Temperaprint

Geoff Chaplin
(*from his bunker in Hokkaido, with thanks to Alex Chater for his comments*)

For me it is important to say what I am seeking from my prints and what I am not. This affects how I use the process. My preferred subject matter is pastel colours, corrosion and blending typified in the images Nagakawa-san's barn, Tokyo Arches and several of the Mandarin's House images.

I like temperaprint because it harmonises well with these images and adds its own character. I like my temperaprints to look like a cross between a painting and a grainy print from cheap colour film.

I therefore generally prefer to leave my prints on the 'thin' side and let the developing process produce gentle patterns of colours in otherwise uniform areas. I am not seeking a 'realistic' print, rather a pleasing print.

A full description of the temperaprint process written by its creators is here http://www.alternativephotography.com/the-fundamentals-of-temperaprint/, and should be read in conjunction with this article for more details.

In this article I briefly summarise my process with some additional points, and illustrate some results using variations of the process including a few faults.

WARNING: Know your chemicals! Both dichromate and sulphuric acid are known hazards. Read the safety data sheets, the MSDS sheets, and use the appropriate PPE.

Dichromate disposal: My dichromate wash tray ends up with about 6g of dissolved ammonium dichromate in 5 litres of water. This can be disposed of relatively safely by making the solution acidic then adding a small amount (just a few grams) of sodium metabisulphite / sulphite until the solution turns dark green and then dispose of it with plenty of water.

Temperaprint vs. gum

Temperaprint is a dichromate process similar to "gum" with the main differences being :

1. Substrate – Yupo, a plastic 'paper'. If you like Artistico you'll love Yupo, completely characterless, bright white, and humidity and temperature stable. When I bought it in Japan there seemed to be no variation in product, I guess what I use is now called "general Yupo". The thickest is the one used by Alex Chater. https://www.yupo.eu/general-yupo/

2. Colloid – whole egg minus shell and nasty bits

3. Pigment – acrylic paint

Summary of process

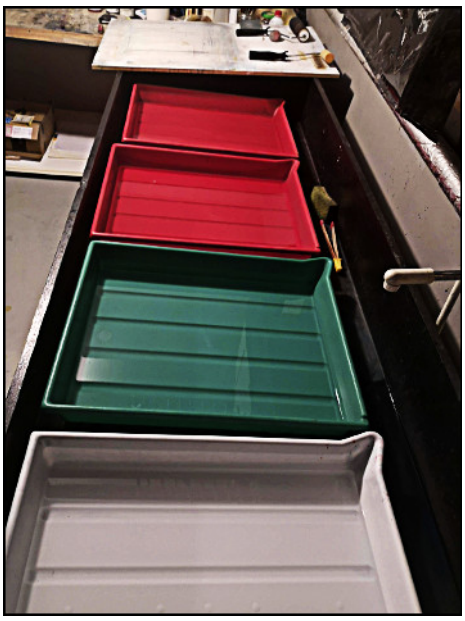


Image 1: (from the far end):

Coating and developing surface [this must be FLAT!!!],

dichromate wash tray,

post-development wash tray,

acid clearing tray

and final wash aid tray with purified water (depending or your water – in Brussels I'd suggest deionised water for all trays).

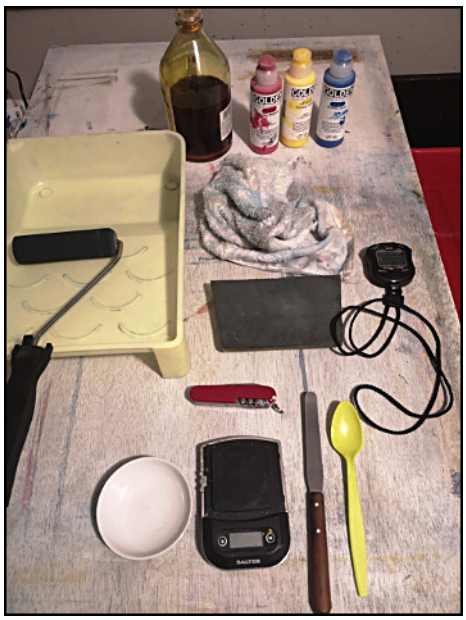


Image 2: Tools (penknife for scale): Mixing bowl for STEM (Standard Emulsion Mix) and Emulsion [see below], scales, palette knife and spoon; tray for emulsion and foam roller, developing pad, cloths, stop watch / timer, paints and a saturated solution of Ammonium Dichromate in a properly labelled bottle,... and it is best if it is not a repurposed drinks container.

