

Making Period Pigments for Illumination

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The Period Pigment Palette Facebook group is a fantastic place to get help, discuss results, and find new sources. If you are at all interested in pigments, please join!

Precautions!!!

When working with powders, it is always a good idea to wear a dust mask in order to protect your lungs. Safety glasses can also be a good idea to prevent powders from getting into your eyes. Gloves will protect your hands from stains and potential irritants. The work area should always be clear of food and drink. Some period pigments were also poisonous. Please be extra careful with these and dispose of any biproducts carefully so as to not pollute the water supply.

What We'll Be Doing Today

We'll try to get to most of the techniques for making period pigments. Most likely these will be:

- A very simple saffron pigment
- Carbon black made from charcoal from hardwood
- A mineral pigment such as malachite
- A lake pigment (pigment made with organic matter) such as brazilwood, cochineal, madder, weld, or turmeric
- Iris green made from fresh blossoms.

The Easiest: A Simple Saffron Pigment

Recipe from the Strasbourg Manuscript (pg 109):

Here I want to teach how one should temper yellow translucent colour. One should take saffron, as much as you want, bind it in a clean linen cloth and lay that in a clean shell. Pour liquid gum onto it. Let it soften in the liquid gum and squeeze then the colour out. If the colour is too intense and too red, then add more liquid gum in it and stir all together with a finger until the yellow colour becomes lighter. However, if you want to have (a) deep colour (and if you like it), then do not add more liquid gum. Look how the colour occurs in its deep state and its light state and keep them without mixing them. So you have translucent deep (and?) light yellow colour for all the things you want.

This is about as simple as it gets.

- Tie a pinch of saffron into a small cloth and tie with a piece of string
- Place bundle into a small container and add gum arabic water (1 part gum to 2 parts water, warm, and dissolve gum. Add a few drops of clove oil to extend life.)

Carbon Black Pigment

Recipe from Cennini (pg 22):

Then there is a black which is made from vine twigs; these twigs are to be burned; and when they are burnt, throw water on them, and quench them and work them up like the other black.

We are not using vines, but charcoal from hardwoods. This is a cheap and simple way to make a really nice dark black.

- Break up and crush charcoal in a mortar and pestle until very fine

If you want to make other kinds of carbon black pigments like almond shell, peach pit, mammoth ivory, or bone such as chicken, pork, turkey, you'll need a low oxygen container to put your material in before putting it into a fire. I use a black iron pipe fitting with two end caps. You can try to use a can with aluminum foil on it, but the foil disintegrated in the fire when I tried it. I usually leave my material in the fire for about an hour to blacken it all the way through.

Making a Mineral Pigment

You can use this process to make pigments out of malachite or azurite. If you choose to use more poisonous substances such as orpiment (arsenic) or cinnabar (mercury) please take extra precautions and dispose of any water or byproducts according to toxic materials guidelines.

We will be using malachite which I find easier to find and a bit cheaper than azurite.

- Wrap a bundle of the stone of choice in a piece of leather and pound it with a hammer until the stone pieces are sand sized
- Put the stone into a metal mortar and pestle and grind until the particles are small enough to start to clump. Be careful not to grind too fine as the color may become gray.
- Put the finely ground stone into a container that has a lid and add enough water to cover the stone and then a little more
- Put the lid on the container and shake
- When the first part of stone settles out, pour off the liquid on top into another container
- Allow the stone in the second container to settle out
- Carefully siphon off the water on top of the stone with an eye dropper or allow the water to evaporate
- The stone in the second container should be fine enough not to need further grinding before making paint

Making a Lake Pigment

This process can be used to make a lake pigment out of most dye plants, insects, or resins. I have found countless recipes in medieval treatises for lake pigments. Most are very similar. I've tried to distill these recipes into one easy to follow recipe that I have used for turmeric, brazilwood, lac, cochineal, saffron, buckthorn berries, weld, and indigo.

Recipe from De Arte Illuminandi (pg 8):

Take some of the best brazil wood . . . and with a knife or a piece of glass scrape off as much of this wood as you want. And put it into a lye made from the wood of vines or oaks (and if the lye is old it is better). And put this into a glazed dish which will stand the heat; and have the lye cover this brazil, so that whatever part of it is extractable may be thoroughly extracted by this lye. And let it stand in this lye for a night or a day to soften. Then put it on the fire, and heat it to the boiling point, but do not let it boil; and stir it often with a stick. Then take account of how much scraped brazil there was, and take the same quantity of very nice white marble very thoroughly worked up on the porphyry to an impalpable powder, or scraped with a knife, and as much sugar alum or rock alum as there is of the brazil. And grinding them thoroughly, mix them gradually in this dish, always stirring it with a stick, until the froth which it makes subsides, and it is well colored. And then it is strained through a clean linen or hempen cloth into a glazed or unglazed porringer. And know that some say that the lye, after it is well colored, should be strained through the cloth into a glazed dish; and after getting it fairly hot, they put in the alum and marble. And it will take up the color immediately; and the water will separate almost clear above it, and you pour it off carefully. And this is better.

