PRO™ CHEMICAL & DYE
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BATIK
using PRO MX Reactive Dye

Please read directions carefully before starting.

Batik is an ancient form of resist dyeing. Unwaxed areas of the fabric absorb dye while the waxed areas resist the dye, preserving the original color of the fabric. More wax is added to dyed areas preserving the new color and the fabric is dipped in another color of dye. Repeat this process until the design is completed then remove the wax. Designs may involve only one or many colors depending upon the number of times the hot wax is applied and the cloth is dipped into different colored dye baths. For additional information visit our web site at ***www.prochemicalanddye.com****.*

✖ Always use proper ventilation in your work area. Create a local exhaust system by putting a portable exhaust fan in a window, so it pulls air from the room to the outside.
✖ Heated wax releases irritating chemicals including acrolein and aldehydes. There is no approved MSHA/NIOSH filter for acrolein. A respirator is not a substitute for good ventilation.
✖ Heat wax to the lowest temperature at which it remains liquid.
✖ Do not leave hot wax unattended, as it is a fire hazard.
✖ Keep water away from the wax pot, as it will splatter. Always make sure you have a fire extinguisher or bucket of sand nearby in case of fire.
✖ Wax forms potentially hazardous vapors at high temperatures and may ignite. Do not use open flames, such as a gas or propane burner, instead use a crock pot or electric fry pan with temperature control.
✖ Make sure your hair is tied back and sleeves are rolled up when using heating equipment.

Wear rubber gloves, apron or old clothes.
Utensils used for dyeing should never be used for food preparation.

Supplies

Batik Wax

Solid Shade Immersion Dyeing
PRO MX Reactive Dye
PRO Dye Activator or Soda Ash
Synthrapol
Salt

Direct Application
PRO MX Reactive Dye
Urea
PRO Dye Activator or Soda Ash
Synthrapol

Equipment

Tjanting or natural bristle brush
Temperature controlled pot
Stretcher frame

Procedure

1. Scour the fabric by machine washing in HOT 140°F (60°C) water, or by hand in a pot on the stove with ½ tsp (2 gm) PRO Dye Activator or Soda Ash and ½ tsp (2.5 ml) Synthrapol per pound of fabric (454 gm, or 3 to 4 yards cotton muslin, or 8 yards 8mm China Silk, or 3 Medium T-shirts, or 1 sweatshirt). Rinse thoroughly. This step does not add the dye fixative to the fabric; it prepares your fabric for dyeing by removing any dirt, oil or sizing..

Transfer your design and stretch the fabric.

2. Use light weight fabric, such as fine cotton, silk, rayon, and linen for your first attempts, as wax penetrates easily on light weight fabrics. Heavier fabrics can be successfully batiked. Since wax does not penetrate them easily, they require waxing on both sides to prevent the dye from penetrating from the underside. Before stretching your fabric, draw your design with a washable marker or soft pencil. Keep the design simple for your first attempts.

3. Stretch the fabric on a wooden stretcher or picture frame, embroidery hoop, or cardboard box. Tape or tack the center of each side and then the corners. The fabric needs to be taut. Also, stretch a small piece of fabric in an embroidery hoop or on a stretcher frame. This is your test fabric to sample brush and tjanting strokes.

Melt the wax.

4. The wax should never be heated to the point where is begins to smoke. Heat Batik Wax to approximately 240°F (115°C). Heat wax in an electric skillet with a thermostat or use a double boiler, or tin can in an old sauce pan on a hot plate. Remember that wax is too hot if it smokes. See above for proper ventilation safety while working with hot wax.

How to use a tjanting.

5. The tjanting, or wax pen, is a drawing tool and produces a continuous flow of hot wax for outline and linear motifs. Tjantings come in different shapes and sizes. They have one or two spouts, or one wide brush spout and are available in small, medium, or large diameter spouts. The width of line is determined by the diameter of the spout, the speed you are drawing, temperature of wax, and angle of the tjanting. Hold the tjanting like you are holding a knife.

Make a few practice strokes on your stretched sample fabric to get a feel and consistent flow of wax. Very hot wax right out of the wax pot may flow too freely. When the wax becomes sluggish, reheat it to the proper consistency by redipping the tjanting in the hot wax pot. Use a wire or pin to clear the spout if the tjanting is clogged.

Natural bristle brushes are suitable to fill large areas. Do not use synthetic brushes as they melt in the hot wax.

Apply the wax.

