




MORDANTING fibre for NATURAL DYING

Dyeing cloth dates from as far back in history as the textile industry itself. As long as humans have clothed themselves, they have been interested in decorating and colouring the fabrics they wore.

MORDANTS, TANNINS, AUXILIERIES & FIBRE PREPARATION

There are records in existence from China where they were dyeing silk in 2600 B.C. using natural dyes. In Thebes Egypt a garment dyed with Indigo dating from 3500 B.C. was found in a tomb. The scarlet used in the Tabernacle curtains in the Bible were no doubt dyed with Kermes.

The dyes employed by these ancient dyers were largely found local to where they lived. Dyers literally went into the forests and foraged for what they knew would yield colour.

In the mid 1800's the development of synthetic dyes radically changed the range of colours and textile dyeing methods and have since largely replaced the commercial use of natural dyes. Recently there has been a renewed interest in dyeing with plant materials and contemporary dyers are enjoying the natural dyeing journey - the fact that they are a nontoxic & renewable source of colour. An infinite and sometimes unexpected range of subtle colour variations can be achieved using individual plant-based dyes on their own or in combination. This is further expanded by **'pre mordanting'** with different metallic salts and auxilieries.

The natural dyeing journey is one of experimentation, creativity and colour manipulation. Be ready to go with the flow, keep written records and samples so you can reproduce your favourite results. We recommend you always test some small samples before dyeing large quantities of fibre or fabric.

THE NATURAL DYERS' MORDANTS

The most common DYERS MORDANTS [Metallic Salts] are Alum, Iron, Copper and Tannin - the least toxic being Alum, Iron & Tannin. Copper is a useful mordant and though it gives much brighter shades remember it is toxic to marine life and humans so use it sparingly: it will need to be handled and disposed of carefully. Historically Tin and Chrome have also been used but are extremely hazardous to the environment & your health. For those reasons we don't sell either product. Always wear gloves and work in a well ventilated space. Use only non-reactive dye pots (Glass or Stainless Steel). If you use copper or iron pots it will change the shade of your dyes (which can be fun!)

WEIGHTS & MEASURES

WOF = Weight of Fibre

This tells you how much dye/plant matter and or mordant you need for a given shade

For example:

- 15% WOF equals 15 parts of dye/mordant to 100 parts of Fibre.
  15gms dye/mordant to 100gms Fibre
- 50% WOF equals 50 parts of dye/mordant to 100 parts of Fibre

The higher the percentage figure – the more dye/mordant you use. Always weigh your fibre when it's dry. The amount of water in a dyebath is not relevant as long as you can comfortably move your fibre to avoid patchy dyeings.

Kraftkolour, Unit 2/99 Heyington Ave, Thomastown, Victoria, Australia, 3074 Ph: 61 3 9465 4865 Web: Kraftkolour.net.au
Email: info@kraftkolour.com.au

FABRIC & FIBRE PREPARATION

Make sure your fabric is either prepared for dyeing [PFD], prepared for printing [PFP] or washed thoroughly in hot water using any standard washing detergent or mild soap.

MORDANTS

ALUMINIUM SULPHATE

ALUM is one of the most commonly used mordants for natural dyeing. Alum is a safe chemical to use but it can sometimes be contaminated with Iron which will result in duller colours. Our Alum is certified pure. It has a great affinity for Protein fibre but not so much for Cellulose so you will need to use Tannin [which has a high affinity for cellulose]. *Usually used at 15% WOF*

ALUMINIUM ACETATE

ALUMINIUM ACETATE is used as an alternative to Alum for dyeing cellulose with natural dyes because it gives richer colours and is recommended if you're printing with natural dyes and plant materials. Using Calcium Carbonate [chalk] will help fix it to the fibre. *Usually used at 5 to 8% WOF*

POTASSIUM ALUMINIUM SULPHATE

POTASH ALUM is the most common mordant of choice for natural dyeing Protein (animal fibres) and Cellulose (plant fibres). It gives bright clear colours with good fastness and is safe to use. *Usually used at 15% WOF*

