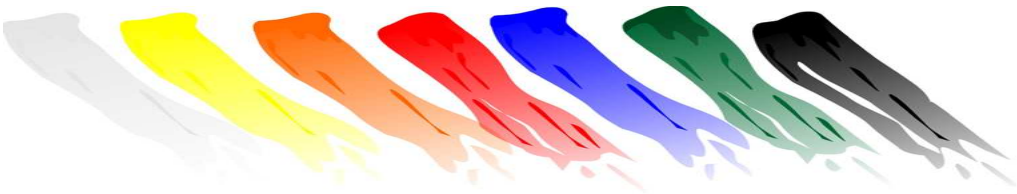
Fixon® Textile Marker

FIXON® Textile Marker is the most modern, most practical and easiest method of writing on fabrics. Our products have excellent fastness properties, which differ according to the type of fibre material used. Fabric writing dyes make the time-consuming sewing of piece numbers unnecessary.

The FIXON® Textile Marker can be delivered in the following colours:



- white,
- yellow,
- orange,
- red,
- blue,
- green,
- black,

The diversity of colours enables the goods to be written on quarterly or according to customer groups.

Type:
FIXON® **Textile Marker** in tube (100ml)
FIXON® **Textile Marker** bottles (1000 ml)
FIXON® **Textile Marker** in fabric-writing-bottle
FIXON® **Textile Marker** - Valve Marker

FIXON® Textile Marker is chemically stable for:

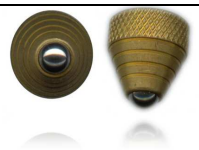
- Organical acid
- Boiled in 30% caustic coda solution
- Boiled in 20% sulphuric acid
- High temp up to 220°C
- washed in soda soap solutions, submitted to peroxide-chloride-bleach
- thermofilation,
- cylinder press,
- HAT-dye machine etc.

Fabric marking dye FIXON® Textile Marker in tube

For tube and fabric-writing bottles writing heads will be used.
Application - technical tip:

The writing heads are very easily dismantled. We recommend a cleaning our writing heads with our cleaning agent. Through the cleaning our writing heads are useable again and bring to you saving.

The writing heads in plastic or metal are delivered in the following strengths:

				
No. 0 ø 1.8 mm Super-fine for super fine textile fabric and polyester	No.1 ø 2.5 mm Very-fine for fine and smooth fabric	No. 2 ø 3.5 mm Fein for middle and smooth fabric	No. 3 ø 4.5 mm Mediumfor cloths and heavy quality fabrics	No. 4 ø 6.5 mm Thick for very thick, strong milled, raised fabric

*FIXON® Textile Marker - Valve marker ***NEW****

The Textile marker with valve system will be used for marking with very high requirements to receive permanent marking. Thanks to the unique valve system we reach an optimum of writing flow.

Properties:

- Universal durable marking for almost all textiles
- Unique valve system
- weather-, acid –base property
- light - resistant

Colours: white, yellow, red, black.

Application note for: FIXON Textile Marker K Series

Shake pen well.
Take off cap, before the first application hold pen upside down and briefly de-aerate by simultaneously pressing the tip (for example above a paper or cloth).
If Ink stops to flow well, press again.
Replace cap after use.
Test on concealed area before using.

Application and Fastnesses

E.Lucas

There are various methods of marking fabrics:

1. By sewing in piece numbers

The traditional method is to sew on piece numbers with a cotton, nylon or some other type of thread.
The disadvantage: The fabric must be taken to the machine or to the sewer. During a subsequent chemical treatment, the thread discolours or there may be problems during the carbonisation: moreover, transport cost time and money.

2. By sticking on printed tapes

Another method is to stick on plastic tape and mark this subsequently.
The disadvantage: Conveying to the gumming device; moreover, the details are in very small print. There is a tendency for the tape to attach itself to the rotary press or to the calendear or alternatively to become detached when the fabric is treated with certain chemicals.

3. Fabric marking dyes methods

a) By means of a pen which can be refilled. The disadvantage: The fabric must be conveyed to the marking table. Problems are incurred with re-filling and/or cleaning the marking pen. The fastnesses of the marking dyes deteriorate as a result of evaporation of the solvent in the marking pen.
b) The marking of fabric with fabric marking dyes in metal tubes be most suitable the most economical, the quickest and least troublesome solution at the present time.