6. Heat the wax and put your brush or the tjanting in it for at least one minute until the metal bowl is hot. Fill the reservoir about three quarters full so the wax does not flow over the top while you are working. Follow the pencil lines you've drawn on the fabric. Make sure there are no gaps in the lines or at the points where they join. Hold the tjanting at an angle, like a knife, as you work. Use a metal spoon to catch drips while you start and stop your design, and when you move the tjanting from the fabric to the wax pot to refill. If you accidentally drip wax, incorporate the dots into the design. Use quick deliberate strokes, as the wax cools quickly in the tjanting or on a brush.

Wax only the first color where you want it retained. Once the front of the fabric is waxed, turn it over and wax any areas that did not penetrate completely. Wax that is too cool will not penetrate through to the reverse side of the fabric and will sit on top. Heavier fabric usually requires hotter wax. The wax should appear clear when you apply it and your fabric should be translucent when the wax cools. Since wax is brittle when cold, the wax design often cracks when the cloth is handled. Dye seeps into the cracks making the characteristic web-like pattern known as crackle.

Never fold an unfinished, waxed batik. Hang it so it will not be disturbed. Do not wax damp fabric as the wax will not penetrate the fabric.

Color mixing through solid shade immersion dye baths

7. Successive immersion dye baths build color. Dye the lightest color first progressing to the darkest. Since the colors are dyed one on top of the other, except where the fabric is waxed, they combine to produce new colors. For example, if the first color is yellow and the second color is blue the mixture creates green. Similarly, if the first color is red and the second color is blue the mixture creates purple. In either example, you cannot obtain blue, only mixtures with blue. It's helpful to know basic color mixing to take advantage of this aspect and be prepared to experiment with color mixing. It is important to plan the dye color order before beginning.

Some colors do not show up over darker colors. In general, use yellow, red, then blue. Dye your fabric the lightest color and wax it only where you want it reserved. Dye the fabric a darker color (the next lightest). Each new color intermixes with the previous color. Repeat waxing and dyeing for as many colors as wanted, covering areas with wax, and dyeing a darker color each time.

Dyeing

8. Choose the traditional solid shade immersion dye bath or direct application dye procedure below.

Solid Shade Immersion Dyeing

If you want to avoid a lot of crackle use a flat tray or bin to hold the dye so the fabric does not have to fold. This way the fabric stays flat so you can control the amount of crackle. Salt and PRO Dye Activator or Soda Ash or Soda Ash break down the wax resist. Therefore, less salt and PRO Dye Activator or Soda Ash or Soda Ash are used in batik and the dye bath time is shortened.

✷ Measure enough room temperature 75° to 95°F (24° to 35°C) water to cover your fabric, counting the number of gallons. Soak your waxed fabric for 15 minutes. Remove and set aside.

✷ Measure the appropriate amount of salt and add it to the water. Dissolve the appropriate amount of PRO MX Fiber Reactive Dye powder separately in two cups of room temperature 75° to 95°F (24° to 35°C) water. Once it is thoroughly dissolved, add it to the dye bath. For each gallon of water use:

	1st color	2nd color	3rd color
Salt	⅓ cup (90 gm)	½ cup(145 gm)	⅔ cup(180 gm)
Dye	⅜ tsp. (1 gm)	2 tsp. (5 gm)	4 tsp. (10 gm)

Then add waxed fabric to the dye bath and let it sit for 10 minutes.

✷ Completely dissolve the PRO Dye Activator or Soda Ash in one cup (250 ml) of warm 120°F (49°C) water. After the 10 minutes carefully remove the fabric. Add the dissolved dye activator to the dye bath and return the fabric. Stirring is not necessary but it is a good idea to gently shift fabric from side to side in the tray.

	1st color	2nd color	3rd color
Activator	1 Tbl (9 gm)	2 Tbl (18 gm)	3 Tbl (27 gm)

✷ After 30 minutes (for pale shades) to 45 minutes (for dark shades) dyeing is complete. Remove fabric from dye bath. Strain dye bath, wash, and rinse water to insure wax does not go down the drain. Discard strained, exhausted dye bath down the drain. Gently rinse the fabric in your tray a couple of times with cool water. The key is to keep your fabric flat. Do not squeeze or wring out the excess water. Instead, hang the fabric in a shaded area to dry. Hang it carefully from one edge with clothes pins on a clothesline, not doubled over on a clothesline. Once dry, it is ready for waxing and dyeing again.

Direct Application

This approach offers flexibility and a variety of color and pattern possibilities that cannot be obtained with the traditional immersion dye bath approach. Hand painting color is useful for very large pieces that are too large for an immersion dye bath.

After initial waxing takes place, the dye solution is hand painted within the areas blocked out by the wax. It is easy to blend or juxtapose several colors within the same waxed area. Synthetic bristle paint brushes work best for controlled application of dye. Foam brushes work well for larger areas.