My process:

- Put 1 tsp of potash (potassium carbonate) into a glass container with about a cup of water. Stir to dissolve the potash.
- Add a generous amount of whatever organic dye matter you have chosen. Stir to combine. Allow to sit overnight.
- Strain the liquid through a cloth (cheesecloth, linen, or the like) to remove the organic matter.
- Pour the colored liquid into a pot. Heat the liquid to near boiling.
- Add about 1 tsp of alum (aluminum potassium sulfate) and 1 tsp of marble dust (can substitute chalk, ground eggshell, or white lead) and stir. The liquid will foam.
- Remove from heat and pour liquid into an unglazed clay pot saucer. Allow to dry.
- Once dry, scrape the pigment into a mortar with a palette knife. Grind with the pestle until fine.

Pour the pigment onto a grinding slab (use glass) and add a small amount of distilled water. Grind the pigment until very fine with a muller until you can no longer see bits of marble dust. Scrape the pigment up when half dry and allow to dry. Pigment can then be quickly crushed to create a powder or left as a cake.

My usual process is not the only one you can use. My friend, Hersiskona Bubba Blackhammer of Atlantia (Kit (Wellner) on Facebook), uses the following process:

- Procure dye stuff, chalk, and alum.

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- Gather coffee filters, hair ties you are ok sacrificing to the cause, a spoon, a 1 qt stockpot and a measuring cup.
- Secure filters to jar tops with hair ties and spoon in a couple of teaspoons dye stuff.
- Boil water, use measuring cup to dip it out and drizzle over dye stuff until there is about a pint of colored water in the jar.
- Get fresh jar, secure filter, spoon in a couple of teaspoons chalk.
- Remove dye stuff filter from dye jar, add give or take a teaspoon of alum. Stir or shake.
- Pour about half the dye over the chalk, letting it drip through the filter.
- Remove filter, squeeze out as much excess dye as possible, set filter aside to dry so that dried pigment can be retrieved from it in a couple of days.
- Pour dripped dye back into main dye, add more chalk, shake, seal. Plan to shake daily for a few days and then strain and let pigment dry. Eyeball both pigments to see if drip or steep seems better/richer/deeper.
- Clean up. Yeah it really is that simple. Grin. Try it!

Iris Green Pigment

There are two basic ways of making iris green pigment: clothlets and sea shells. In period *Iris germanica* were probably the species used, but any blue/purple iris will work.

Recipe from De Arte Illuminandi (pg 6-7):

Take these fresh flowers in the springtime when they are blooming, and pound them in a marble or bronze mortar; and squeeze the juice with a cloth into a glazed porringer. And in the juice soak other linen cloths, clean and soaked once or twice in a solution of rock alum and dried. And when the cloths are thoroughly saturated with the juice of the lilies in this way, let them dry in the shade, and keep them between the leaves of books.

Clothlet process:

- Soak a linen or similar cloth in water with a bit of alum (aluminum potassium sulfate) repeatedly and allow it to dry. Do this about 5-10 times.
- Gather the blue parts of iris blossoms. If you leave a little non-blue parts of the blossom that is fine. You can use them fresh or allow them to sit in a closed container for a day.
- Crush the blossoms in a mortar and pestle. You can do it all at once or allow it to sit for a little while and then come back and crush the blossoms more.
- Strain the blossoms through a cheesecloth.
- Dip an alum infused clothlet into the iris juice and then allow it to dry. If you have more iris juice dip the cloth into the juice again and allow to dry. As it dries the pigment will react with the alum and change from blue to blue-green.
- To use, cut a small piece of the clothlet and put it into a clean seashell. Add a small amount of gum arabic water (recipe for gum arabic water in the saffron pigment section.) Allow the pigment to sit for a while before using. As it sits, the pigment will react with the calcium in the

seashell and turn from blue-green to green. You can then remove the clothlet and rehydrate the color in the shell at later times.

