



BISHOP MUSEUM  
Art Conservation Handout

## THE CARE OF TAPA

### Introduction

This handout is a summary of steps which can be taken at home to insure a longer life for your tapa. By knowing what can harm your tapa, it is possible to take steps to avoid damage before it occurs. Combined with an understanding of how tapa is constructed, we have a better sense of how it can be preserved. The emphasis of the handout is towards problems which we face most often here in Hawai'i: insects, excessive light, high humidity, dust, and acidic storage and mounting materials.

Tapa, also known as barkcloth, can be loosely defined as a material made from the inner bark of shrubs or trees that has been softened and expanded into thin sheets by a process of soaking and beating. Surface decoration can be beaten into the cloth during manufacture or can be painted onto the finished cloth. Although tapa has been made in many parts of the world, the emphasis of this handout will be on tapa made in Polynesia. Within Polynesia, the art of tapa making was most refined in Hawai'i. Although this art was almost lost in the early 20th century, Hawaiian tapa making is presently undergoing a revival as contemporary artists' recreate tissue-thin sheets with a rich variety of colors and textures.

The popular tapa of Samoa, Tonga and Fiji continues to be made today and can still be found commercially. Although smaller pieces are made, tapa from these areas is often constructed of individual pieces of processed bark pasted together to form large sheets with bold application of earth colors onto the finished cloth.

### Causes of Deterioration

Because tapa is constructed of organic fibers, it is susceptible to damage from insects, mold, acidic pollutants, extreme heat, light, and dust. The following is a summary of how these forces work to accelerate deterioration of tapa and steps which can be taken to limit them. You should begin by examining your tapa and the area where it is stored or exhibited to see if any of the following problems can be eliminated.

### Insects

Bugs are a major source of damage to tapa. Insects will eat tapa fibers themselves as well as the starchy paste often used during manufacture. The tapa should be examined periodically for the presence of holes and frass (fine pellet or sawdust droppings). If an infestation is discovered, the tapa should be bagged and PRCC should be called regarding the procedure for freeze sterilization. We generally do not recommend the use of chemical fumigants.

When examining your tapa for insects, note the large, slightly irregular, oval, smooth edged holes which extend periodically through only a single thicknesses of bark.

These holes are not insect damage but are from branches which have disrupted the bark during growth.

## **Humidity**

Relative humidity is a measure of how much moisture is in the air. Tapa has the ability to absorb and desorb moisture as the humidity goes up and down. For this reason, very low humidity is not good for tapa as it will cause the fibers to become brittle. Constant swings in humidity are harmful because, in time, break-down and weakening of the fibers will occur. Perhaps the biggest problem in Hawai'i is the growth of mold due to the presence of excess moisture in the air. Some types of mold can grow with humidity as low as 65%. As our humidity in Hawai'i is often above this, steps should be taken at home to avoid mold growth.

Mold is a problem with tapa because it is visually disfiguring and will weaken the fibers. Mold grows best given the following conditions: high humidity, lack of air circulation, and the presence of food such as dust or oils to grow on. Mold can be avoided by keeping your tapa away from damper rooms such as bathrooms and away from areas where leaks or mold have been a problem in the past. Air circulation in the room where tapa is kept can be increased by running fans and by routinely airing out closets and storage boxes. In rooms which do not have extensive air circulation, dehumidifiers can help to keep the humidity down.

We recommend plumbed dehumidifiers which will properly drain collected water automatically. Although some people have had good luck with closet heating rods, the wiring in your home should be checked before these are installed. A step as simple as leaving on a light bulb in the closet can create enough of an air current to deter mold growth. As a final preventive measure against mold growth, tapa should be kept clean of dust (see section below).

If mold is found, the tapa should be spread out onto a clean work surface and the fluffy mold growths lifted with a dry, soft, natural bristle paint brush. A vacuum nozzle should be carefully held above the area being brushed to collect the mold as it is lifted. The nozzle should not be allowed to contact the tapa surface directly. Staining from the mold will remain after vacuuming but removal of the spores will help to limit future outbreaks. You should always wear a protective dust mask and disposable latex gloves when handling moldy tapa. Because most vacuum cleaners throw a certain amount of collected materials back into the room during use, it is best to either use a wet-dry vacuum (which traps the dust in the water) or to vacuum moldy tapa outside. After cleaning, the tapa should be allowed to air out for a short while then should be returned to a dryer area than where it had been when it began to grow mold.

## **Acid Attack**

Tapa can be damaged when placed in contact with materials that give off acidic vapors. Many common household items such as wood, cardboard, paper towels, pvc piping and common tissue contain acidic materials that in time will cause discoloration and weakening of the fibers. Custom made "archival" materials such as mat board, storage boxes, tissue and paper are now available which do not contain acids. These materials can be purchased from the vendors listed at the end of the handout. When choosing archival storage materials, choose those that are both acid free and lignin-free.

For storage purposes, unbleached cotton muslin, white cotton or polyester/cotton blend sheets and towels can also be used to protect tapa as these materials do not contain acids. All of these materials should be well washed before they are used to remove sizing and old detergent.