✷ Make the urea water. Measure 9 level Tbl. (100 gm) Urea into a 1 quart (1 liter) container. Measure 1 quart (1 liter) 120°F (49°C) water into the container and stir until dissolved. Cool urea water to room temperature before using.

✷ Make the dye solution. Measure the dye powder, from the chart below, into a dry 1 cup (250 ml) measure. Dissolve measured dye with 1 cup (250 ml) of urea water.

	Pale	Medium	Dark	Black
Dye	⅜ tsp. (1 gm)	2 tsp. (5 gm)	4 tsp. (10 gm)	8 tsp. (20gm)

✷ Make mixed alkali. In a ½ cup (125 ml) jar with lid mix 4 Tbl. (50 gm) baking soda and 1 Tbl. (9 gm) PRO Dye Activator or Soda Ash. Cap jar and shake until well mixed. Label, date, and store mixed alkali in a cool, dry place.

Just before you are ready to paint add 1 tsp (4 gm) Mixed Alkali to each cup of dye solution. Mix until well blended and mark the time on the jar. Discard dye solution after 4 hours.

✷ Paint dye and allow fabric to set undisturbed for 4 hours for pale shades, and 24 hours for dark shades. Room temperature must be above 70°F (24°C) during cure time. Cover fabric if it is drying out.

✷ After 4 to 24 hours dyeing is complete. Uncover fabric and let it completely dry. Once the fabric is dry it is ready for waxing and over dyeing.

✷ Once your batik is completed, gently rinse the fabric in cool water a couple of times to remove the excess baking soda and dye activator. Strain the wash and rinse water to insure the wax does not go down the drain.

Waxing and over dyeing

9. After the fabric is rinsed and completely dry, pin it to the stretchers and wax the areas that you want to stay the second color. Examine the first waxing and re-wax areas where the wax is deteriorating. Repeat *Applying the wax* and *Dyeing* until your design and color combinations are completed.

Crackling

10. Before the last dye bath, cover the entire batik with wax and crackle it before dyeing your last color; the last color is usually a dark color. The dye penetrates into the crackled areas producing the characteristic batik effect. You can control the amount of crackle, to cover only part of the design or cover the entire piece with an overall effect, by how it is handled through the dye process.

Removing wax

11. Always remember to use proper ventilation when wax is heated. Remove wax by rubbing the dried fabric together and flake off as much wax as possible. The wax that falls off may be saved and reused for future batiks. The remainder of the wax is removed by one of two methods, ironing and boiling or ironing and dry cleaning. Silk should never be boiled and should be ironed and dry cleaned to remove excess wax.

12. Ironing Since wax clogs the vents of a steam iron, look at garage sales for an old plain electric iron to use only for batik. Place several sheets of newspaper over the ironing surface and cover them with plain newsprint. Lay the fabric on this, and cover with a layer of plain newsprint then newspaper. Press with sufficient heat to melt the wax out of the fabric. Use the hottest setting your fabric can withstand and iron until the wax saturates the paper. Peel the paper off while it is still warm and replace it with additional newsprint. Change the paper and repeat this process until no traces of wax remain on the paper.

13. Boiling Fill a large enamel or stainless steel pot, which you do not use for cooking, with enough water to cover your fabric. Boil for five to ten minutes, stirring the fabric to change the folds, allowing the wax to float to the surface. Remove the pot from the stove. Make sure the fabric is submerged while the water cools. Skim the solidified wax off the surface and set it aside for reclaiming. Remove the fabric from the cooled water. If your fabric still contains a lot of wax, repeat this boiling process then go on to soap boiling.

14. Soap boiling Refill your pot with water and add 1 Tbl.(5 ml) of Synthrapol or shaved ivory bar soap. Add fabric and boil for five to ten minutes, stirring the fabric to change the folds, allowing the wax to float to the surface. Allow wax to cool and skim wax off the surface and throw it away. Remove your batik and rinse it several times in a bucket of water. Repeat soap boiling if there is any wax residue. Do not pour hot rinse water that contains any melted wax down the drain. Strain cooled rinse water to insure wax does not go down the drain. Do not use this method for silk.

15. Reclaiming wax Reclaim flaked and boiled wax. Do not reclaim soap boiled wax. Reclaimed wax is good for crackle effects and is best to keep it separate from new wax. Collect all the removed wax and melt it in a pot with some water. Boil the melted wax for 15 to 20 minutes then set it aside to cool. Once the wax is solidified on top of the water, remove it from the pot. Scrape off and discard the sediment from the underside of the wax. The remaining clean wax is ready to reuse.

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