

## D. HEATFIX<sup>®</sup> LIQUID DYE ADVANCED USAGE PROCEDURE

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## **1. DYE SELECTION**

Check to ensure that the colours that you have chosen are applicable on the fibre that you have selected. Then if necessary make the following additions to the liquid HEATFIX dyes to maximise dye uptake on the fibre of choice.

	<b>ON PROTEIN FIBRES</b>	<b>ON CELLULOSE FIBRES</b>
Silk, <u>fine</u> wool, angora, alpaca, mohair, leather, nylon and polyamide	<u>Coarse</u> wool, angora, alpaca and mohair	Cotton, linen, hemp, rayon and wood
No addition to the liquid HEATFIX dyes is <u>necessary</u>	Thicken the liquid dye slightly by adding <u>15% HEATFIXDYE THICKENER STOCK</u> to 85% liquid <u>HEATFIX dye</u> . <u>The thickener stock recipe is found below on page 3.</u> Slightly thickening the dye adheres it to coarse fibres preventing it from draining away.  1% WOOLFIX added to the dye can greatly improve colour yields particularly for 'cold batch' or low temperature heat fixation on wool, angora, alpaca, and mohair.	Two options: 1. <u>Either add 5% COTTONFIX to the liquid dye</u> before painting. 2. <u>Or prior to painting soak the cellulose fabric in and alkaline solution</u> made as follows. (3.5% SODA ASH plus 96.5% WATER) Spin off excess moisture. Dry the fabric, then paint or print etc. as usual. This is the preferred method for painting or printing cellulose because the liquid dyes are free from COTTONFIX. It's addition limits dye lifespan from at least one year to about 10 days.

## **2. DYE APPLICATION**

### **2.1 Diffused painting**

When the liquid HEATFIX dyes are applied to fabric free from size or finish, they usually spread uncontrollably like ink on blotting paper. This dye spreading and diffusion can be enhanced by:

- Adding up to 2% DIFFUSANT to the liquid dye (1% is already in the liquid HEATFIX dyes when they are made according to the recipes in Table II 'Procolour Powder to Liquid Dye Recipes').
- A further way to speed up dye spreading is to paint the HEATFIX dyes onto the fabric warm (i.e. warm the dyes to approximately 30-40° C before applying them).

DILUTING THE HEATFIX DYES FOR PASTEL SHADES can be done with plain tap water, however, pastel colour yields are greatly improved by using HEATFIX DILUENT instead of water.

100g of diluent is made as follows:

DIFFUSANT	2g
HEATFIX MEDIUM	25g
<u>WATER</u>	<u>73g</u>
	100g

Add the HEATFIX diluent to HEATFIX dyes in any proportion whenever pastels are required.

### **2.2 Sharp detail painting and printing**

This can be achieved by modifying the HEATFIX dyes in the following ways:

- a. - Add thickener to the liquid HEATFIX dyes (see below a. PROCOLOUR THICKENER USAGE).
  - Coat the fabric with antifusant (see below a. PROCOLOUR THICKENER USAGE).
- b. Outline all design detail with gutta resist (see below b. PROCOLOUR RESISTAD GUTTA SYSTEM).



## b. PROCOLOUR RESISTAD GUTTA SYSTEM

- Gutta resist is yet another tool that silk painters can use to produce sharp definition designs. When gutta is applied and penetrates right through silk, it forms a barrier so that when liquid HEATFIX dye is painted onto the silk, it spreads up to but not beyond these gutta outlines.
- Procolour supplies RESISTAD gutta in 3 concentrate forms called:
  1. THIN RESISTAD (no thickening effect)
  2. MEDIUM RESISTAD (medium thickening effect)
  3. THICK RESISTAD (thick thickening effect).
- MEDIUM and THICK RESISTAD are not so compatible with HEATFIX dyes because the thickening stiffness doesn't wash out well during the rinse procedure. So to make 100g of heatfixation compatible DYE-COLOURED GUTTAS, use THIN RESISTAD in the following recipe:

APPLICATION METHOD	THIN RESISTAD	HEATFIX STOCK PASTE	HEATFIX DYE	HEATFIX DILUENT
SCREENPRINTING (full strength dye-coloured)	20g	40g	40g	-
SCREENPRINTING (1/10 strength pastel colour)	20g	40g	4g	36g
PIPETTE EXTRUSION, BRUSH PAINTING, BLOCK PRINTING, STAMPING, SPONGING, RAGGING, etc. (full strength colour)	25g	35g	40g	-
PIPETTE EXTRUSION, BRUSH PAINTING, etc. (1/8 strength pastel colour)	25g	35g	5g	35g

- To make 100g of heatfixation compatible CLEAR GUTTAS use the following recipes:

APPLICATION METHOD	THIN RESISTAD	STEAMFIX STOCK PASTE (DYE THICKENER)	WATER
SCREENPRINTING	20g	50g	30g
PIPETTE EXTRUSION, BRUSH PAINTING, BLOCK PRINTING, STAMPING, SPONGING, RAGGING, etc.	20g	35g	45g

- Most textile paints on the market can be converted into guttas (metallic coloured paints are particularly popular for guttas). So to make TEXTILE PAINT COLOURED GUTTAS use the following recipe:  
80g textile paint + 20g THIN RESISTAD = 100g gutta.
- After adding the THIN RESISTAD to the textile paint, it may require thickening. So the following thickening procedure is compatible with most brands of textile paints:
  - Add 1% CLOUDY AMMONIA (available from your supermarket) to increase the pH to approximately pH 8. Mix thoroughly.
  - Add 0.5% PAINT THICKENER (available from Procolour). Mix in thoroughly. If necessary, add another 0.5% paint thickener and mix thoroughly etc. until thickening is sufficient.
- Thin by adding up to 10% water to the paint gutta or if more serious thinning is required, add PAINT THINNER (available from Procolour) little by little and mix it in thoroughly.

- Mechanical stirrers or blenders give best mixing results when thinning or thickening textile paints.
- Procolour supplies ready made the following popular textile paint-based guttas:  
METALLIC WHITE PEARL, METALLIC GOLD, METALLIC SILVER, METALLIC COPPER AND BLACK.

**PROS AND CONS OF TEXTILE PAINT GUTTAS VS DARK DYE COLOURED GUTTAS FOR HEATFIXATION**

COMPARATIVE POINT	TEXTILE PAINT BASED COLOURED GUTTAS	DARK HEATFIX DYE COLOURED GUTTAS
LOSS OF SHARP DEFINITION OF GUTTA LINES IN AREAS OF: - FINE STIPPLED SHADING - FEATHERED BRUSH STROKES ETC. (HAPPENS IF THERE IS PROLONGED WET COLOUR-IN DYE CONTACT WITH DARK DYE COLOURED GUTTA LINES)	<u>No definition loss</u>	<u>Some definition loss</u> , particularly when: - the gutta design remains wet for long periods after colouring-in, i.e. - the fabric is thick - the weather is not conducive to drying - if the gutta design has been poorly heatset. - the gutta design has: - mainly fine lines that have often not fully penetrated through the fabric - narrow channels leading to large enclosures - been coloured with very pale colours. <b>NB. <u>PASTEL HEATFIX DYE COLOURED GUTTAS DON'T HAVE DEFINITION LOSS PROBLEMS.</u></b>
PROBLEMS ENCOUNTERED DURING RINSING AFTER DYEING AND SUBSEQUENTLY DURING WASHING AND WEARING	Heavy blobs and lines of metallic gutta can soften and come off particularly during hot water rinsing or washing. <u>Few rinsing problems, some long-term wear problems</u>	Thick deposits of dark dye coloured gutta can cause backstaining during the first rinse. STAINGUARD in the rinse alleviates this problem mostly. <u>Some first rinse problems, no long-term wear problems</u>
IMPAIRMENT TO FABRIC'S DRAPE AND SOFTNESS	Good for fine lines, but not good for broad lines or large blobs particularly on fine fabric; <u>Some impairment</u>	Excellent for fine or broad lines or large blobs on fine fabric; <u>No impairment</u>
IMPAIRMENT TO FABRIC'S LUSTRE	Totally coats the fabric; <u>Total impairment</u>	<u>No impairment</u>
CONCLUSIONS ON RELATIVE GUTTA PERFORMANCE	- EXCELLENT DEFINITION - IMPAIRS THE FABRIC LUSTRE AND SOFTNESS - <u>EASIER TO USE, IMPAIRED FINISH</u>	- POSSIBLE DEFINITION PROBLEMS FOR SOME GUTTA DESIGNS - NO IMPAIRMENT OR WEAR PROBLEMS - <u>MORE DIFFICULT TO USE, BEST FINISH</u>

