Maiwa Handprints

KATAZOME MANUAL

JAPANESE PASTE-RESIST DYEING

NORIZOME

The Japanese word Norizome originates from a combination of the word nori meaning "paste" or "glue" and zome from someru meaning "to dye". It describes a resist dyeing technique involving the application of a flour based paste to fabric to prevent dye from penetrating into the design areas. Nori paste is used in many different dye processes in Japan including:

KATAZOME – a process where paste is squeegeed through a laminated rice paper stencil, called "katagami" or "shibugami" that is cut with designs.

TSUTSUGAKI – paste resisting which is done by outlining the designs using a cone made from "katagami". This process is very similar to cake decorating with a pastry cone.

YUZEN – here the paste is often applied in the tsutsugaki method and the fabric is dyed by handpainting.

BINGATA – this process denotes Okinawa's colourful katazome where the island's traditional motifs are hand dyed.

KOMON – katazome with very small repeating designs.

AIZOME – although the term does not actually mean paste resist dyeing the term is often used in conjunction with paste resist. Aizome is any fabric that is dyed with indigo that employes paste resist dyeing methods.

Norizome is cooked from a mixture of rice flour and rice bran, the paste is smooth and elastic, with a much higher adhesive quality than that of the wheat-flour based mixtures used in other dye traditions. Whether applied through a stencil or a cone, the paste clings tenaciously to both paper and fabric, allowing even the finest lines to be reproduced with great accuracy. Once dry, the paste resists both brushed on dye and dye applied by brief dips, yet it can be washed away after a relatively short soak in water.

MATERIALS NEEDED

MOCHIKO (sweet rice flour) — This product remains glutinous and elastic, retaining a strong adhesive quality even when boiled or steamed. It enables the nori paste to remain on the surface of the fabric and yet fill in between the warp and filling yarns.

KOMON NUKA (rice bran or rice polish powder) — This product is used in situations where it is desirable to reduce the elasticity and adhesiveness of the sweet rice flour to make the finished nori paste easier to handle. KOMON NUKA refers to a special type of rice bran especially for dyeing. It has been ground extremely fine and all the natural oil has been removed. Ordinary rice bran or rice pol may be substituted. However, it must be sifted or re-ground to as fine a powder as possible. Insufficiently refined rice bran will result in a lumpy paste.

SALT — This product acts as a hydroscopic agent, ie., it absorbs moisture from the air. A certain amount of moisture is necessary in the paste to prevent it from cracking on the fabric. Too much moisture, however, causes the edges of the nori paste to blur and become "fuzzy" and indistinct. Adjust the amount of salt according to the humidity: less salt during the humid summer weather and more salt during the dry winter season.

CALX (calcium hydroxide, hydrated lime or slaked lime) — This product is a mild alkali and causes the starch molecules in the mochiko to swell and thus gives the nori paste body. It also acts as a preservative. Paste with calx added can be refrigerated for several weeks or frozen. Too much calx will cause the paste to become extremely gelatinous and lumpy, and hence unusable.

Note: Mochiko, Komon Nuka and Calx are all available at Maiwa Supply and through our mail order catalogue.

LARGE MIXING BOWL — Making nori paste is alot like mixing bread dough, so if you have a favorite bowl for this purpose, you can use it. Our favorite is a large, heavy ceramic mixing bowl.

PESTLE — The Japanese prefer a thick, hardwood dowel rounded at both ends for this purpose. Wooden spoons or spatulas can be substituted, but must be very strong and durable.

MEASURING CUPS — Pyrex ones are best.

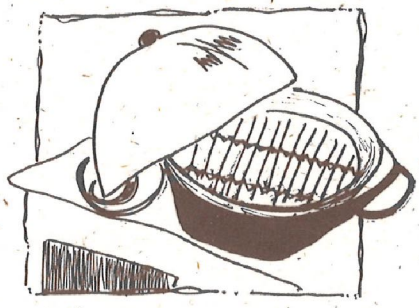
STEAMER — Asian cuisine makes extensive use of steaming as a cooking method. Hence, the best steamers are the Japanese-style steamer pots or the Chinese steamers designed to fit in a wok. However, any make-shift steaming apparatus will suffice, including the small stainless steel vegetable steamers inserted into a pot for use.

STEAMING CLOTH — If you have scrap pieces of muslin around, use these. Otherwise, dish towels seem to work well.

PROCEDURE

This recipe makes about 3 cups finished paste.

- 1 cup glutinous sweet rice flour
- 1 1/2 cup rice bran
- 1/4 - 3/4 cup water
- 1/3 cup hot water
- 2 tablespoon salt (dissolved in hot water)
- 2 or more tablespoon calx (dissolved in 1/2 cup warm water)

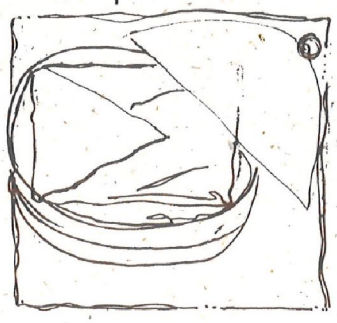


1. PREPARE STEAMER FOR USE. Place on heat source and bring water to boil while you are mixing the paste.

2. SIFT TOGETHER MOCHIKO (sweet rice flour) AND KOMON NUKA (rice bran powder). Mix thoroughly, breaking up any lumps in either product.

3. ADD WATER GRADUALLY AND KNEAD WELL. Use only enough water to allow the mixture to form a ball. Under no circumstances should it be sticky. For this amount of paste, it should not require much more than 3/4 cup water. The Japanese say if its consistency is a little softer than your ear lobe and doesn't stick to your hand, it's just right!

4. FORM INTO DOUGHNUT SHAPES (you know, the kind with a hole in the middle!) This amount of rice flour/rice bran mixture should make two or three doughnuts about 3 to 3 1/2" across and 1/2" high.



5. STEAM FOR 50-60 MINUTES. Dampen and then wring out whatever you're using for a steaming cloth. Spread this cloth out in the steamer and place the doughnuts on the cloth. It's not critical that there be only one layer. They can be piled up slantwise on one another if necessary. Fold up the cloth over the doughnuts or place another dampened cloth on top and put the lid on the steamer. Steam 50-60 minutes.

6. REMOVE DOUGHNUTS FROM STEAMER AND MASH THOROUGHLY. It's important to work as quickly as possible at this point. Remove the doughnuts from the steamer and place them in the mixing bowl. Immediately, take your STEAMING CLOTH and soak it in water as any attached paste will become hard and difficult to remove later. While still steaming hot, thoroughly mash the doughnuts with a WOODEN PESTLE so that all doughnut shape disappears. Continue working the paste until it assumes a smooth, glassy appearance with an even, elastic texture. This part is hard work. The paste will be quite heavy and stiff, and larger quantities may require two people: one to hold the MIXING BOWL and another to stir with the PESTLE.

