# Understanding Indigo Indigo and shibori stitch resist

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Remember tie and dye? Images come to mind of multi coloured quick effect T-shirts. The term does not convey control, so the Japanese word shibori is used and is now accepted as an umbrella term, and indigo is synonymous with shibori techniques.



Controlled stitched shibori on cotton lawn

### The magic of indigo

The microscopic particles of insoluble indigo pigment are available to us in many different forms, and different vats can be made using different ingredients to suit different fibres which all do the same thing – make indigo useful as a dye. The dyeing process for all of them is essentially the same and choice depends on preference and the way we work. Oxygen is the key which opens the door to understanding indigo's behaviour, as its presence or absence dramatically alters the indigo compound.



Looking on to the 'indigo bloom' or 'flower' on top of a healthy indigo vat

There are two types of indigo, natural and manufactured, synthesized. Having the same chemical formula, amazingly, certain conditions have to be met with both before the insoluble blue particle will dissolve in water to become a dye.

Indigo needs to be 'reduced' to its original leuco state (indigo white) and this happens when a 'reducing' agent is added to de-oxygenate a prepared alkaline solution. In its reduced state indigo is deposited on the fibre and is able to enter into them to a degree. The indigo vat is not blue, or colourless, but golden/brown, greening slightly near the surface as the oxygen level increases.

The colour of the vat is easily seen in a clear glass vessel







Graphics illustrate the fibre uptake of indigo. It is understood that some of the blue particles, having clumped together to form larger particles, are trapped just near the surface in fibre pores.

#### **Oxygen blues**



The cloth emerges from the vat a golden colour, quickly passing through greens to blue. This is because as indigo meets oxygen, it returns to its blue, 'particle' self, insoluble in water, semi attached and 'trapped' within the fibre which makes it extremely light fast. As more fabric is dyed, the vat becomes 'exhausted' or 'spent' of indigo.



Greatly enlarged picture of indigo take-up on silk fibre. The clump attached to the fibre is sericin, a 'gum' produced by the silk worm.



The fabric 'greening' as it comes into contact with oxygen.

## Dyeing with indigo

The oxidization period between the dips (leaving the fabric to hang in the air) could be described as the time of 'fixing'. This repetition of dipping and oxydizing is ideal for stitch resist. The dips concentrate uptake of indigo on exposed areas of fabric and oxygen reacts upon these areas first, while seepage into folds results in paler hues.

It is not the length of time that a fabric is immersed, but the number of dips which last for one or two minutes, that achieves depth of shade. Some of my heavily stitched pieces have had up to 20 dips as I like the pattern to shine out from a deep, evenly dyed ground







'Indigo Spring' cotton, 150 cm (60 in) square. Use and adaptation of a miru shibori motif used greatly in Karamatsu shibori (Japanese larch pattern)

These two factors work together to create the distinctive effect of dark, crisp markings within a wide tonal range – wonderful - and these are unique to indigo stitch shibori.

## Fabrics

Indigo dyes natural fibres such as silk, a protein fibre, and cotton, linen and hemp, which are cellulose. Also rayon, a synthetic fibre invented in 1895, which is made from wood pulp and was once known as artificial silk. Cotton has been woven in India since prehistoric times and silk was discovered in 2640 BC by the Chinese Empress His Ling Shi. Keeping sericulture very much to themselves the Chinese were the first to develop silk, and a trade route, which eventually became known as the Silk Road, began to emerge in the 2nd century BC.



On silk jacquard with iron rust



'Dandelio' (detail). Silk brocade. Use and adaptation of a miru shibori motif

The range of cotton and silk fabrics available to us is vast. Choice of weight, weave characteristic, fabric handle and finish can add interest and depth to the final surface quality. Resisted marks relate to carefully selected stitch sizes and can give any number of effects.

Loosely woven cottons result in blurry edges, while crisp poplins hold a more defined line. The same stitching on *this* fabric will look completely different on *that*, as each cloth takes up and reflects indigo blue differently. Pin holes will be evident in shearer silks, so reserve these for other techniques, or accept that this is part of the process.

It is always wise to make samples before embarking on that major piece!

#### Stitched shibori

Though resist dye methods developed the world over where natural products enabled the construction and colouration of cloth, using a thread to create a resist through stitching seems to have originated in Asian antiquity. Tritik, meaning droplet, is one of the Malay words for a stitch resist method, a process refined and worked with great control by the Japanese within their textile discipline of shibori and *shibui*, which literally means 'good taste'.



Study based on 16th century Japanese costume pattern with fibre reactive dyes and indigo

#### The process

Cloth is traditionally hand stitched with a running stitch, 'hira-nui' being one single row of running stitches. After this threads are pulled up tightly and tied off securely to channel flow and control penetration of dye. Heavily worked areas result in wonderful three dimensional manipulated fabric extravaganzas which define shibori. The word means to wring, squeeze or press.



On completion of the dyeing process, threads are cut and removed, and after washing, the fabric returns to its original and open state. Up to this point the fabric has been like a ceramic pot in a kiln, its metamorphosis hidden from view. Now, at last, the makers' secret vision is revealed as the design can finally be seen.



### The Possibilities

There are several exciting avenues to explore with stitching, and patterns and textures can be created specifically for inclusion in other textile ventures.

We can draw with its distinctive resisted line, we can create texture, and we can make patterns with repeated motifs. We can also enclose shaped areas which, after the threads have been drawn up, can be totally protected from dye with capping methods.









When synthetic fabrics are stitched, the exciting sculptural aspect of shibori can be retained.

Stitching can be done on single thickness fabric and when hira-nui is worked in close rows, the peaceful Mokume shibori or wood grain pattern emerges, right



## The fold

Where motifs include a fold in the cloth prior to stitching, a number of complex patterns and shapes, such as Karamatsu shibori, the larch pattern are possible.

The fold is an important design structure for used thoughtfully it can create exciting secondary



Combined with machine-lace inserts. 100 cm sq. Cotton iron rust.

Not only is the versatility of the simple running stitch limitless and the variety of its resists inestimable, it can also be incorporated with other dyes and other shibori techniques such as Bomaki Shibori, and Itajime. But all that is another story!

Stitch and Itajime combined.



'Indigo squared' cotton lawn.



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