**USAGE PROCEDURE FOR ALL PROCOLOUR GUTTAS**

1. Make the desired gutta up from RESISTAD concentrate according to the recipes given above on page 4.
2. Apply the gutta ensuring that it penetrates right through the fabric for the entire length of the gutta outline.
3. Dry the gutta design naturally or if the detail is losing sharpness, then rapid-dry with a blow heater or hair dryer.

4. Heatset the gutta design in the following ways (in diminishing order of heatsetting efficiency)
  - by ironing or baking in the oven or in a commercial textile paint infra-red heatset tunnel or a heat press (150° C for 2 mins is recommended). For DARK HEATFIX DYE COLOURED GUTTAS this comprehensive heatsetting is important because it fixes the dark dye in the gutta simultaneously. If the dye is well fixed, it is not prone to peripheral definition loss when it comes in contact with the wet dye used to colour the gutta design in.
  - leave at close range in front of a blow heater on high for 20 mins.
  - leave for 24 hrs in a warm place.
5. Colour-in the gutta design with HEATFIX dye.
6. Heatfix the painting.
7. Rinse simply in plenty of warm soapy water or if optimum results are required, then follow 4. THE PROFESSIONAL RINSE AND FINISHING PROCEDURE given below on page 8.

#### Notes on PROCOLOUR GUTTAS:

- All are water based so application utensils wash up in water.
- All are permanent to dry cleaning and washing.
- All require heatsetting prior to colouring-in with dye. Heatsetting activates the gutta's water repellency transforming it from water based to water resistant. This is an extra compulsory step not encountered when using other brands of guttas on the market.
- The efficiency of the heatsetting of Procolour guttas (step 3 above) determines the repellency of the gutta. If the gutta has been given optimum heatsetting, then it will shrug off dye almost as well as wax does. And for dye-coloured guttas it is an added bonus that the dye will also be heatfixed, so this alleviates lack of sharp definition problems.
- Excessive heatsetting temperatures result in gutta browning. This brown stain along with the thickening residue is difficult to rinse out during the rinse procedure, so avoid excessive temperatures, particularly with clear or pale dye coloured guttas.
- Don't mix hot ingredients with RESISTAD or it will spoil.
- Though Procolour guttas contain much less solvent than solvent-based guttas, they do, however, contain some solvent. So care should be taken to avoid prolonged exposure to gutta fumes. USE GUTTAS IN A WELL VENTILATED AREA (Actual solvent content: 2-Methyl-pentane-4-diol 1.25%).
- Procolour guttas will work on any fibre that will permit full penetration. However, silk below 20 MM (Mommies) in weight gives by far the best results. For dye-coloured guttas being used on rayon and other cellulose fibres, 5% COTTONFIX should be added to the gutta just prior to application.
- If both dye-coloured and textile paint guttas are to be used together in areas where the guttas overlap, then it is important that the textile paint gutta is applied first and therefore can grip clean fabric unobstructed by dye-coloured gutta. Textile paints rely on adherence for their permanence.
- For further information on gutta problems and application techniques see the TECH. INFO. SHEETS listed on the Table I Pricelist.