7. ADD SALT TO PASTE. For this quantity of paste, use 4-5 tsp. during summer or humid weather and up to 6 tsp. during drier weather. Dissolve the salt in a little hot water first and then gradually adding to the paste.

8. MAKE UP CALX SOLUTION by dissolving calx powder in water. Let stand 5-6 minutes until most of the solids have settled to the bottom. Gradually add the clear liquid off the top of the settled calx to the paste, stirring thoroughly after each addition. You will notice a color change as you add the CALX solution. When the paste changes from a light tan-brown to a straw yellow, **STOP ADDING THE CALX SOLUTION!** If you add too much, the paste becomes lumpy and gelatinous, and loses its adhesiveness. Sometimes this problem can be corrected by adding a few drops of vinegar and stirring very thoroughly.

9. COOL THE PASTE by placing the bottom of the mixing bowl into a bath of cool water for 30 minutes or so. Smooth out the surface of the paste in the bowl and add just enough water to completely cover the paste. This thin layer of water keeps the paste from drying out by preventing contact with the air.

10. ADJUST THE CONSISTENCY OF THE PASTE. Remove the mixing bowl from the cooling bath. Give the paste a stir and gradually add small amounts of warm water until the paste stirs easily and becomes smooth, elastic and somewhat shiny. Proper consistency is very much a matter of personal preference based on experience. However, "good" nori paste should make a kind of "plopping" sound when it is scooped up and then dropped back into the bowl. Also, if you draw up a thin thread of the paste, it should break off easily, ie., it should not be like taffy. Lastly, if you form it up into a mound shape, it should be "relaxed" enough to revert to level within 10 to 15 seconds.

The paste is ready to use.

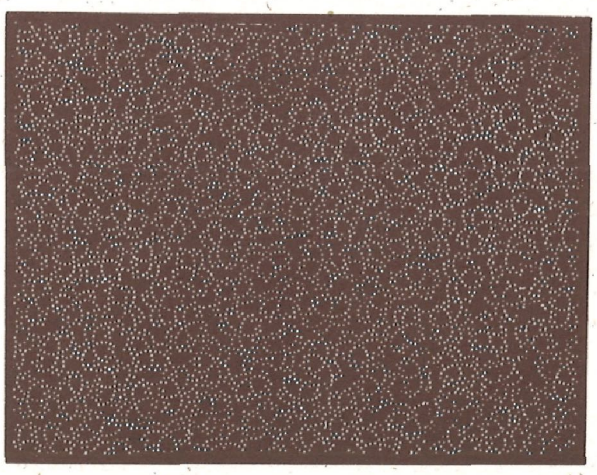
KATAGAMI STENCILS

The Japanese word, katagami (from kata meaning "pattern" and gami meaning "paper"), refers to the patterned stencils used mainly for printing on fabrics for kimonos. They originated in the Ise district of Mie prefecture in Japan during the later part of the 8th century, but it was during the Edo and Meiji periods (1600-1900) that these stencils developed into fine works of art, reflecting the superb craftsmanship and the sure sense of beauty of Japanese stencil cutters. Because the Ise district was part of the feudal estate of the Kishu Tokugawa family, close relatives of the Shogun, the stencil cutters in this district enjoyed the patronage of their feudal lord, and soon this district became the center of kimono stencils supplying nearly all of the stencils used throughout Japan. It must not be forgotten that behind each kimono with its beautiful patterns, there are equally beautiful stencils cut by artisans of the past with great skill and artistry. Today, stencil cutting is a dying art as there are only a very few masters of this craft still living.

To obtain fine stencils, the paper for them must be prepared in a special way in order to minimize shrinkage or stretching during the printing operation. This paper is made from two or three layers of the highest quality mulberry paper (washi) which are laminated together with persimmon juice, kakishibu. This juice is made from fermented, bitter persimmons kept in a vat for several years to extract the maximum tannin content possible. The laminated sheets are dried in the sun and then smoked in a kunenjo, a special smokehouse where sawdust is burned to produce a dense smoke. The smoking process lasts a week to ten days during which the resin in the smoke will adhere to the paper. This process of painting with the kakishibu juice, drying in the sun and then smoking is repeated many times over a period of about six months. Eventually, the persimmon tannin turns a deep brown color, and the paper becomes waterproof and extremely strong and durable.

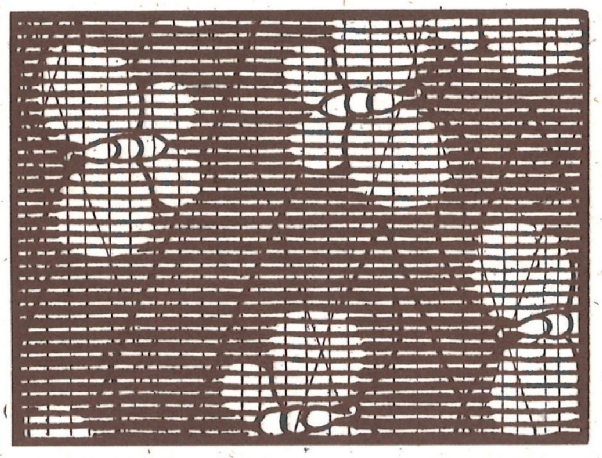
Traditional stencils were cut in several distinctive patterns using different tools:

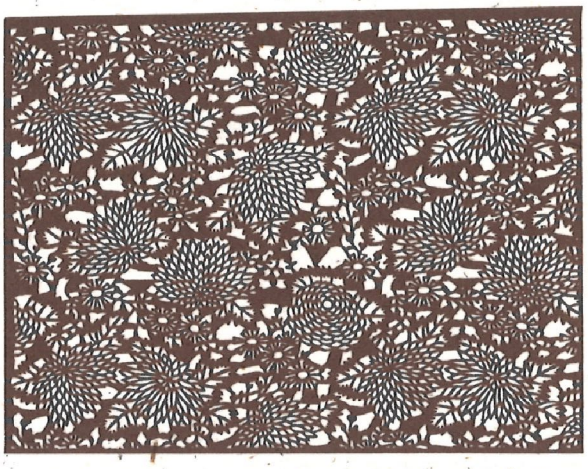
KIRIBORI – This method used an awl-like knife with a very fine, semi-circular shaped blade to create patterns characterized by thousands of tiny dots. Certain designs, such as the samekomon or "goose-pimple pattern", used as many as 600 holes per square inch. Modern stencil cutters create these patterns using metal punches (see dogubori on page 6).