Tubes for this purpose are presently available with “one-way” screw tops. Optically, this offers the best solution, although there are some obvious disadvantages. The writing heads available in only one size: they are consequently too fine or too thick for some purposes.
The disposable heads are uneconomic. This price problem can only be overcome by inferior quality or smaller tube sizes and hence smallerquantity of marking dye. The cheapest and best long term solution would therefore be a good, easily cleanable writing head, which is interchangeable.

Disadvantages of fabric marking dyes

The main problem seems to be related to fastnesses. Almost all suppliers are disinclined to provide precise details concerning fastnesses and application limits or instructions. Vague details are marked on the products, such as "wash-fast, bleach-fast, dye-resist", etc. In the event of a complaint, the supplier is then always able to refute any accusation, because the standards of wash-fastness, bleach and colour-fastness are fundamentally different in the cotton, wool and synthetic fibre industries. The is never any reference to "fastness to pressing", either flat or rotary pressing. There in no doubt very good reason for the absence of details on this subject, since it is one of the most critical factors.

Similarly, there is a peculiar lack of information or claims relating to fastnesses to pressure or heat treatments.

On the part of the producers, it is only fair to say that it is virtually impossible for them to test their products under every circumstance and with every method, with all possible chemicals and combination of method and chemical. To do so would increase the price of the marking dye to such an extent that if would no longer be considered as a mass produced article.

Test, methods, fastnesses, comparisons

We have made a thorough study of this problem. Since it is not possible in practice to examine all fibre types and chemicals, a quite different approach was adopted. The main chemicals involved were used a highly concentrated form, that in quantities of 10 to 40 times more in excess. Damage to the fabric or to the fibre was unimportant at this stage. The important thing was to ascertain whether the marking dyes would withstand such severe treatments. The criteria of this method is that if the marking dyes pass the test, then it would be safe to assume they will be stable to all other agents and additives, which are normally used in very small concentrations.

It will no doubt be interest to those actually involved with these problems, to learn something concerning the comparisons between the different types of marking dyes. We was naturally obliged to make such comparisons during the course of this work.

For reasons of fairness a comparison of different products will however not be reported here.

On the other hand, it is pointed out that we found only one marking dye which was really heat – resistant. There was a great variance in the acid and alkaline resistance by the different products tested. There were some marking dyes which had very good fastness properties, but unfortunately , these were stable to temperatures of only 60 to 80 ^{o}C, thus making them of only very limited use in practice.

Tests

Product: Fabric marking dye FIXON® supplied by Flockenhaus **Colours**: Yellow, red, black, white, green, blue, orange.

Material: a) 100% cotton **b)** mixture of cotton and polyester, **c)** 100 % polyester.

Test series

The following test were carried out one after the other:

1. 40 g soda(NA_2CO_3) + 20g soft soap per litre water: boil for 2 hours at about 100^{o}C
2. 300 g sodium hydroxide (NaOH) per litre water: boil for 1 hour at about 100^{o}C
3. 100 g sodium hydroxide (NaOH) per litre water: 2,5 atm. Gauge pressure, 120 to 130^{o}C , 5 hours.
4. Acetic acid (CH_3COOH) 60%, 30 min at about 100^{o}C
5. Formic acid (HCOOH) 85%, 30 min at 50^{o}C.
6. Hydrochloric acid (HCl) 10%, 10 min at 25^{o}C.
7. Perchloroethylene, 30 min at 20^{o}C.
8. a) 40cm^3 sodium hypochlorite bleach liquor per litre water with 120g active chlorine, 60min cold.
   b)40cm^3 hydrogen peroxide (H_2O_2) 30% per litre water, 30 min at about 100^{o}C.
9. Heat setting at 210^{o}C.

Naturally, the fabric was thoroughly rinsed after every test stage.

