

Botanical Bundle Dyeing

WOF = weight of dry fiber, measured in grams

Always scour fabric before mordanting

Wearing gloves is best practice when mordanting, nothing here is toxic but it is astringent and can really dry out your hands

Always wear a mask when working with powders

ANIMAL/PROTEIN fibers

Aluminum Potassium Sulfate

1. Dissolve 10-20% WOF alum sulfate (and the 6% WOF cream of tartar if mordanting wool) in very hot water stirring well ensuring they are dissolved well.
2. Add dissolved alum (and COT for wool) to your pot with enough warm water (110° F or 40° C) to cover the fiber without it being too crowded and stir well.
3. Add the scoured, wet fiber & gently stir. Over 30-45 minutes bring the temperature up to 180°F. Rotate the fiber frequently, being careful not to agitate (for wool especially, so as not to accidentally felt the wool). Keep at this hot temp for 1 hour, being sure that the fiber remains submerged and doesn't float to the top. A clean ceramic plate, stainless steel colander or filled glass mason jars can all be effective weights keeping fibers submerged.
4. Turn off the heat and let the fibers cool in the bath for 20 minutes to overnight.
5. Remove fibers and rinse well in cool water and proceed to dyeing or dry and store for future dyeing

Note: Animal/Protein fibers can be mordanted with a cool or room temperature method where the fiber sits in the mordant bath for an extended period of time (3-4 days on average) with no external heat source applied. The alum will deposit on the fiber in a slower manner. Stir as often as possible to avoid uneven uptake of mordant.

CELLULOSE/PLANT fibers (2 METHODS)

Method 1- Tannin then Alum Sulfate with Soda Ash

Overview: Treat the fiber with the plant tannin of your choice and gently rinse, then apply the alum & soda ash mixture to create the tannin/alum complex within the fiber making it very attractive to the natural dye. For this process do not heat the fiber excessively. Starting with very hot tap water 120°F - 140°F (48°C - 60°C) is good. It is not necessary to heat the tannin or alum/soda ash baths again to maintain the temperature. For this reason, it is possible to use a plastic bucket or vessel other than a pot.

Tannin

1. Dissolve tannin (use recommended WOF % for the tannin you are using) in very hot water stirring well making sure all lumps and gritty particles are dissolved fully.
2. Add well dissolved tannin to your vessel and top it up with enough hot water 120°F - 140°F (48°C - 60°C) to cover the amount of fiber you are treating without it being too crowded. Add the scoured, wet fiber.
3. Let soak for 1-2 hrs. Stirring occasionally & covering the vessel to stay warm. Make sure fiber stays submerged fully while soaking.
4. Remove fiber and gently wring and rinse— for larger amounts of fabric you can spin in a laundry spinner, or the spin cycle of a washing machine. Don't let the fiber dry before proceeding to the alum mordant (this can cause the tannin to oxidize on the cloth creating uneven application and/or dark spots). You can also let the fiber steep in the tannin bath for an additional 3 to 24 hours, this will result in more tannin application and result in more saturated dye colors.

Alum Sulfate with Soda Ash

1. Dissolve 2% WOF soda ash (sodium carbonate) in very hot water, stirring well to ensure it is fully dissolved. Add this to your vessel.
2. Dissolve 15% WOF alum sulfate in very hot water, stirring well to ensure it is fully dissolved. Add this to your vessel. *Be sure you are using a vessel that is large enough to accommodate the natural bubbling/fizzing reaction of the combination of alum (acidic) and soda ash (alkaline). The bubbles (carbon dioxide gas releasing) will subside, stir continuously to encourage this along.
3. Fill the vessel with enough hot water 120°F - 140°F (48°C - 60°C) to cover the amount of fiber you are mordanting without it being too crowded. Stir.

4. Add the already tannin treated wet fiber to the vessel stirring well particularly for the first 5-10 minutes, then occasionally & making sure it stays submerged fully.

5. Let fibers soak for 1-2 hours and cover the vessel to stay warm when not stirring. You can also let the fiber steep in the alum/soda ash bath for an additional 3 to 24 hours, this can result in more saturated dye colors.

6. Remove the fibers and wring well (wearing rubber gloves). Rinse well to remove any unbound alum.

Now the fiber can be dyed immediately or dried for dyeing later.

Note: For even more thorough mordanting of cellulose/plant fibers (particularly tougher to dye fibers like hemp and linen) you may choose to repeat the alum sulfate/soda ash bath. To do this you can make a fresh mordant bath (alum sulfate at 10%WOF and soda ash at 2%WOF) or a fresh mordant bath of alum sulfate alone (10%WOF) to achieve more saturated colors.

Method 2 - Alum Acetate then Fixing Bath

For this method you may choose to put the fibers through the tannin procedure (see "Tannin" section above) before the Alum Acetate bath. This will result in better lightfastness of dye because you are creating a tannin/alum acetate complex within the fiber making it most attractive to the natural dye. You may also choose to only use alum acetate but you should then use a Fixing Bath described as part of this procedure for best adherence of mordant.

Note: If you choose to use the tannin process before alum acetate you DO NOT need to "fix" the alum acetate with the chalk fixing bath.

As with the tannin and alum/soda ash baths, the alum acetate bath does not need to be very hot and doesn't necessarily require a pot and can be performed in a plastic bucket or non-reactive vessel of your choice. Do not heat the fiber excessively in the alum acetate bath, too much heat can reduce the effectiveness of the alum acetate. Starting with very hot tap water 120°F - 140°F (48°C - 60°C) is good. It is not necessary to heat again to maintain the temperature.

Alum Acetate

1. Dissolve 8% WOF alum acetate in hot water and add to the vessel.
2. Top up the vessel with enough hot water 120°F - 140°F (48°C - 60°C) to cover so that the fiber you are mordanting is not too crowded. Add wet fiber to the vessel and stir well especially for the first 5-10 minutes.
3. Soak fabric for 1-2 hours keeping covered & warm or steep overnight-stirring occasionally & making sure it stays submerged fully.

Next up is the chalk fixing bath... There's some debate here as to whether you should rinse after the alum acetate. I personally do not. I wring out my fabric really well or put it through a spin only cycle.

Fixing Bath

If using Alum Acetate, the fiber will benefit from “fixing” of the alum mordant before dyeing. The phosphates in chalk will neutralize the acetic acid of the alum acetate which secures the alum in place on the cloth thus “fixing” it. It can also help slough off any weakly bound alum that may come unattached in the dye bath and instead bond with the dye molecules away from the fiber during dyeing. The chalk solution may be kept over time and refreshed after every 20lb of fiber. The chalk will settle over after use and only needs to be stirred up before using again. Once it looks dirty, it can be disposed of and a new chalk bath can be made.

Chalk (calcium carbonate) To 1-2 gallons of warm water add 50g of chalk. Submerge fabric and stir, let soak for at least 5 minutes then wring out then rinse well. Your fabric is now ready to dye or dry for future use.