TSUKIBORI – This method uses a thin-bladed knife which is moved up and down like a jig-saw blade to create a variety of waveform, checkered and floral arabesque patterns.

HIKIBORI – also known as shimabori – This is a very difficult technique using a thin-bladed knife which is pulled to cut extremely fine and delicate parallel lines which create striped patterns possessing a moire-like interplay between positive and negative spaces. Some patterns required as many as 20–25 stripes, ie., 40–50 cuts per inch.





DOGUBORI – This method uses various shaped metal punches traditionally made by the stencil-cutter himself, but nowadays, machine made, to cut various patterns using, for example, cherry blossom or chrysanthemum petal shapes as well as round dot shapes to make up the overall design.

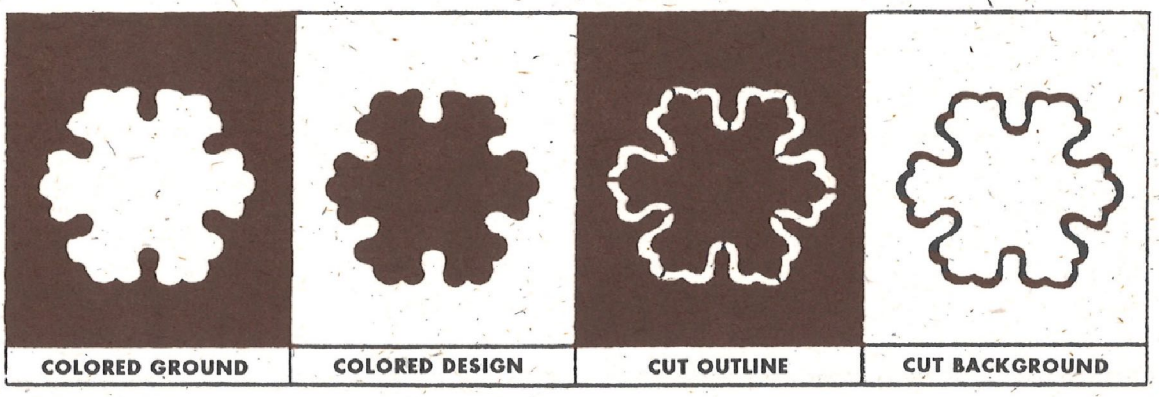
Large, bold or very simple patterns were often cut one at a time. However, because of the great amount of time required, very delicate or intricate patterns were cut in multiples of 6 to 12 at a time. The sheets of stencil paper were held in place during the cutting operation by means of pins piercing the sheets outside the design area near each of the four corners. These perforations would later serve as registration marks when printing.

Many of the stencil designs, especially the delicate stripes of hikibori style, required reinforcement and support to avoid distorting the pattern during the printing operation. Traditionally, this was accomplished by very carefully sandwiching fine silk threads between two identically cut stencils using kakishibu juice as glue. This process was called ito-ire meaning "thread insertion". Modern artists have eliminated this laborious and time-consuming process by using lacquer as glue to carefully adhere silk gauze (sha) to the cut stencil.

Stencils were generally all a standard width since they were designed to print traditional kimono cloth (kohaba shirokiji) which was woven on narrow looms about 14" wide. The length of the stencils varied depending on the intricacy of the pattern. The very fine komon dot patterns were often much shorter than others and could require as many as fifty separate registrations down a 10 meter bolt of fabric (tan).

STENCIL CUTTING TECHNIQUE

There are four basic approaches to pattern design in traditional Japanese-style stencil cutting. They can be used alone or in combination to express the feeling of depth or achieve a variety of textural effects. Remember that the resist paste will be applied to the fabric through the cut- out areas of the stencil; hence, it is these areas of the fabric which will remain white (or un-dyed).



It's pretty obvious from the designs above that, except for the "colored-ground" approach, all of these pattern styles have some "island areas" not directly connected to the surrounding portions of the stencil. These areas must be correctly held in position with respect to the rest of the stencil at least during the cutting operation. This is accomplished by leaving thin, narrow pieces of stencil paper in place to serve as connectors or links between these island areas and the rest of the stencil. The Japanese call these tsunagi; we'll simply call them "bridges".

It is important to realize that these bridges will be apparent in the design of the finished fabric after dyeing. Some consideration should be given to this problem of placement of bridges so as not to detract from the overall design. Of course, the best solution is to somehow very cleverly make these bridges part of the design itself.

Western fabric printers, however, solved this bridge problem by using a silk screen to provide backing and support for island areas. Japanese stencil printers had, of course, developed a solution much earlier with the ito-ire process described previously. This has evolved into a process of gluing silk gauze to an already cut stencil and then removing the bridges, a method which will be described below.

In situations where the stencil design is not part of a continuous repeat, for example, a T-shirt design or furoshiki or noren design, another alternative is available. This involves leaving the bridges in place and stabilizing the stencil by using a piece of metal screening stretched on a wood frame placed on top of the stencil. This prevents the stencil from distorting during the paste application procedure, after which the screen and stencil are removed and the bridge areas are filled in with the tsutsu-gaki technique.

MATERIALS NEEDED

TRACING PAPER — Japanese minogami or other light-weight tracing paper
KATAGAMI STENCIL PAPER — also called shibugami
LAY-OUT WAX — Japanese saikuro or other wax, or remountable spray glue (see step 3)
SILK GAUZE — Japanese sha
OLD NEWSPAPERS
LACQUER & LACQUER–THINNER or SHELLAC & SHELLAC–THINNER (denatured alcohol)
STENCIL KNIFE or CUTTING PUNCHES
CUTTING BOARD — plywood or vinyl
IRON
BRUSHES — a medium size (1-2 inches) flat paint brush for applying lacquer or shellac and a medium size #5 or #6 sumi style brush for un-clogging areas.
PLATES — for mixing lacquer
STRAIGHTEDGE — a yard stick or ruler

PROCEDURE

1. CREATE YOUR DESIGN. The size of the stencil is an important design consideration, as large stencils are quite difficult to handle. The size also depends on the size of the fabric. With Western width fabrics of 90 cm (36 in.) and 115 cm (45 in.), it's best to divide the selvage-to-selvage width into halves or perhaps thirds and use this as one dimension of the stencil. Traditional Japanese fabric is narrow (35 cm = 14 in.) and this makes a convenient width for the stencil.

Stenciling is a repetitive process, ie., the same design is repeated over and over again down the length of the fabric using linked units that form a continuous pattern. Remember that the design unit exists in relationship to other units, ie., it must connect or "register" from side to side and top to bottom in order to retain the sense of continuity.

