

## DICHROMATE GUM – The Paper

The choice and preparation of the paper for a gum print is a step that requires some careful attention.

The backing of a dichromate gum print must satisfy three 'physical' characteristics, in addition to touch, sight and a suitable background color.

I consider a support that render an image as clean as possible and respect the tonal range, leaving the edges mainly unstained.

For this purpose, some trials will be carried out before making a choice, since preparing the backing is not futile and so it will be good to restrict the selection through a knowledge as precise as possible of the paper manufacturing.

The three characteristics relating to the backing, that greatly influence the final result of the printing process are:

- **impermeability**, albeit partial, which leave the dye at the upper surface, clinging to the outer fibers, rather than side and deep diffusing, indelibly staining the edges and the tonal range of the print;
- **resistance** to repeated and prolonged soakings even at a temperature of 30 °÷ 40 ° C;
- **dimensional stability** in the case of '*multiple gum print*' which requires the register of the various layers to assemble a whole and set tonal scale.

Look for a paper of a easily 'handled' size; let us say 30x40 or 35x50 cm, useful for a maximum 30x40 cm image leaving some blank margin if needed. A 'cardboard' consistency (200 - 250 gr/m<sup>2</sup>), a surface bearing a lot of manipulations (fingers and clamps) even wet and swollen with liquid, sufficiently glued to preserve the impermeability of the surface. It does not have to be 100% cotton but it may contain in part a refined cellulose paste, very compact and regular through light inspection, resistant to scrapers and not too water absorbent.

The type is of a drawing paper, for pencil and indian ink – high quality and therefore higher cost – smooth or slightly textured (rough surfaces make it more difficult to maintain clean highlights and details), preferably white and without brighteners (1).

Generally these papers - also intended for watercolor - are well glued and hardened, at least on one side, therefore ready to endure the gum layer and 'deal with' the dye. They also resist abrasions (rubbers, scrapers and brushes), a very useful feature in the several corrections both in addition and subtraction, always necessary before releasing the finished image. ...

If, on the other hand, you prefer a more precious and elegant or thin backing, similar to absorbent watercolor papers, it will be better to size it by glueing and hardening before put it to work (2).

This with regard to the first two 'physical' characteristics as mentioned.

As far as the third request is concerned, it is practically indispensable to build an image with a complete and dense tonal scale, considering that 'gum' produces short and contrasted ranges which are at the same time flat in density, because the dye amount cannot exceed what is 'clinged to' the hardened gum (3). So talking I mean that the process is not suitable – how and why it will be seen – for the reproduction of fine details at close view.

Multiple coatings (and following *strippings*) reinforce the hue, thicken and gloss the gum layer and extend the tonal range, ... but in the same time make thinner the glue-bed in white (uncovered) areas.

In general, vegetable fibers have a tendency to stretch by wetting and shrinking during the drying, but unfortunately without returning to the original size ... at least for a couple of times.

This forces us to size the sheets, wetting and drying them, so that we can get a decent register of the image after the first layer when we operate a multiple gum. The shrinkage in my experience is less than 5 ‰ (i.e. half a centimeter per linear meter) after the first plunge in and 1-2 ‰ after the second. With the above dimensions (60 cm diagonal) we will have a shortening of about 2 mm on the first drying and 0.5 mm after the second on the diagonal; a third bath would be worthless.

However, wetting the paper is not painless as it impoverishes the surface sizing and partially dissolves the glue together with the smoothing patina – as above-said in relation to multiple gum – due to the double swelling and drying of the fibers. This is another good reason to start from a smooth sheet rather than textured.

To prevent partially the loss of sizing, after several experimented solutions, today I do it this way: I wet the paper in a flat-bottomed bowl with a minimum amount of distilled water (50-60 cc/sheet for the above-mentioned dimensions); I let it soak evenly for about ten minutes, recover the drained liquid, let the sheet dry perfectly hanged horizontally by two consecutive corners. Now I add to the recovered liquid, containing the lost sizing (in such a way reused), the missing part of that minimum water quantity; soak as before, hang from the opposite corners to the previous ones, let missing the drain. Please note: by hanging up a single corner you will have a perfectly dry and ... rolled up stubborn cone.

I realize that some things look like clashing one another and others will follow, but the process is exactly a mediation among various contradictions or rather a balance in the properties of materials that makes personal the executive experience.

## NOTES

(1) The optical brighteners are chemical compounds used in fabrics and papers with the purpose of increasing the reflection of the near-blue wavelengths, to convey the feeling of a brighter white.

(2) The paper sizing is carried out by dissolving quantities of less than 1% of animal gelatin or of the same arabic gum in water, wetting the plain sheet in this solution for a few minutes and then - well drained - soak it in a 2% solution of formaldehyde (formalin) which "tan" the proteins of the glue creating a waterproof layer. Take care: Do not breathe formaldehyde. You can store the diluted solution in a firmly capped bottle forever.

(3) The following 'coatings' to the first, find a greater waterproofing of the layer that forms the image. At the same time where there is no image (and hence very little gum) it is easier that small amount of dye is absorbed. That sometimes 'worsen', ... but sometimes improve the tonal range of highlights!