COPPER SULPHATE

COPPER tends dull colours and turn them blue green. You can use Copper as a premordant or as an after treatment to adjust colours. Colours dyed with Copper are usually more lightfast than those dyed with Alum and has a less harsh effects on Protein fibres than Iron. Dispose of Copper solution responsibly by exhausting your dyebaths, diluting the residue with clean water and don't put it down the storm water. *Used at 2 to 4% WOF.*

FERROUS SULPHATE

IRON is only usually used to deepen and darken the colour of a dye. It also makes natural dyes lighter and wash fast but can dull the colour. More often used with cellulose than protein as it can make protein fibres brittle and harsh. Iron changes shades to deeper, darker shades and is better used in a remordant bath than directly into the dyebath. *Used at 2 to 4 % WOF*

POTASSIUM BITARTRATE

Cream of Tartare

CREAM OF TARTAR is an extra addition to an Alum dyebath which will soften the wool and help give brighter colour or change the shade (it will change the Fuchsia of cochineal to a pure red). Cream of Tartar works best with animal or protein fibres and isn't commonly used with plant or cellulose fibres. *Used at 5-6% WOF*

OAK GALLS

Gallnuts

OAK GALLS are a source of clear tannin. The gallnut is produced by oak trees as a reaction against parasitic wasps who deposit their eggs in small punctures they make on young branches. The tree excretes a tannin-rich substance that hardens and forms a gallnut. These are collected and ground or grated to be used in dyeing at your own discretion. This is a clear tannin.

TANNIC ACID

TANNIN is used to help natural dyes bond with Cellulose. Alum does not bond very well with cotton but does bond with Tannin. By treating the fibre with Tannin then Alum, the two combine on the fibre. This improves the depth of shade and fastness of natural dyes on Cellulose. *Extract used at 6-8% WOF*

Some natural dyes already contain Tannin which eliminates the need for it to be used when dyeing cotton. Fustic, Cutch, Myrobalan, Sumac and Pomegranate are 4 such dyes which will not need Tannin in your pre mordant. Tannins are either clear or yellow [which will add colour to your fibre]. Consider which one you use if you don't want your dye colour to be affected by the Tannin.

Individual dyes which contain Tannin

Myrobalan (yellow tannin)	15 – 20% with Alum
Cutch (red brown tannin)	15 – 30% with Alum
Sumac (clear tannin)	20% with Alum
Pomegranate (yellow tannin)	Use 5 – 8 % with Alum
Fustic (yellow tannin)	Use 4 – 6% with Alum
Brazilwood (yellow red tannin)	Use 4% with Alum

Kraftkolour, Unit 2/99 Heyington Ave, Thomastown, Victoria, Australia, 3074 Ph: 61 3 9465 4865 Web: Kraftkolour.net.au
Email: info@kraftkolour.com.au

MORDANTING fibre for NATURAL DYES

MORDANT RECIPES

EQUIPMENT


Dye Pot


Scales


Gloves


Stirring Spoon


Dust mask


Measuring Spoon


Jug

MORDANTING PROTEIN

Wool, silk or any animal fibre

INSTRUCTIONS ALUM MORDANT BATH

1) Weigh your dry fibre
2) Weigh some Alum Sulphate @ 15% weight of fibre
3) Dissolve the Alum in your measuring jug with hot water -make sure its thoroughly dissolved
4) Add your fibre to the dye pot and cover it with a generous quantity of warm water, add the dissolved mordant solution.
5) Slowly bring the dyebath to approx. 85 – 90C.
6) Stirring gently and regularly, keep the dyebath at temp for an hour then let it cool for 30mins
7) Remove the fibre from the Mordant bath, gently squeeze out excess water and hang to dry
8) Mordanted fibre/yarn or fabric can be stored indefinitely
9) The same method can be used for Iron and Copper but remember to be careful not to damage your fibre.