2. TRANSFER DESIGN TO TRACING PAPER. Draw or trace the design onto lightweight tracing paper. The Japanese use a very lightweight "rice" paper called minogami, but any tracing paper will do.

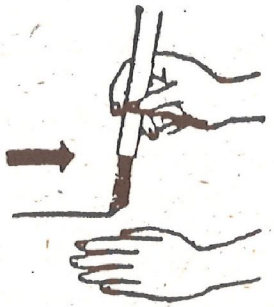
3. WAX THE BACK SIDE OF TRACING PAPER. Put an even coat of wax on the back side of the tracing paper. The Japanese use a special, sticky, low-melt-point wax called saikuro. It conveniently comes in stick form. You can try using paraffin, beeswax, microcrystalline wax or graphics- type paste-up wax as a substitute. Even remountable spray glue will work. The important thing is that the paper be held firmly to the stencil and be easily removable at some later time. All of these waxes become hard during cold weather. Be careful not to tear the tracing paper when applying.

4. CUT STENCIL PAPER TO SIZE. The paper should be the same size as your design plus about 1 1/2-2 inches (3-5 cm) extra border around the design. This extra area, which is called enba in Japanese, plays a role similar to that of ink wells in silk screen printing, in this case serving as a place to hold extra paste between registrations.

5. ADHERE TRACING PAPER TO STENCIL. Carefully center the tracing paper, waxed side down, on the stencil paper and using the tips of the fingers, rub well to adhere. Make sure there are no

wrinkles or bubbles and that the edges are straight and lined up correctly with the edges of the stencil paper. (Note: some artists prefer to skip this business with the tracing paper entirely and sketch their design directly on the stencil paper).

6. CUT THE STENCIL. Lay the stencil paper on a piece of soft wood (like plywood) or on a vinyl cutting surface. A wide variety of cutting tools can be used. Best, however, is a stencil knife with a sharp, thin, narrow blade. It's important to hold the knife straight up and down when cutting. If you cut at an angle, the size of the pattern tends to be smaller on the back of the stencil paper than on the front. Fine lines in particular have a bad habit of being perfectly clear on the front and yet disappearing entirely on the back. To reduce fatigue and gain a certain sensitivity to the "feel" of the knife, try to get in the habit of always pulling the knife toward you using only the tips of the fingers to apply force. It's better to re-orient the whole piece of stencil paper than to try to cut at a weird angle.



Be sure to begin by cutting any finely detailed areas first. If you start with the large areas, the rest of the stencil will be more difficult to cut because the paper will no longer be as stable and will shift around a lot. Start with the detail areas being very careful not to cut any of the "bridges". After all areas are cut out, remove the tracing paper by simply peeling it off. If it's really stuck down, you can use a warm iron to loosen it. If the stencil paper is sticky with wax, use the iron, too, along with some old newspaper to remove the wax as it will interfere with adhering the silk gauze later on.

You can get an idea of what your design will look like by placing it on a sheet of white paper. Except for the "bridges" this is how the fabric will look dyed one color. If you choose to use the "metal screen" method of stabilizing the stencil during paste application, you can skip to the STENCIL PASTE APPLICATION section.

7. CUT SILK GAUZE TO SIZE. Handle the gauze carefully stretching only in the warp direction (parallel with the selvage). If you put tension on the gauze across the weft (ie., at right angles to the selvage), the warp threads will become distorted and make the piece unusable. When kept folded for a long time, the gauze will get wrinkles which make it very difficult to handle when laying it on the stencil paper. Wrinkles can be removed by spreading the gauze out on newspapers and then dampening it with a mister or sprayer. Stretch it carefully (in the warp direction only), place more newspapers on top and weight it lightly for about 20 minutes.

Cut the gauze the same size as the stencil paper making sure to cut straight. If the gauze includes part of the selvage, position it off the edge of the stencil paper. The selvage is usually thicker and therefore more difficult to adhere to the stencil paper.

8. MIX UP LACQUER. The Japanese use a variety of glue-like substances to adhere the silk gauze to the stencil paper. The easiest to obtain in this country is lacquer which can be purchased at any large hardware store or as "airplane dope" in hobby shops. (Note: if you have a choice of colors, choose black; it makes things easier to see later on). Shellac can also be used, but is weaker and tends to break down sooner with repeated use of the stencil.

Proper consistency for the lacquer (or shellac) is very much a matter of learning through experience. If the lacquer is too thin, it won't have enough body to hold the silk gauze in place and the gauze will peel off or wrinkle up despite hours of work trying to get it to stay down. If the lacquer is too thick, it will clog up the mesh of the silk gauze and dry before you have a chance to do anything about it.

Pour some lacquer out onto a flat plate and, as a general rule only, adjust with lacquer thinner to about the consistency of light cream using your brush to mix very thoroughly. If you need to add thinner, don't expect to add the same amount each time as the consistency of lacquer changes through evaporation each time you open the can or jar.

9. START ADHERING THE SILK GAUZE. Place the cut stencil on several layers of old newspaper and position the silk gauze on the stencil paper. In your left hand, take a straight edge (yardstick, ruler, etc.) and place it on a line a little to the left of the vertical centerline of the stencil (the straightedge should be at right angles to the selvage of the gauze). Press down firmly so that the gauze can't be moved, but without causing the mesh to distort.

10. APPLY LACQUER TO THE RIGHT HALF OF THE STENCIL. Take the brush in your right hand and, starting at the top of the stencil and brushing from the centerline in a left-to-right direction only, apply an even coat of lacquer. Work quickly. Don't worry about clogging up open areas of gauze. Be sure to apply the lacquer everywhere including open areas and the edges of the stencil (enba).

11. APPLY LACQUER TO THE LEFT HALF. After you've finished painting the right half, take the straightedge off and start brushing lacquer on the left half. In order to avoid the possibility of distorting the gauze, don't move the stencil. Repeat the procedure above, except brush in a right-to-left direction only. No further need to hold the gauze down at this point.

12. OPEN UP CLOGGED AREAS OF MESH. After you've finished applying lacquer to the entire stencil, remove and discard the top sheet of newspaper underneath. Put the stencil on a new sheet and brush lacquer over the whole stencil for further reinforcement. Brush stroke direction is unimportant. There should no puckers or wrinkles in the gauze at this point.

By looking at the surface of the stencil from a low angle, what should be open areas will appear "shiny" if the mesh is blocked up with lacquer. Put some lacquer thinner on a plate and soak your brush in it as if you were cleaning it. Squeeze out excess thinner on the edge of the plate and brush quickly on the blocked areas of mesh. The lacquer will melt off and soak into the newspaper below. Keep moving the stencil around so that clean areas of newspaper are always underneath where you're applying the thinner. Be very careful not to apply so much thinner that the gauze separates from the stencil paper. Using the tip of the brush seems to be most effective for this procedure.