Results

On completion of the test, not one of the dyes showed any indication of bleeding or smudging. All the dyes were clear and readily legible; there was no deterioration in depth of colour (Fig. 1 and 2)

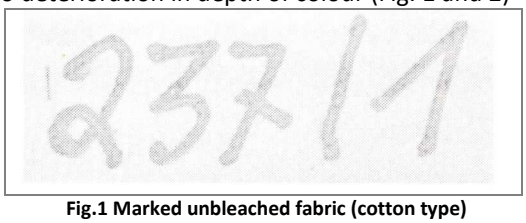


Fig.1 Marked unbleached fabric (cotton type)

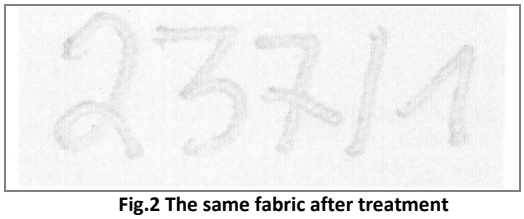


Fig.2 The same fabric after treatment

Test on 100 % wool and mixtures of wool/polyester

Product: Fabric marking dye FIXON® supplied by Flockenhaus

Colours: Yellow, red, black, white, green, blue, orange. **Material: a)** 100% wool, **b)** 45/55 wool/polyester.

Whereas in the cotton trade, mainly chemical processes are involved, in the cloth and wool trade, the marking dyes would be subjected predominantly to the mechanical stresses in the processing of the fabrics. Consequently, it was difficult to simulate some of these mechanical processes on a laboratory scale, e.g. raising, fulling, milling, etc.

1. ***Washing / scouring and chemical treatment***

a) 40 g soda (Na_2CO_3) + 20g soft soap per litre water: $2^1/_2$ hours at 100^{o}C.

b) carbonizing, 20% sulphuric acid (H_2SO_4), 30 min at about 100^{o}C

c) acetic acid (CH_3COOH) 60%; 30 min at 100^{o}C.

d) formic acid (HCOOH) 85%; 30 min at 70^{o}C.

e) hydrochloric acid (HCl) 10%; 30 min at 20^{o}C.

f) perchloroethylene, 60 min at 30^{o}C.

All the dyes tested withstood these tested. No bleeding and no smudging was observed. After the tests, the colours were still clear and readily detectable. On the mixture of wool and polyester, the colours were noticeably clearer and more legible after the test than before (Fig.3 and 4). This is probably due to the fact that the wool fraction had detached itself somewhat during the severe testing.

Fig.3 Marked un – bleached fabric (cloth type)

Fig.4 The same fabric after treatment

2*. Milling / fulling*

This operation can be simulated on a laboratory scale only with difficulty and then admittedly not with any degree of reliability. It was found expedient to undertake practical test. On a commercial scale, it was established that the fastness of the dyes to milling / fulling was generally fully adequate.

3.*Raising / napping*

In this case, the test was carried out with emery paper. It was found that the marking dyes had penetrated deeply into the fabric and that the marking effect was completely satisfactory. Our firm recommends that fabrics, which are to undergo severe napping, should be marked on the technical back of the material. It has been found from experience, that this surface is subjected to less severe treatment.

4.***The rotary press***

As mentioned at the outset, the greatest problems were encountered at this operation with all competitors products, so that special attention was paid to this test. Since it was general practice to operate the press at 120 to 150°C and corresponding pressures, the marking dyes were tested as follows:

A small piece of marking dye is placed on a clean, chrome-plated hot plate, which has attached to it a thermometer. At 150°C and upwards, the marking dye is pressed firmly against the hot plate for between 30 and 60 second, with the blade of a knife and the behaviour observed.

As soon as the marking dye begins to stick or smudge, this indicates that the heat resistance is reached or exceeded. The temperature of the hot plate is noted and the test is repeated a further two or three times at the critical temperature to obviate the possibility of any error.

From the experiments carried out, it was found that only one competitors marking dyes could withstand temperature in excess of 215 °C in fact being heat resistant up to 240°C. Unfortunately, this particular product proved problematical with the alkaline and acid treatment on cotton, cotton / polyester as well as on wool and wool / polyester blends.

The fabric marking dyes Fixon ® produced by Flockenhaus displayed good stability up to 210 and 220°C.

Practical test on rotary presses confirmed the findings of the laboratory test. No smudging was observed with Fixon marking dyes with temperatures even above 220°C on the rotary press.

