

1. Make sure the yarn is scrupulously clean, free from processing oils and waxes. I pre-scour all my cottons, even if they are brand new, as there may be waxy coatings applied by the manufacturer that aren't visible but can attach to the dye and it then swooshes away during rinsing rather than attaching to the fibres. To scour, wash in the hottest water you can (without damaging the yarn) in detergent or synthrapol. Rinse very thoroughly until the water runs clear.

2. Make up fresh dye solution, only as much as you need. Once the dye comes into contact with water it will begin to react and, once it is in contact with the sodium carbonate in the yarn, I would aim to use it within a couple of hours.

Note: Any dye solution that hasn't been in contact with the sodium carbonate (ie, just dye + water), can be kept for use later. It will lose strength over a period of time and is best used on cottons within a week. However, on protein fibres like wool dye, solutions that are just dye and water will keep for several months so no need to throw them away!

3. Dye strength - for cottons I tend to use 2g dye powder per 100g dry weight of yarn. Up to 5g for deep reds and blacks.

4. Rinsing - cotton fibres have much less affinity for dye than wools and they are difficult to exhaust whichever dye you use. My rinsing process is as follows:

- First rinse in ice cold, plain water to remove the bulk of the dye and reduce any backstaining (colour transferring to other areas). If you have dark and light areas, try as far as possible to rinse the dark areas first (I use one of those rubber shower heads you can attach to the taps so I can direct the flow of water – you could also use a garden hose if you can work outside). This cold rinse halts the dye reaction.
- Second rinse in red hot water with metapex (synthrapol). It is low-foaming and designed to attach to the loose dye molecules. Alternatively, a good detergent will be fine as long as it doesn't have bleaches or optical brighteners.
- Wash again with metapex if required for very deep colours.
- Rinse in hot water until the water runs clear.

5. Temperature – Procion MX dyes do not require heat to dye cellulose fibres. However, they do need to be in a warm place (21C or thereabouts). If it is too cold, the reaction may not be complete and items should be left to batch (fix) for longer.

General notes

Colour bleeding is not unusual, particularly if you are going for very deep colours like red or black. Treat your yarn as you would a new red t-shirt (don't throw it in with your white shirts!). For future washes, use cool water rather than hot. The dye is fixed, it's simply that there may be loosely attached dye molecules that are released during washing.

If you are tie-dyeing or using a method where dye is applied to the yarn using bottles or similar (as opposed to immersion dyeing where the yarn is dyed a solid colour in a bucket), you can add urea to

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Tips on using procion mx (fibre reactive) dyes on cellulose (plant) fibres

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the dye solution. This is a humectant that helps keep the fabric damp during the fixing time. If tie-dyeing and adding sodium carbonate to the dye solutions, aim to use these within a couple of hours for best results.