13. CUT "BRIDGES" AND REMOVE. After all the blocked up areas of mesh are opened, flip the stencil over. Place it on your cutting surface which has been protected with a few layers of newspaper. With your stencil knife, carefully cut the bridges trying not to cut the gauze. This will be a very messy operation if the consistency of your lacquer was too thick to begin with. Learn your lesson.

14. REINFORCE WITH LACQUER ONE MORE TIME. After all the bridges are cut, flip the stencil over, gauze-side up, and apply a final, slightly thicker coat of lacquer evenly over the whole stencil. Again, brush stroke direction is unimportant. Open up the clogged areas of mesh once again using the same technique described above. Hang the stencil up by one edge to dry for at least 30 minutes. Trim off any gauze which may be extending over the edges. The stencil is ready for use.

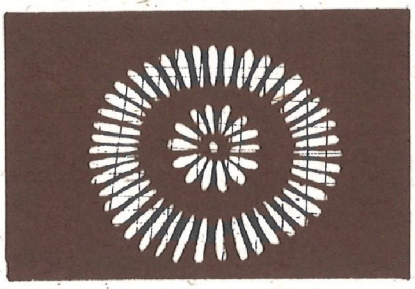
15. CLEAN BRUSHES. If you ever expect to be able to use your brushes again, spend a lot of time to make sure all traces of lacquer are removed from the bristles. The solvents in lacquer and lacquer thinner are particularly strong and nothing ruins a brush more quickly than leaving lacquer in it. Rinse with lacquer thinner and dry with paper towels at least 2-3 minutes.

STENCIL PASTE APPLICATION

These directions are oriented toward the situation where one is working with a stencil design to be repeated down a length of fabric. Techniques for projects that are on a smaller and more compact scale such as noren (space dividing curtains) or furoshiki (a cloth to wrap bundles in) can be easily adapted from these instructions and are discussed in more detail at the end of this section.

In traditional Japanese stencil printing, the fabric is adhered with a thinned-down nori paste to a long, smooth, unfinished wooden board, a little wider than the fabric itself and about 1/2" (1.2 cm) thick. A standard print table for screen printing could be used as a substitute; however, unlike screen printing, padded printing surfaces are a disadvantage for stencil printing. A better substitute would be a smooth, bare plywood or Formica table top. In the directions below, we'll simply refer to this printing surface as "the board".

MATERIALS NEEDED



NORI PASTE

OLD NEWSPAPERS

FINE SAWDUST

DRY SOYBEANS

PRINTING BOARD or PRINT TABLE— (see text)

SCRUB BRUSH — a small soft bristle brush is best.

SPATULA (for applying printing-board paste) — the Japanese use a metal scraper. A very good substitute is a wide- bladed, metal spackle knife, the kind that's used to cover seams in plasterboard. Should be available at any large hardware store.

BRUSHES — soft bristle ones are best, as wide as you can afford.

CARDBOARD TUBE — as wide as your fabric and at least 2" (5 cm) in diameter.

SINK WITH RUNNING WATER — must be large enough to lay stencil perfectly flat on the bottom.

T-PINS or SMALL HAT PINS.

HERA — this is a wooden spatula used to gently force the nori paste through cut stencils onto the fabric. Hera are available with or without a narrow rubber blade (1/8" thick). Modern practitioners prefer the rubber-bladed models. Traditional artists use the wooden blade only. A small silk- screen or window cleaning squeegee could possibly be substituted for this tool.

SMALL BROOM or LARGE BRUSH (for popping air bubbles in paste) — the Japanese use a small rice-straw broom called a hoki for this purpose. Possible substitutes would include any soft-bristle broom or perhaps a wide, stiff bristle brush. Don't use those small "wisk brooms". Their bristles are too stiff for this purpose. Look for something softer.

HARITE — these are a pair of clamps set with small nails. They are attached to the ends of the fabric to keep it in open width while drying or while painting on with water, dyes, soybean juice, etc. The harite are then tied with rope to some convenient support point. It's pretty easy to construct your own harite at home. Simply take 1" by 2" wood strips about 4" (10 cm) longer than the width of your fabric and, to

one side of the centerline or the other along the length, pound small nails in every 3/4" (2 cm) or so (if you can find them, stainless steel or copper nails are the best). The nails should go all the way through so that the points extend up about 3/4" (2 cm). Take a hammer and bend these points over until almost flush with the surface of the board. They shouldn't extend over the edge, however. Drill a hole in each end and tie a length of clothesline between the holes. Attach your fabric by hooking it over the nails.

BAMBOO STRETCHERS (SHINSHI) — these are resilient bamboo rods with needle points set in each end. Keeps fabrics stretched with even tension for drying, painting, etc. These could be constructed at home by setting small nails in the ends of wooden dowels. Other possibilities would include working with fiberglass rods (like those used for supports in mountaineering tents) or some type of metal rod. If none of these are available, simply mount the fabric on some sort of frame for drying, painting, etc.

KITCHEN BLENDER

METAL SCREEN — (optional; see text)

PROCEDURE

1. PREPARE THE BOARD. Old boards are likely to be dusty, so be sure to wash the board using water only (no soap). A small scrub brush can be helpful in getting off any stubborn dirt or dust. Let it dry out of the sun to avoid warping. New boards should also be scrubbed to remove any natural pigment or alkali which might leach out and affect the dye application later on.

2. PREPARE THE PRINTING BOARD PASTE. By using the nori paste and thinning it down quite a bit to roughly the consistency of house paint. A small amount is all that's necessary. Figure 1/2 cup for each square yard of fabric (250 ml per square meter).

3. APPLY PASTE TO BOARD. Starting in the upper left hand corner, lay a dribble of paste about 1–2" (3–5 cm) wide for 3 feet (1 meter) or so along the top edge of the board away from your body. Using both hands on your spatula, start in the upper left corner and pull the paste directly toward you making sure to apply even pressure to get a thin, even layer about 1/32" (1 mm) or less in thickness. Hold your spatula diagonally to the board so that the lower left corner is closest to you. This prevents leaving a dribble on the left side as you pull the paste toward you. The bulk of the paste is then naturally drawn to the right as you continue spreading. If you run out of paste in a certain area, add some more and spread as above, always pulling the paste toward you.

4. ALLOW PASTE TO DRY. After spreading the paste over the whole board, allow it to dry for at least 30 minutes. If you are working on an unfinished wooden board, apply another coat of paste at this point. Most of the first layer will have simply filled in the grain of the wood. Allow the second layer to dry also.