1. Shake 3 eggs in a Tupperware type container to mix thoroughly, strain, and keep in a clean container in the fridge. Feed nasty bits to wife / husband / dog.
2. Wash Yupo with dishwasher liquid to remove any surface oil etc. Avoid handling the surface. Dry.
3. (Not done by Alex)

    a) I apply a thin "size" of egg mixed 2:1 with potassium or ammonium dichromate and expose for 2min, neither the mix not the exposure time are critical. It is best to use a foam roller to apply and smooth out – good practice before trying pigmented emulsion. Try to get as thin a coat as possible, squeeze most of the emulsion out on the tray before coating the Yupo, then go back and forth with lighter and lighter strokes until you get an even thin glassy coating

    b) Dry, expose to UV, wash for a few seconds, wash in clean water with a little washing up liquid or rinse aid, dry. If the coating is thin then usually the dichromate stain disappears just by washing.
    I usually do 5-20 A2 size sheets in one go, approx 2g egg (3g of the mix) per sheet. My reasons for this step are without a preliminary coat the second layer is partly attaching to

the first layer, partly to uncoated Yupo, and also by inspecting the dried surface you can identify any coating problems with the Yupo surface – if very patchy or blotchy scrub down and start again.

4. Make up the STEM 8g egg to 4g saturated Ammonium Dichromate – this covers about 3 A3+ printing areas. Only mix as much as you can use in a 3 hour session.
5. Add 2g (this can vary) acrylic paint to 12g Binder to make the EMULSION. (Add Stem to pigment slowly and mix thoroughly else it won't mix easily.)
6. (see detailed comments below) Coat and dry (takes only a few minutes). Expose under the appropriate negative, wash, wash-develop, wash, clear, and wash in purified water with a little rinse aid to avoid drying marks which can affect the next layer. The steps after exposing take 3-4 minutes plus drying time which can be speeded up with a hair dryer.

   Repeat step 6 with the same colour and negative, then go on to the next colour. If you are unfamiliar with tri-colour printing then 3 (4) negatives taken through Red, Green, Blue (no) filters are used to print blue, red and yellow (black) layers, the black layer being optional.

   Make your negatives with a black border to give a clean edge to the final print. Once finished pigmented areas outside the image itself can be cleaned off using kitchen cream cleaner and an abrasive sponge. I generally make my negatives by extending the brightness range if necessary to cover the range of the horizontal axis on the histogram. I print the negative normally (greyscale, but don't increase the pigment quantity put down on the OHP material as is required for some processes such as salt printing.)

   I used to apply a thin coat of black as the first coat primarily to give a registration image – registration is then done using the border area – though now I just start with blue or red. The first coat sometimes does not take well and you may end up just with a border to register to – this is fine, don't worry about it – reapply the coat if and when necessary. I generally also apply one or two short exposures of a black coat at the end to add contrast.

   I have not found a black acrylic paint that mixes well so I mix my own "black", generally a deep purple or blue-brown.

   In the description of the images (see section at end of document) below I quote the developing times I have used – these are obviously dependent on my UV set-up. Using a Lightmeasure PPM-2 my UV bed generates 120 units of exposure per minute.

Coating

If using a brush to apply emulsion to the Yupo brush on quickly and don't over-economise on the emulsion else you can get drying marks. Then use a foam roller to even out the emulsion and remove excess. (A brush was used for image set 4.)

The more consistent and reliable method is the roller method described in the article referred to above. Use a foam roller – I use a 12cm roller – which can be encouraged to apply most of the emulsion and wastes little. Roller was used for most of the other images.

Drying the emulsion prior to exposure

The best method is immediately after coating, use a hair dryer (not too close and keep it moving) to dry the emulsion. I have generally used air drying in the past – this is fine if the darkroom is warm (over 22deg) and you wave the Yupo in the air until it has clearly started to dry. I have had

problems when the air is cool and the Yupo is simply left flat to dry – this can lead to the dichromate crystallising out (see Image set 3: Coronavirus! below)

Wash-Developing

No chemicals other than water are used so the term “develop” is slightly misleading. On the other hand “wash” on its own is a term used for the initial dichromate rinse and post wash-dev cleaning. The was-dev process is simply one of washing but in a slightly abrasive and controlled way. Please see the description in the article referred to above.

The density of the image from the layer you are making is a function of the pigment density, exposure time and your developing method. Also for tri-colour printing if you want a reasonable approximation to the colours in the image data then you need to be able to develop each colour layer evenly and equally. Plan a developing method beforehand and stick to it.

I use a (damp) painter’s pad resting on the surface without significant pressure from my hand, and move evenly across the top of the image in smooth circular strokes, then move down 10cm or so and go backwards, etc. without lifting the pad of the surface. I continue until I reach the bottom of the print (making sure the edges are developed too) then proceed with vertical sweeps. I may repeat the whole process again (two horizontal and two vertical sets) if the print is denser than I wanted. I only lift the pad at the end. The pad quickly develops its own suction onto the surface which provides enough pressure for the development process. Development takes 2-3 minutes for an A3+ image.

The wash-dev stage allows the creation of a creative print primarily through the use of local development. Knowing the image you are printing you make want to exaggerate or hide certain features, or change the colour balance locally. This can be done using the corner of the pad for relatively large areas or a small sponge or slightly stiff brush for smaller areas. Bear in mind the colour after local development depends on the layer or layers you take off, and you may want to plan your print colour sequence correspondingly.

