MODULE TWO – DIRECT APPLICATION OF ALUMINUM ACETATE MORDANT

# PREPARING ALUMINUM ACETATE MORDANT PASTE

The first video is 7 minutes long and gives you detailed instructions about how to make an aluminum acetate mordant paste for direct application. The second 6 minute video gives you a general introduction to mordants and dyes, how they combine, and why they are essential to colourfast dyeing on cloth.

This workshop is all about the relationship between mordants and natural dyes. In order to manipulate mordants and dyes so that we can use them for direct application, we are going to be controlling when and how the mordants and dyes come together.

**Immersion mordanting** is the mordanting of cloth or yarns in a pot using a mordant bath.

**Direct application** is the placement of the mordant in a specific location on the cloth using a printing block, brush, stencil or silkscreen.

In order to directly apply the mordant, we need it to be in a particular form. It needs to be a solution of **aluminum acetate**.

**Dyers commonly encounter aluminum mordants in three forms:**

**1) POTASSIUM ALUMINUM SULFATE** - KAI(SO4)2 - aka ALUM - the aluminum salt most often used by dyers.
**2) ALUMINUM SULFATE** - Al2(SO4)3 - the form of aluminum salt often used by paper-makers as a sizing.
**3) ALUMINUM ACETATE** - Al(CH3COO)3 - the form of aluminum salt most useful for textile printing.

You could start with aluminum acetate powder, however it is often expensive or difficult to find. So below we give recipes to make an aluminum acetate solution from either potassium aluminum sulfate (alum) or aluminum sulfate.

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## ALUMINUM ACETATE MORDANT PASTE RECIPE

This is the aluminum acetate mordant paste recipe we will be using in this workshop:

- 200ml vinegar
- 20g of alum (potassium aluminum sulfate)
- 10g of soda ash
- 2g guar gum

**1.** Place the 200ml of vinegar in a large, wide-mouth vessel of at least 1 litre. (Ensure that your vessel is at least 4-5 times larger than your initial liquid volume).

**2.** Add the alum to the vinegar.

**3.** Swirl for 5-10 minutes to dissolve (it might not all dissolve - that's OK).

**4.** Add the soda ash - a little at a time. The mixture will froth up due to the release of gas. Ensure the mixture does not overflow! Continue to swirl and add the soda ash until it is all added and no more bubbles are being formed when you swirl the mixture.

**5.** When all bubbling has subsided you may thicken the mixture by adding 2g of guar gum. It is okay if there are still some undissolved crystals on the bottom of your jar. You may add all the guar gum at once.

**6.** Stir thoroughly and give about 15 minutes for the mixture to fully thicken.

## ALTERNATIVE ALUMINUM ACETATE MORDANT PASTE RECIPES

The following recipes show a few different ways to make aluminum acetate mordant paste. These are not covered in the workshop but can be made by following the same process at the recipe in the video (also listed above).

Instructions for the following recipes: Dissolve the alum in water and add either the sodium acetate or calcium acetate if you are using either of the first two recipes. Thicken the mixture as the last step.

**1) Sodium Acetate Recipe**

- 100ml water
- 10g alum (potassium aluminum sulfate)
- 10g sodium acetate
- 1g guar gum (thickener)

**2) Calcium Acetate Recipe**

- 100ml water
- 10g alum (potassium aluminum sulfate)
- 10g calcium acetate
- 1g guar gum (thickener)

**3) Aluminum Acetate Recipe** - this is the pre-made purchased aluminum acetate.

- 100ml water
- 8g aluminum acetate
- 1g guar gum (thickener)

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**NOTE: Percentage measurements**

We will often give a measurement as a percentage. This makes it easy to scale a recipe up or down.

1 ml of water weighs 1 gram. So 100 ml of water weighs 100 grams and we can easily express the weight of an ingredient as a percentage.

So, for example if we thicken a mixture using guar gum at 1% — that means that we use 1 gram for every 100 ml of water.

**NOTE: Volume equivalents (tablespoons and teaspoons)**

Tablespoon and teaspoon equivalents of gram weights are always approximations. Measuring spoons are not precision instruments and they may be used scant, level or rounded. In addition powders may be compacted or loose, making the same volume weigh more or less. For ease of working, we offer tablespoon and teaspoon equivalents, but keep in mind these are not as accurate as the gram measure.

**NOTE: The micro-mixer**

This is a very efficient tool for mixing solutions. It can, however, easily create froth - which we do not want. **Keep the mixing tool below the surface of the liquid.**

## COLOURING YOUR ALUMINIUM ACETATE MORDANT PASTE WITH RED BEET JUICE

We take advantage of the fugitive colour in red beets. Fugitive means that the colour will not stay, but it will disappear and be removed in the fixing process.

- Slice your beet in 1/8-1/4” slices.
- Put the beet slices in a sauce pan and add just enough water to cover the beets.
- Set to high heat and boil the water for about 5 minutes.
- This is your beet juice extract to use for temporarily colouring your paste so you can see your application as you work.

**Note:** The exact volume and concentration isn’t critical, you simply want to ensure that the concentration of colourant is strong. You will only be adding a small amount to your aluminum acetate mordant paste - shown in the next lesson.