5. MOISTEN PASTE. There are several different ways to moisten the printing-board paste in preparation for laying down the fabric. Probably the easiest is to simply use a large, dampened

brush. However, a slightly wet washcloth or a plant sprayer or mister can also be used. Apply just enough water so that the paste is fairly tacky, kind of like honey stuck to your fingers. Too much water creates problems later on since the fabric may absorb some of the printing–board paste from underneath and then not dye evenly. Whatever method you choose, try as much as possible to apply the water evenly over the whole board.

6. STICK THE FABRIC TO THE BOARD. Carefully, roll the fabric onto the CARDBOARD TUBE keeping the salvages even and straight and the fabric taut and wrinkle-free. Place the rolled-up fabric at one end of the moistened board about 2" (5 cm) from the edge nearest you. It is essential that the fabric be at a right angle to the edge of the board. Very carefully pat down and smooth out the first part of the fabric. Continue rolling out the rest of the fabric to the end keeping tension on the roll while adjusting its position so that the selvage remains parallel to the edge of the bard. Pat the fabric down to remove any trapped air pockets and smooth out any wrinkles.

7. SOAK STENCIL PAPER IN WATER. Soak the stencil in water for at least 30 minutes making sure that it remains flat while soaking. Take it out and blot off any excess moisture by placing it between several layers of newspaper. A damp wash cloth can also be used. The dry katagami stencil paper is stiff and brittle; however, after it's been soaked, it becomes quite soft and pliable with almost leather-like durability. Soaking does not hurt the stencil and it's easiest to just start soaking the stencil as soon as you begin work.

8. FOLD UP THE LEFT BORDER OF THE STENCIL. This will become important later on as you repeat laying the paste down the length of the fabric. Make the crease of the fold exactly along the left edge of the cut portion of the stencil. The goal here is to make sure that the left border of the stencil paper (enba) does not come in contact with the fabric surface. If the stencil paper is so soft that it wants to flop back down, try inserting T-pins at the top and bottom near the very left edge of the border to serve as tiny props or supports.

9. PLACE THE STENCIL ON THE FABRIC. The crease-line of the fold you just made will be your registration line. Start in the upper left-hand corner. With your right hand, hold the right edge of the stencil up and position the registration line at the left edge of the fabric and at a right angle to the selvage. Carefully lower the rest of the stencil to the surface of the fabric.

10. APPLY STENCIL PASTE THROUGH STENCIL FOR THE FIRST REPEAT. Have the container of nori stencil paste close by. If you're working on wide fabric, put some kind of scrap cloth underneath the container if you set it on the fabric. Be careful not to slop any paste on the fabric where you don't want it.

Using your hera squeegee, place a dollop of the nori paste in the middle of the stencil. With your left hand, hold the stencil firmly in position so that it doesn't shift around. Hold the hera in your right hand, tilt it over at an angle leaning toward the direction of your stroke and spread the paste evenly over the entire stencil using a few broad strokes. Try to think of the hera as a rigid extension of your hand, almost as if you were using the bottom edge of your hand itself to spread the paste. If you hold the hera straight up and down, the layer or nori paste will be too thin. It should be about the same thickness as the fabric itself. After you have finished spreading the paste, lift the hera off the stencil by moving it to a border area and then slowly tilting it up from back to front. This avoids the problem of the stencil sticking to the hera as you lift and messing up your freshly laid paste.

To lift off the stencil paper, support the folded-up border with your left hand and with your right hand, very carefully peel up the stencil starting from the right edge and working back toward the

registration line. If you discover paste stuck to the underside of the stencil, it has to be cleaned off before doing another repeat. Otherwise, the design is sure to be indistinct in the finished fabric.

To clean the stencil, put it back in the sink and soak it in water for a minute or so. Very gently brush off any paste using your fingers or a soft-bristle scrub brush. A spray attachment on the faucet helps immensely for this procedure. Don't scrub too hard or you run the risk of ripping delicate parts of the stencil. Make sure the stencil is completely clean, blot dry as before and you're ready to continue.

11. APPLY PASTE FOR NEXT REPEAT. If you are stenciling a continuous pattern, don't forget about registration. Position the stencil so the registration line matches up correctly and actually overlaps the previous repeat slightly, about 1/32" (1 mm). The left border should be folded up so as not to ruin the paste from the previous repeat. Don't forget to re-insert your T-pins if necessary after washing the stencil. Apply the paste as in step 10 and continue in the same manner to the end of the fabric.

After a bit the border areas of the stencil will begin to dry out while the area where the paste is laid remains moist. This results in a slight warpage and the stencil won't lay flat. When this happens, it's time to soak and clean the stencil again.

Working with wider fabrics is more difficult because more than one repeat is required to span the width from selvage to selvage. With the narrow Japanese fabrics, only one border need be kept folded to prevent ruining the paste from the previous repeat. With wider fabrics, however, two sides of the stencil face previous repeats and so two borders must be kept folded up forming a kind of box shape corner where the two borders meet. This is obviously a bit trickier and involves more work. It's important to consider the layout of the stencil repeats on the fabric before you begin.

12. BRUSH THE PASTE TO POP AIR BUBBLES. Take your broom or brush and wet the end of the bristles very slightly. Sweep or brush lightly over the surface of the paste to draw up and break any air bubbles which may have been trapped in the paste. Use a toothpick or small stick to patch any holes in the paste or if you have a tsutsu with a fine tip handy, you can use it as well.

13. SPRINKLE SAWDUST ON WET PASTE. Sprinkle fine sawdust over the whole fabric. The sawdust will adhere to the wet paste and prevent it from sticking to itself or to an area to be dyed later should there be some accidental contact. If your sawdust has a lot of wood chips or shavings in it, be sure to use a sieve to filter these out while applying the sawdust.

14. REMOVE THE FABRIC FROM THE PRINTING BOARD. After applying the sawdust, carefully pull the fabric off the board or print table and attach the ends to harite. This may require two people, especially for larger pieces of fabric. Try to keep tension on the fabric at all times; the paste is still wet and wrinkling or folding the fabric at this time can lead to disaster.

15. APPLY WATER TO THE UNDERSIDE OF THE FABRIC. Turn the fabric over and gently slap the fabric to allow any loose sawdust to fall off. Then, with a wet brush, thoroughly scrub the back of the fabric. The areas without paste should be damp, not dripping wet. Don't get carried away. This procedure draws the paste through the fabric to the back side producing a stronger resist.

16. ATTACH BAMBOO STRETCHERS TO THE FABRIC. Attach bamboo stretchers (shinshi) from selvage to selvage across the underside of the fabric. You should have enough stretchers to have one every 10" (25 cm) or so. These stretchers prevent any puckering or wrinkling caused by different shrinkage rates between blank areas and areas with paste applied.