MORDANTING CELLULOSE

Cotton, Linen, Hemp, Viscose Rayon or any other plant fibre

For the best results – mordant twice – once with Tannin, then once with Alum at 15% WOF then again with Alum at 10% WOF. You can also do a **Tannin, Alum, Tannin mordant. The Tannin Bath is the first step.

INSTRUCTIONS FOR TANNIN BATH

1) Weigh the fibre
2) Some natural dyes do not need Tannin as they are Tannin rich. These can be used in combination with other natural dyes as a source of Tannin or used on their own with Alum. See chart above
3) Measure Tannin for WOF and dissolve in hot water
4) Fill the dyebath with enough hot water to cover the fibre and add the Tannin solution
5) Stir well, cover it and allow it to soak for 1 -2 hours, stirring occasionally – it doesn't need to boil
6) Remove fibre, spin out excess water or gently squeeze. Needs to be mordanted while it's still wet.

Kraftkolour, Unit 2/99 Heyington Ave, Thomastown, Victoria, Australia, 3074 Ph: 61 3 9465 4865 Web: Kraftkolour.net.au
Email: info@kraftkolour.com.au

ALUM MORDANT BATH

1. Make up a new dyebath with enough hot water to comfortably cover the fibre.
2. Add the wet fibre [treated with Tannin] to the dyebath
3. Weigh the Alum at 15% WOF, dissolve in hot water and add to the dyebath
4. Stir well, cover and allow to sit for 1 – 2 hours. It doesn't need to boil.
5. Rinse the fibre and remordant with Alum *or* repeat the Tannin bath again **[Tannin, Alum, Tannin].
6. The fibre is now ready to dye or dried and stored to be dyed later

COPPER MORDANT BATH

1. Use at 2 to 4% WOF Copper Sulphate
2. Dissolve in hot water
3. Make up enough hot water to cover the fibre
4. Add wet Tannin treated fibre
5. Heat to 80C and hold that temp for 30mins
6. Rinse well
7. DISPOSE OF MORDANT BATH WITH CARE

ALUMINIUM ACETATE MORDANT BATH

1. Fill the dyebath with enough hot water to comfortably cover the fibre
2. When the fibre has been treated with Tannin, add it to the dyebath
3. Stir well, cover the pot and leave it for 1 – 2 hours. It doesn't need to be boiled.
4. Using Calcium Carbonate helps fix the Alum Acetate to the fibre.
5. Make up a separate bath with 5gms per litre of Calcium Carbonate.
6. Soak the fibre in the chalk bath, squeeze out excess water.
7. Rinse the fibre and re mordant with Alum *or* repeat the Tannin bath again **[Tannin, Alum, Tannin]
8. The fibre is now ready to dye or dried and stored to be dyed later

IRON MORDANT BATH

1. Use 2% WOF Ferrous Sulfate
2. Dissolve in hot water
3. Make up dyebath with enough hot water to cover the fibre
4. Add wet Tannin treated fibre
5. Heat to 80C and hold at that temp for 30mins
6. Rinse well

MORDANTING IMPROVISATION

You can try using materials at hand to improvise mordants

FERROUS SULPHATE	ALUMINIUM SULPHATE	COPPER SULPHATE
Rusty Nails	Aluminium saucepans	Copper wire
Old iron fencing wire		Copper pipe
Old corrugated iron		
Cast Iron cookpot		

COLOUR MODIFIERS

These can be used as an after treatment
on the pre dyed fibre & fabric to extend the range of colours further

ACID – White Vinegar, Citric Acid
ALKALINE – Soda Ash, Rhubarb
IRON – Ferrous Sulfate
COPPER – Copper Sulphate

RESOURCES:

Department of Carpet, Faculty of Art, University of Birjand, Iran
Natural Dyes in the United States – Rita J Adrosko
Maiwa Handprints Ltd
The Dyers Handbook – Dominique Cardon
Wild Colours – Jenny Dean

Kraftkolour, Unit 2/99 Heyington Ave, Thomastown, Victoria, Australia, 3074 Ph: 61 3 9465 4865 Web: Kraftkolour.net.au
Email: info@kraftkolour.com.au