### **3. DYE FIXATION**

After painting or printing with HEATFIX dyes, the dye:

- Should be allowed to air cure and dry for at least 6 hours. However, do not stack and store dry but unfixed HEATFIX dye paintings touching one another particularly in humid weather conditions, because the paintings will absorb atmospheric moisture and dye colour will transfer at the points of contact.
- For short-term storage prior to fixation interleave the paintings or prints with something to prevent colour transfer.
- It is not recommended to store unfixed paintings or prints for longer than several weeks, because this may cause detail loss.
- After air curing and drying, the paintings or prints must be HEATFIXED by any of the following appliances and methods (in descending order of efficiency):

## HEATFIXATION METHODS

- APPLIANCE - TEMPERATURE AND DURATION - COLOUR YIELD EFFICIENCY RATING	USAGE METHOD NOTES METHOD DRAWBACKS
- HEATPRESS - 150° C for 3 mins - 8 out of 10	
- SCREENPRINTERS INFRARED HEAT TUNNEL - 180° C for 1 min - 8 out of 10	
- DOMESTIC OVEN - 125° C for 1 hour - 8 out of 10	- Preheat the oven to 125° C or 250° F - Roll the flat dry paintings between sheets of unprinted newsprint or preferably polyester plastic (it doesn't melt like normal plastic). Avoid creasing the paintings, because creases will become permanently set during baking. - This method is only suitable for small paintings that can fit into the oven without being folded. - Uneven hotspots in the oven can cause fabric damage. - UNSUITABLE FOR GAS AND OPEN FLAME OVENS BECAUSE OF THE FIRE RISK.
- ELNA PRESS, SET FOR PAINTING FIBRE TYPE - For at least 30 sec - 7-8 out of 10	- Cover the painting on both sides with fine cotton cloth to avoid unwanted colour transfer. - Press ensuring that each and every part of painting has been pressed for at least 30 sec.
- MICROWAVE OVEN, SET ON MEDIUM (60% OF POWER) - For 7 mins - 7-8 out of 10	- This appliance is suitable for small shibori (tie-dyed) creations that will fit into the oven compartment. - Best results are achieved if the tied fabric is heated in a microwavable plastic bag immediately after painting (i.e. wet).
- HAND IRON, ON THE SETTING ABOVE THAT APPROPRIATE FOR THE FIBRE - For at least 30 sec - 7-8 out of 10	- If your iron does not dribble then, the steam function helps dye fixation. - Cover the dry painting with fine cotton cloth to prevent undesirable colour transfer. - Iron ensuring that each and every part of the painting or print has been ironed for a minimum of 30 sec. - For large paintings it is difficult to ensure complete even coverage.
- ELECTRIC BLANKET, SET ON THE HOTTEST SETTING - For 8 hours - 7-8 out of 10	- Interleave the dry paintings with plastic and stack them flat on top of an electric blanket. - Cover with several old blankets. - Bake for 8 hours on the hottest setting. - This method is convenient for fabric lengths, because at the temperatures reached there isn't any problem with folds or creases being permanently set into the fabric. - The moderate temperatures reached also suit heat sensitive fibres like wool.
- SOLAR FIXATION, ON FULL SUNNY DAYS ONLY - For 8-10 hours - 7 out of 10	- Interleave the dry paintings with plastic and stack them flat on top of several blankets in a position that will catch perpendicular sun rays all day. - Cover the plastic on top of the stack with black sand to weigh down the stack and attract the sun's heat. A flat sheet of 2 mm thick steel, painted matt black on the upper side facing the sun, would be even better than sand. - Leave this to sun-bake all day.
- ROOM TEMPERATURE FIXATION (COLD PAD BATCHING), IN WARM WEATHER - 20° C or warmer for 48 hours - 5 out of 10	- Just leave the paintings or prints where they were painted. - It is my opinion that this is the poorest possible fixation scenario, and if it is worth doing the paintings or prints in the first place, it is worth trying to find somewhere for them to fix where the temperature is greater than room temperature so that colour yields can be increased (e.g., hot water cupboard, etc.) FOR HEATFIX DYE FIXATION, INCREASED HEAT = INCREASED COLOUR YIELD.

