



# Fructose Indigo Vat Instructions

This is a simple alternative for Indigo dyeing based on traditional dye vats from Morocco and India. Instead of using chemical reduction agents and alkali, this vat uses the reaction which takes place between Lime (Calcium Hydroxide) and Fructose to reduce the dyebath (removing Oxygen) and put the Indigo into an environment where it is able to bond with the fibre. To begin you will be making a stock solution – use a heatproof glass jar so you can see the reaction taking place. The natural dye world is not perfect – so you need to be patient and learn from your mistakes and failures. You need to respect the process and the history and expertise that has gone into giving you a successful result.

## EQUIPMENT:

Rubber Gloves  
Wooden Spoon  
Stainless steel pot or plastic bucket  
Thermometer  
Measuring Jug  
Protective Clothing  
Heat Source

## MATERIALS:

Natural Bio-Indigo Powder  
Crystalline Fructose  
Hydrated Lime (Calcium Hydroxide)  
Any natural fabric or fibre (wash before dyeing)  
*A sense of adventure*

The combination of the Fructose and Lime removes the oxygen from the indigo dyebath. This is known as 'vatting out'. When Indigo is vatted out in solution it changes from blue to yellow/green. The surface of the dyebath should be a bluish, bronzy colour with some bubbles on it which is known as 'the flower'. This is caused by the Indigo returning to its insoluble state where it comes into contact with oxygen. A healthy Indigo dyebath should be greenish/yellow. Once the dye is dissolved, the fabric is submerged in the vat. When the dyeing is complete, the fabric is removed from the dyebath, exposed to the air (OXIDISED) and the dye returns to its original rich blue colour. An Indigo vat is in a constant state of fermentation, and you will need to keep an eye on the health of your vat for a successful dyeing.

This recipe is for **1kg** fabric but can be adjusted for larger or smaller amounts by multiplying the amounts or dividing the ingredients proportionately.

**25-50gms Natural Bio Indigo Powder**

**75-150gms Crystalline Fructose**

**50-100gms Hydrated Lime (Calcium Hydroxide)**

## **MAKING A STOCK SOLUTION:**

- Add your Indigo powder to a 2ltr container. Paste the Indigo with some warm water then add 500mls of hot water & stir well.
- Add the Fructose Crystals and stir again.
- Add the Lime and gently stir to make sure it thoroughly mixed into the solution. Fill the jar with extra hot water. Initially the solution will be a dull cloudy yellow green. Keeping it warm will help the vatting out process so you can sit it in some hot water.
- Stir every 15 minutes for 45 minutes then allow it to sit for the last 15 minutes undisturbed. Unlike a chemical vat which goes clear, the Fructose Vat will stay cloudy and will turn a yellowish green or sometimes brown. You'll see some sludge in the bottom of the jar - this is normal.

## **DYEING YOUR FABRIC:**

- Fill your dye pot (stainless steel, plastic or glass) with hot water. Add the entire stock solution (including the sludge) to the dyebath and stir gently. The dyebath will gradually turn yellow green - allow at least 30 mins. You should also see a coppery flower develop on top of the dyebath. This means the dyebath is ready to use.
- Rinse your fabric or fibre in warm water and completely submerge in the dyebath. Leave it there for up to 5 minutes then remove it and gently squeeze out the excess dye solution into a second container (this can be returned to the dyebath when you've finished). The fibre will gradually oxidise and turn from dull green to indigo blue.
- Leave it for 30 mins to completely oxidise then return it to the dyebath for another 5 mins. Repeat the process until you have the depth of colour you are after. NOTE: You will lose some of this colour in your rinsing process so don't be afraid to go quite dark.
- When you're satisfied with the depth of colour rinse well to remove excess unfixed dye and air dry.

## **REPLENISHING AND STORING THE DYEBATH:**

- If the dyebath goes back to being dull blue, you will need to replenish it with a tablespoon of Fructose. Before doing this, heat the dyebath back up to 50°C. If it doesn't go back to being yellow green, add the same amount of Lime. Stir well and wait for 30mins. You can also make another stock solution and add this to the dyebath. For reuse, store in a covered container. This will keep at least 6 months but may need to be reheated & the addition of extra Fructose and Lime.

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