Seashell process:

Recipe found in the Paduan Manuscript (Merrifield pg. 687):

Take the purple lilies, that is, the flowers, and of these the petals only are to be used, and pound them until they are well bruised, and leave them until they begin to ferment; then take burnt roche alum at discretion, grind and incorporate it well with the lilies, leave them on the grindstone for 5 or 6 hours; then prepare the shells, and take a worn linen rag, put the lilies into it, and press the juice dexterously into the shells or vases; then dry the color in the shade, and you will have a beautiful green; and if you wish to make the colour lighter, add to it a little quicklime at discretion.¹

Process:

- Gather the blue parts of iris blossoms. If you leave a little non-blue parts of the blossom that is fine. You can use them fresh or allow them to sit in a closed container for a day.
- Crush the blossoms in a mortar and pestle. You can do it all at once or allow it to sit for a little while and then come back and crush the blossoms more.
- Add a small amount of alum (about $\frac{1}{2}$ tsp) to the mortar with crushed blossoms. Crush the alum into the blossoms and allow the material to sit for an hour or so. The liquid should change from blue to blue-green.
- Strain the blossoms through a cheesecloth.
- Pour the liquid into clean seashells. Allow to dry. As it sits the pigment will react with the calcium in the seashell and turn from blue-green to green.
- To use, add a small amount of gum arabic water to the seashell and mix.

¹ Merrifield at 687.

Other Pigments You Can Make at Home

Verdigris

Wear gloves while harvesting and working with verdigris!!! Copper is absorbed through your skin and is hazardous to your health!

- Take a sheet of copper. Rough the copper with sandpaper or steel wool to remove any coating that may be on the copper.
- In a large glass jar with a wide mouth, place a small plastic bowl or something else to keep the copper off of the bottom of the jar.
- Add a small amount of vinegar to the bottom of the jar. You should add enough vinegar to cover the bottom but not so much to touch the bottom of the copper.
- Place the copper on the small bowl and close the jar tightly.
- After you have a reasonable amount of inflorescence (blue-green film) on your copper sheet, pull the copper sheet out of the jar and scrape the inflorescence off of the copper sheet.
- Let the inflorescence dry on a glass plate before packaging.



Earth Pigments

If you find a highly colored earth (red, yellow, brown, black, white, green, etc) you can make pigment from the processed earth.

- Collect your dirt. Make sure you write down where you found the dirt and when so that you can find your collection place again.
- Take some of your dirt and put it into a container with plenty of room. Add enough water to cover the dirt and then some.
- Stir the dirt and water. The biological material (roots, leaves, bugs) will float to the surface. Let the water settle and then skim off what you can and pour off as much water as you can without losing the really nice fine dirt particles. Do this several times until you no longer have floating biological material.
- When the water above your dirt is clear, move your earth into a larger container to dry. Do not put this container in the sun because it could make your dirt very hard and difficult to process.
- After the dirt is dry, put it into a mortar and crush it with a pestle to break up any chunks.
- Pour your dirt through a kitchen sieve to remove any large particles. Use a plate or bowl beneath your sieve to collect what falls through. Then shake the dirt through a finer mesh sieve to collect the finest particles to use as pigment.
- Package your pigment and make sure to label it!

To Make Paint With Powdered Pigments

Grind equal parts gum arabic and pigment on a grinding slab with a small amount of water with a muller. Grind until fully mixed. Put into a seashell or other container and allow to dry. To use add a small amount of water and allow to set for a minute or two as you would with a normal watercolor.

Equipment for Making Pigments

- Kitchen scale that can zero
- Measuring spoons
- Palette knife
- Metal mortar and pestle
- Unglazed clay pot saucer
- Small containers to store dried or liquid pigments
- Glass or marble grinding slab
- Glass bowls with lids
- Metal pot
- Hammer

Materials

- Plant or animal material such as madder, weld, woad, woad, iris petals, turmeric, saffron, buckthorn berries, brazilwood, indigo, or cochineal
- Stone such as malachite or azurite
- Hardwood charcoal
- Alum (Aluminum potassium sulfate)
- Potash (Potassium carbonate)
- Distilled water
- Cheesecloth, linen cloth, or similar cloth for straining and making clothlets
- Egg shell
- Gum arabic or glair
- Quickslime

Sources of Materials

Griffin Dyeworks <https://www.griffindyeworks.com>

Brazilwood powder, lac, fustic, indigo powder

Etsy.com

Woad

Amazon.com

Cochineal, copper plates, quicklime

Ebay.com and Rock and mineral shows

Malachite and Azurite

Natural Pigments <https://www.naturalpigments.com>

Marble dust, alum, potash

Kremer Pigments <http://shop.kremerpigments.com>

Madder root powder, weld, green buckthorn berries

Penzey's Spices

Saffron, Tumeric

Sources

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