#### **4. PROFESSIONAL RINSE AND FINISHING PROCEDURE**

After fixation, HEATFIX dye paintings and prints can be simply rinsed in warm soapy water. However, if back-staining problems are encountered when rinsing off dark dye-coloured print paste and gutta residues, then a multi-bath commercial rinse procedure needs to be used as follows:

1. Soak the paintings or prints for 10 minutes in cold water plus 1cc of STAINGUARD per litre of rinse water. STAINGUARD reduces the risk of backstaining and improves dye washfastness. During rinsing it's important:
  - to have enough rinse water, so that the paintings or prints are not too congested;
  - to change the rinse water, if it becomes too contaminated with colour;
  - not to pour neat rinse additives directly onto the paintings or prints. Mix them into the rinse water before entering the fabric;
  - never wring silk out because it is sensitive to chaffing and damage when its wet.
2. Transfer the painting or prints to a warm water bath (30 – 40° C) plus 1cc/l of STAINGUARD plus a little detergent for 10 mins.
3. Transfer to a cold bath plus 10cc of RINSEFIX per litre of rinse water for 20 mins. RINSEFIX chemically fixes any poorly fixed dye and permanently improves washfastness.
4. Transfer to cold bath plus fabric conditioner for 5 mins. ACETIC ACID 50% 2cc/l can also be used to condition protein fibres. Rinse off the excess conditioner.
5. Spin off excess moisture in the washing machine.
6. Dry. Damp silk is best ironed dry.
7. Optionally, the dyed fabric can be given a water and oil proof finish with AQUAPROOF. Immerse the dry fabric in full strength Aquaproof for 5 minutes. Remove and squeeze off the excess Aquaproof back into the container. Hang the fabric outdoors to air cure/dry for 48 hours after which proofing is complete. This proofing is good for:
  - stain resistance, on products like cushions, upholstery, men's ties, women's scarves, etc.
  - shower proofing on products like ski jackets, umbrellas, women's scarves, etc.

NB. Aquaproof is solvent-based, so care should be taken to minimize exposure to fumes. It is FLAMMABLE, so fume build-ups should be avoided, and it CANNOT BE SENT BY AIRMAIL.

#### **5. ALTERNATIVE RINSE PROCEDURE**

This procedure is especially for heat fixation methods of marginal efficiency. That is, those which allow too much colour loss during the above standard rinse procedure. Of course, it is always better to improve heat fixation efficiency in the first place. Anyhow, the following rinse procedure will bolster mediocre heat fixation:

- After fixation HEATFIX dye paintings and prints should be soaked for 20 mins in a bath containing:
  - 50 ml RINSEFIX
  - 10 ml ACETIC ACID 50% or alternatively some white vinegar
  - 940 ml water
  - 1000 ml
- Remove the paintings from the bath and rinse thoroughly in cold water to remove all traces of RINSEFIX. Otherwise the effectiveness of softening with fabric conditioner is diminished.
- Proceed with conditioning etc. as described in Step 4 and onward in the above standard rinse procedure.

NB: The RINSEFIX bath can be saved and reused until it becomes contaminated with too much unfixed dye colour.

It is preferable to have a large area shallow bath so that paintings can lie flat thus avoiding congestion and excessive contact with one another. RINSEFIX spoils liquid dye so utensils must be thoroughly washed before reuse.