Clearing

The clearing tray can be 1% sulphuric acid, which works in seconds, or 4% acetic acid which Alex says works but takes longer (and is safer than diluting strong sulphuric acid). If you are using sulphuric acid remember that when you make the dilution you must add acid to water not water to acid. Remember to keep a lid on the clearing bath so that any fumes that can irritate the eyes are contained.

Monochrome print

You may want to start with a monochrome image – fewer negatives to make and no colour balance problems and it will also help you find the appropriate exposure time. Unlike tricolour printing you will probably want to use a range of exposure times to potentially produce a colour image by tone separation – a method I use for my gum prints.

And finally a paragraph by Alex Chater

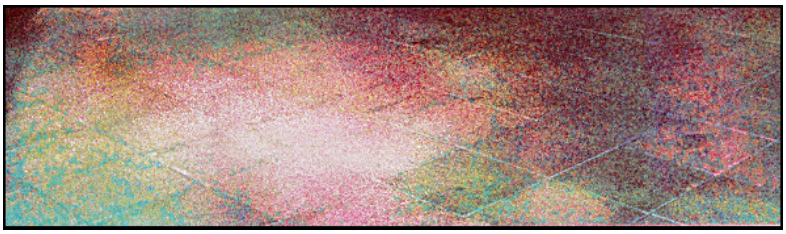
It is very gratifying to see these images that Geoff has created. Temperaprint is one of the most versatile process available to practitioners of alternative photography. Playing with colour and watching the print get richer as more coats go on is both fun and rewarding. Temperaprint can produce subtle prints with a soft grainy look, as Geoff has chosen in his current work, or have the

strong colour and graphic impact of screen prints. As a process it is very well suited to a wide range of creativity without being overly difficult, but can be much more forgiving than traditional gum. Once the basics are mastered, as is explained in this article and amply demonstrated by these images, the creativity can be exercised with relative freedom. You do not need lots of expensive equipment or complicated processing, some simple and inexpensive tools, a decision of how you want the image to look and a consistent way of working.

Image Section

Image set 3: problems

a. A fault in the Yupo surface – in this case probably during transport the layer had something heavy dragged across leaving an indentation in the surface. This is rare – I have only found it in one sheet out of about 100.



b. Coronavirus! Probably crystallisation of the dichromate during the drying process. Chemical contamination can also produce similar patterns – which are sometimes attractive and add to the print.

c. Brush marks – arise if too little emulsion is applied by brush before using a roller

The following photos of the prints are direct from my digital camera and are unprocessed apart from cropping out excess border. They generally are rather brighter than the actual print and exaggerate the grain effect. I find little difference in the final coating between 4min and 6min exposure times (with some adjustment to the development).

Image set 4:

Brush coated, roller smoothed. 5min then 4min exposure for BYR, plus final black layer.

Prints approximately 31cm x 45cm.

Left : Mandarin's house, Macau, PRC

Below, left to right:

Mandarin's house, Macau, PRC
Near the Palais de Justice, Brussels

Image set 5:

Roller coated and smoothed. 5min then 4min exposure for BYR, plus final black layer.

Prints approximately 31cm x 45cm.

Left : Mandarin's house, Macau, PRC

Below, left to right :

Wall with Ivy, Asahikawa, Hokkaido, Japan
Railway arches, Tokyo, Japan

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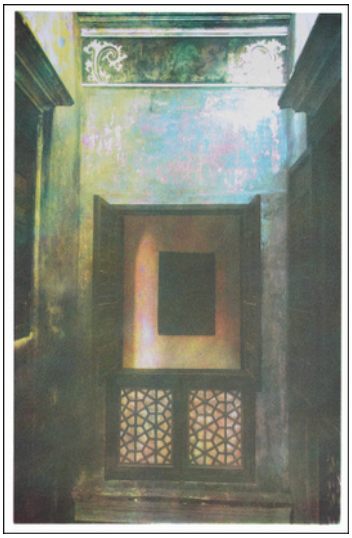
Image set 6:



Roller coated and smoothed. 6min then 4.5min exposure for BYR, plus final black layer 4.5min then 4min.

Prints approximately 31cm x 45cm.

Right : Graffiti, London

Below, left to right :

Mandarin's house, Macau, PRC
Nagakawa-san's barn, Nae, Hokkaido, Japan

Image set 7:

Roller coated and smoothed. 6min then 4.5min exposure for BYR.

Prints approximately 31cm x 45cm.

Left :

Mandarin's house, Macau, PRC, plus final burnt umber layer 6min then 5min

Below, left to right :

Railway arches, Tokyo, Japan, plus final burnt umber layer 5min
Nagakawa-san's barn, Nae, Hokkaido, Japan

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Image 8: (From a single B&W negative).

Pigment densities ranging from 12:1 Raw Sienna to 5:1

Print approximately 31cm x 45cm.

Mandarin's house, Macau, PRC. Burnt Umber, also Burnt Sienna, total of 6 layers.

Geoff Chaplin - April 2020

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