Bamboo stretchers, especially long ones for 36" (90 cm) or 45" (115 cm) fabric, are manufactured so that part of the bark of the bamboo remains on one side. When attaching the stretchers, make sure the bark side is on the outside. The stretchers break quite easily otherwise. This isn't as much of a problem with the shorter-length stretchers. Let the paste dry completely, at least 12 hours.

17. THIS NEXT STEP INVOLVING THE APPLICATION OF SOYBEAN JUICE SHOULD ONLY BE USED WITH INDIGO OR OTHER NATURAL DYES. DO NOT APPLY SOYBEAN JUICE IF YOU INTEND TO USE ANY SYNTHETIC DYE TO COLOR THE FABRIC!

BRUSH SOYBEAN JUICE OVER THE FABRIC. If the nori paste doesn't penetrate deeply enough into the fabric, the dyes will tend to bleed into areas which are supposed to be resist areas. The Japanese call this naku meaning "to cry" and they have a little saying to the effect that both the fabric and artist will naku (cry) if you don't brush soybean juice (gojiru) on your fabric. The soybean juice strengthens the resist and gives clear distinct edges to the pattern. It also helps prevent streaking and aids in dye penetration.

To make soybean juice (gojiru), place about 1 quart (1 litre) of water into an electric blender. To this, add roughly 10 ozs. (300 gms) soybeans (if you have a choice, use the "hard" variety of soybeans). Blend the mixture until everything is thoroughly homogenized. Strain this mixture through a filter cloth (old muslin works fine) to get soybean juice. This should be diluted with water to about the consistency of skim milk.

Before applying the soybean juice, take your broom or brush and lightly sweep the fabric to remove any loose sawdust. Then with a wide, flat brush, apply the soybean juice as evenly as possible to both the front and the back of the fabric using broad, sweeping strokes. Again, allow the paste to dry completely and you're ready to dye.

18. CLEAN AND DRY STENCIL FOR STORAGE. Place the stencil in the sink and clean off the paste as described in step 10. Remove from the sink and blot dry as before. Finally, place the stencil on clean, dry newspaper and allow to dry thoroughly before storing flat in a cool location.

Modifications For Non-continuous Designs

We mentioned this method briefly in the previous section. If the stencil is cut and the bridges left intact, adhering the silk gauze to the stencil to support island areas would not be necessary. However, some method of preventing the stencil from distorting during the paste application is still needed.This is accomplished by the use of a "metal screen". It consists of aluminum, copper or brass screening with a mesh size slightly smaller than ordinary window screen stretched over a silk-screen-like frame which is a little larger than the piece of stencil paper. After laying the stencil in the desired position, this screen is carefully placed on top and the paste is applied. Gentle pressure with the hera is all that is required. Enough paste should be applied to just cover the top surface of the screening.

After the paste has been applied, the screen and stencil are carefully lifted from the fabric and, if necessary, placed in the sink to be washed and soaked. The design areas which did not receive paste because they were blocked by the bridges can now be filled in using the tsutsu-gaki technique described in the next section. From this point, the procedure is identical to steps 12 through 17 described above.

This method lends itself well to small projects such as noren, furoshiki, wall hangings, pillow covers or even T- shirts. Since accurate registration is not a factor in this method, the time-consuming process of adhering the fabric to the printing board is not necessary. In fact, the fabric can simply be pinned or taped down to any flat surface for paste application. Staple or pin the fabric to a frame for applying water to the underside and for painting on the soybean juice.

A stencil reinforced with silk gauze can also be used with this method. In fact, many stencil printers find it easier since the metal screen helps keep the stencil from shifting around and reduces the chances of damage from over-energetic squeegeeing. If you intend to use your stencil for production printing, it's wise to go ahead and reinforce with silk gauze anyway. Your stencil will last much longer and you will save time in the long run by not having to go back and fill in bridge areas each time you print.

TSUTSU-GAKI TECHNIQUE

Both katazome and tsutsugaki are resist techniques that involve applying a paste resist to the fabric. There are, however, some important contrasts to be considered. Katazome reproduces a single, predetermined pattern by means of a cut- paper stencil. Paste is applied in one continuous operation. Tsutsugaki, however, is a "free-hand" technique. Paste is applied by squeezing it through a metal tip placed in a paper cone in much the same way that cakes are decorated with icing squeezed from a pastry bag. The design can be drawn freely and changed at will. Work can also be done in several stages. Tsutsugaki more closely resembles other, perhaps more familiar, resist techniques such as batik. Many artists find it easier and more enjoyable for this reason.

MATERIALS NEEDED

TSUTSU–NORI PASTE (preferably freshly made) — slightly thicker nori paste than used for katazome.

DRAWING PAPER & FELT-TIP MARKER

VINE CHARCOAL — for initial tracing of design onto fabric.

FUGITIVE TINT — used to draw or paint final draft of design onto fabric. Traditionally, the Japanese use aobana, a light-blue tint derived from the juice of the otsuyugusa flower. A red tint called akabana or sometimes, tohi, is also used. These have been replaced to some extent by a newly developed aobana pen, a fine, nylon-tipped marker with a synthetic light-blue fugitive ink. Any substitute you choose to try on your own should be tested to verify that it actually does wash out completely in water.

WOOD FRAME & PUSH PINS or BAMBOO STRETCHERS — to stretch fabric on while applying paste.

SMALL SUMI–STYLE BRUSH #0 or #1 LARGE SUMI–STYLE BRUSH #6 or #7

TSUTSU CONE & TIPS — Traditionally, these cones are made from the same smoked, persimmon-tanned paper as the stencils and are called shibutsutsu. Modern substitutes include both plastic and vinyl renditions. Although we personally have not tried them, typical European-style pastry bags used for cake decorating may be worth evaluating as a readily available substitute. Most large kitchen equipment stores carry these items.

The metal tips for the cones, called zagane, are made of brass and come in two shapes: "round" (marugane) and "flat" (hiragane). The "round" tip actually consists of a pair of brass tips: and inner tip (nakagane) and an outer tip (sakigane or kuchigane). The inner tip is pre-cut in a size to match the size of the cone. It is placed inside to give the tip of the cone added strength and rigidity. The outer tip is designed to then fit like a cap over the end of the cone. It comes as a solid brass tip, the end of which must be filed down with a file or on a whetstone to the desired size opening. The "flat" tip has a similar cone shape, but its opening is rather flat and oval shaped. It is designed to make broad lines used to fill in resist areas very rapidly. The opening of the "flat" tips come pre-cut to various sizes. The "flat" style needs no outer tip and is simply inserted into the cone for use. We will provide directions for using both the inner and outer tips of the round style. Users can determine for themselves whether using only the one tip has any advantages.