If a fabric marking dye is not “Press fast”, then the following problems will inevitably occur:

a) The dye colour smudges the roller of the rotary press, and with every revolution of the roller, the following fabric is printed with the smudged marking dye.
b) Difficulties could arise during calendaring in the cotton industry.
c) In the case of batched fabric, the dye could possibly mark off on to adjacent layers.

The problem of “heat – resistance” rotary press - calender

Figs. 5, 6 and 7 show the disadvantages of fabric marking dyes with inadequate heat resistance.

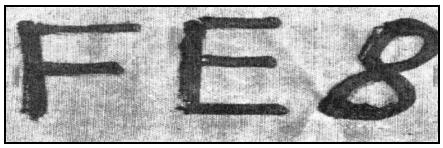


Fig.5 the fabric is marked with the code FE8 fabric

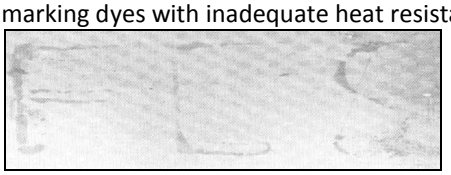


Fig.6 the color has become partly smudged on to the roller

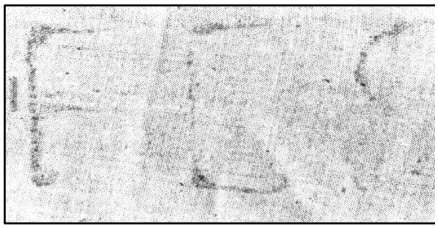


Fig.7 The rotating roller prints to the following

Overall result of the test

Despite the excellent fastness properties established for the Fixon® marking dyes, the we refutes any idea that these are unsurpassable, or even that they are better than some which existed previously or unbeatable in the future.

New fibre types, new techniques and new chemicals naturally bring in their wake the demand that marking dyes must also be developed to meet the new problems. The test described above are intended, above all, to simplify the work and clarify the theory on behalf of the operators actually concerned with this particular problem. Practical trials will inevitably be the ultimate factor on which to base a decision as to which marking dye is most suitable.

Advice on practical application

1. It is absolutely essential that the marking be carried out on dry fabric. The marking dye will not have the opportunity of bonding with the fibre material if the fabric is wet or damp.
2. Before the marked fabric is subjected to a new process ,the marking dye must be completely dry. Generally speaking, marking dyes contain highly volatile organic solvents, so that a drying time of 5 minutes is usually fully adequate.
3. Where possible, the marking dye should be in a contrasting colour to the fabric, that is, with dark fabrics, the marking dye should be white, yellow, green ,red, orange in the case of light fabrics, the colours black, green, red and possibly yellow should be used.
4. Marking dyes should be stored under normal temperature conditions, i.e. neither too hot nor too cold. The dyes tend to thicken when cold while they become “runny” when warm.
5. Because of the choice of colours, yellow, red, black, white, green, orange and blue, it is possible to mark the fabric batchwise or according to type of customer. For example, the firs batch could be marked in yellow, the second batch in green, etc.
6. Messrs Flockenhaus offer a choice of three writing heads.

No.0 – super fine for finest fabric and polyester
No.1 – very fine: for the silk trade as well as for very fine cotton and polyester goods.
No.2 – fine : for all plain fabrics in the cotton and cloth industry, e.g. worsteds.
No.3 – medium: for cloths and heavy guality fabrics.
No.4 – thick for milling filing and raising / napping of heaviest goods – **only metal**
Generelly speaking, the cloth industry uses No.2 or 3

7. Once screwed on, the writing head remains on the tube until it is completely empty and only then is it quickly transferred to a new tube.
8. If the writing head fails to write immediately, merely pick off any dye residue from the tip, using a finger nail: then press the head lightly inwards and gently squeeze the tube. Allow same drops of marking dye to escape, after which the tube will be ready for action.
9. If for same unexpected reason, the writing head fails to write, it should be unscrewed and replaced by a new head. The blocked head should be placed in acetone and within a short time, the congealed dye will dissolve. The cleaned head should then be blown clean and dry or dismantled and cleaned. Once re – assembled, the head will again be available for use.
10. The writing heads are precision made components and consequently, they should not be hit with sharp cornered or hard objects. They should be treated with due care to avoid damaging them.