SMALL POINTED STICK — a chopstick is ideal. A sharpened pencil is a possible substitute.

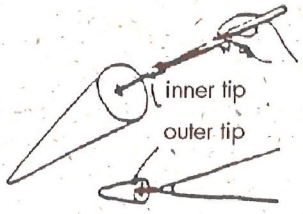
PROCEDURE

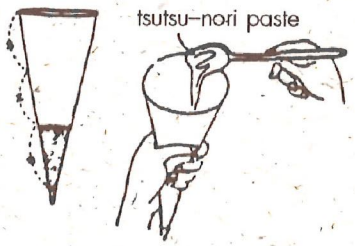
1. CREATE YOUR DESIGN. A full-size drawing of your design should be prepared. Use butcher paper or tape together smaller sheets to make one sheet large enough to fit your design. Go over the outline of your design in a dark felt-tip marker.

2. TRACE OUTLINES ONTO FABRIC. Tape or pin your drawing to a flat surface. Place your piece of fabric on top and secure in position with tape or pins. Carefully trace the outline of your design onto your fabric using the vine charcoal. Check out your design and make any corrections at this point. When you're satisfied with the design, retrace the outlines with the aobana pen or by using the small sumi brush and other liquid tints. If you have difficulty seeing through your fabric, try taping your drawing and fabric to a lighted window.

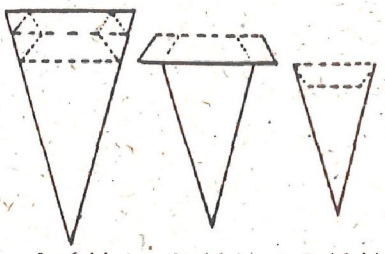
3. STRETCH YOUR FABRIC ON FRAME. Pin or staple your fabric onto canvas stretcher bars or use the bamboo stretchers (shinshi) criss-crossed from corner to corner across the back of the fabric. Where the two bamboo stretchers cross, use a small piece of twine to tie them together for stability. If your fabric is too long to use bamboo stretchers or to mount on a frame, simply pin or tape it to a flat table.

4. PREPARE YOUR TSUTSU CONE. Soak your cone in warm water for 15 minutes or so until it is soft and pliable. Take it out and blot it dry with an old dish towel. If it is a new cone, take scissors and cut the tip off so that the opening is slightly larger than the smaller end of the inner tip. If you are using a "flat" tip, simply drop it in and pull it firmly through the mouth of the cone. If you are using the "round" tip set, drop the inner tip into the cone and with a small pointed stick, push it so that it fits snugly. Slide the outer tip onto the end of the cone. It should also fit snugly and you can again insert the pointed stick into the cone to hold things in place while you push the outer tip on firmly.



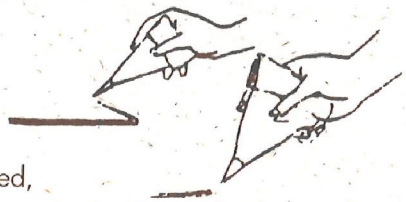


5. PUT PASTE INTO THE TUBE. Use a spoon or long stick to fill the cone with paste up to about 1/3 the length of the cone. Try to get the paste into the very bottom of the cone without getting it all over the sides. Too much paste will cause problems with overflowing out the top. Squeeze the cone gently with both hands and try to work any air pockets up toward the top of the cone. Fold over the cone one time, fold in the corners and again fold the top over. Secure this last fold with a small piece of masking tape if you desire.



6. APPLY PASTE TO FABRIC. There are a couple of different approaches to holding the tsutsu cone. Some artists lay the cone across the palm of the hand and apply pressure with a gentle, even, rolling motion of the thumb. Other artists grasp the cone from the "back" with the fingertips and press "forward" with the thumb. Experiment for yourself to find a comfortable position that allows good control.

Hold the cone over the paste bowl and squeeze gently to eliminate any air bubbles in the tip. The goal is a continuous, uninterrupted flow of paste. If your design is intricate or complicated,



it's a good idea to begin by placing a dot of paste inside each area you want to cover. It's quite easy to put paste where it doesn't belong once you get going. If you're right-handed, start working in the upper left hand corner and work from left to right, top to bottom. Follow the tinted outline holding the cone at about a 70° angle. Try not to lift the tip from the fabric. Instead, try to get a sense of pressing the tip into the fabric so that the paste adheres well. When you want to stop, hold the cone straight up, stop squeezing and press the tip into the fabric. This will cut the flow of the paste and you can lift the cone without leaving a dribble.

After you have finished outlining, switch to a larger "round" tip and apply paste next to the first line making sure to overlap slightly. Large areas can now be filled in with the "flat" tip or by using your basic kindergarten finger- painting technique to spread paste around. Try to get the layer of paste as even as possible. Really large areas can be filled in by using a hera squeegee to spread paste.

From this point on, the procedure is identical to the STENCIL PASTE APPLICATION instructions starting from step 12. BRUSH THE PASTE TO POP AIR BUBBLES.

Removing Paste from the Fabric

1. SOAK FABRIC IN WARM WATER. Remove your fabric from bamboo stretchers and harite if you used them for drying. Otherwise, fill a large wash basin or tub with warm water and carefully immerse the fabric. If you're dealing with a long length of fabric, use an accordion fold approach to neatly place the fabric in the tub. Don't crumple the fabric up. The nori paste will take a while to soften up. If the water becomes highly colored because of excess dye, drain and refill a second time, and so on until you get a clear bath of water.

2. STRETCH FABRIC TO LOOSEN PASTE. When the nori paste does begin to loosen up, don't try to peel it off by scraping or rubbing. Instead, try stretching the fabric in the bias direction (diagonally from selvage to selvage). This tends to separate the paste completely without leaving any paste embedded in the fibers.

3. FINAL WASH IN WARM WATER. When all the paste has come off, run the fabric through a wash cycle or hand wash. Dry the fabric by stretching between harite. If you decide you need bamboo stretchers too, remove them before the fabric is completely dry as they tend to leave stretch wrinkles.

A Note About Dyes and Pigments

Nori paste is unfortunately a water soluble resist and some attention should be given to a suitable choice of dyestuffs. Most dyes designed to be applied from a dyebath require boiling or long immersion times. An exception to this is indigo and the Japanese make extensive use of this dyestuff. Do not allow the pasted fabric to remain in the indigo dyebath longer than 1 to 2 minutes at the most. The fabric would then be allowed to oxidize, and dried thoroughly before the next dip.

The other alternative is to use a dye or pigment product which can be applied directly.