### **Light**

Light is a form of energy. The energy in light can cause damage to tapa by weakening the fibers and by fading colors. Some types of light such as sunlight and light from fluorescent bulbs contain higher energy and are therefore more damaging than incandescent light. To lessen the damage caused by light, stored tapa should always be kept in the dark. Exhibited tapa should be kept away from direct sunlight and bright spot lights. Ultraviolet filtering acrylic sheeting such as Plexiglas® can be used with framed tapa to help filter out the more damaging high energy ultraviolet light. For more on light, please refer to the Conservation handout entitled "Light: Basic Principles and Practices for the Preservation of Art and Antiquities."

### **Dust**

Dust can damage tapa by causing unsightly stains and by attracting insects and mold. Tapa should be kept dust-free by properly storing in a box or, when exhibited, by protecting in a shadowbox frame with Plexiglas® or glass. Dust on the surface of tapa can be removed by laying the tapa out on a clean, dry surface such as a dining table. A section of clean nylon window screening (available at hardware stores) should be laid over the tapa and a vacuum used to clean through the screening. The screening keeps the vacuum from sucking up loose pieces or grabbing at the tapa. Alternately, the same technique can be used to remove dust as previously discussed to remove mold. For more on dust, please refer to conservation handout entitled "Dust: Its Effect on the Preservation of Art and Artifacts."

### **Storage**

The goals of safe storage are to avoid insects, mold, light damage, damage from acid vapors and damage due to mishandling and the creasing of folds. The following two methods are recommended for the long term storage of tapa. It is important to remember that no matter what precautions are taken, problems can occur with time. It is essential that all stored materials be examined at least once every six months.

### **Rolled Storage**

For large tapa, rolling is the safest storage method. By rolling oversized pieces onto the outside of a rigid roll, folds and creases can be avoided. The rolls can then be suspended from bars or stored within acid free boxes. Rolls with a diameter of at least 3" should be used; the larger the diameter, the better. Acid free rolls are recommended (see source list). If it is necessary to use a common cardboard roll, the outside of the roll must be carefully covered with aluminium foil or heavy weight polyethylene plastic sheeting to ensure that acid vapors do not migrate from the roll onto the tapa.

To roll the tapa, lay it face down on a clean surface then cover the top of the tapa with sheets of acid free tissue (see source list). The tissue will act as interleaving and additional padding for the tapa as it is rolled onto itself over the roll. The rolled tapa

should then be protected from dust and light by covering with acid free tissue or a well washed white cotton or poly/cotton bed sheet. The wrapping on the rolls can be secured with 3/4" wide twill tape.

In storage locations where mold is not a threat yet insects are, the rolls should be wrapped in polyethylene plastic bags or sheeting. If mold is a greater threat than insects, plastic bags should not be used as stagnant air encourages mold growth. All stored materials should be examined for mold or insect damage at least once every six months.

### **Flat Storage**

Smaller pieces of tapa should be stored flat in boxes. The boxes will provide protection from mishandling and from dust and light. Acid free boxes should be used (see source list). If acid free boxes are not used, the next best is to line common department store gift boxes with one of the following: unbleached cotton muslin, white cotton towels, cotton or cotton/poly bed sheets. All of these materials should be well washed before use. New sheets or muslin should be washed once in hot water with detergent then washed twice without any detergent. Older sheets and towels should be washed twice without any detergent.

Ideally, the storage box should be large enough to avoid folding of the tapa. Should folds be necessary, they should be padded with pillows of acid free tissue to ensure that creasing does not occur. As with rolling, the boxes in insect prone (yet mold free) surroundings should be bagged. The boxes should be checked for insects or mold at least once every six months.

### **Display**

#### **Acceptable Methods**

##### **Horizontal exhibition**

Smaller pieces of tapa can be displayed below glass on a desk or table top. The glass must be raised up from the surface of the tapa with small spacers as glass in direct contact with the tapa encourages condensation and mold growth and will eventually stick to the paints used to decorate the tapa. The tapa should be protected from possible acid migration from the table top by placing a sheet of thin Mylar® film or aluminum foil below the tapa (see source list).

### **Framing**

The optimum system for displaying most tapa involves vertical hanging within a shadowbox frame with a Plexiglas® or other U.V. absorbing acrylic sheet front. The advantages of framing include protection from dust, insects and light. In order to mount the tapa within the frame, any of the following methods can be used: draping, clamping or conservation mounting. Framed tapa should be hung away from direct sunlight or harsh spotlights and should be hung in drier parts of the house. The following steps should be followed in proper framing of tapa:

Only top grade, archival materials which are specified as acid-free and lignin-free should be used within the frame.

If a wooden frame is used, the interior faces should be coated to keep acidic vapors from migrating into the tapa. An excellent wood coating is Interprotec® 1000 clear epoxy boat resin (Interlux Corp., see source list). By simply oiling or waxing the

exterior faces of the wood frame, acidic vapors will be free to migrate out of the frame away from the tapa.

The reverse of the frame must be sealed with an acid-free board (Fomecor®, corrugated grey board or mat board can be used). The edges of the board should be taped to the reverse of the frame to hinder insect introduction into the tapa. A shadow box frame should be used. A shadow box frame will keep the Plexiglas® away from the tapa, allowing plenty of air circulation between the Plexiglas® and the tapa. Plexiglas® which contacts the tapa will lead to mold growth. In addition, Plexiglas® or glass which lays directly against the work may, in time, begin to stick to the surface paint on the tapa causing permanent damage.

Small bumpers should be used at the bottom, reverse of the frame to keep the back of the assemblage away from the wall, allowing air circulation behind the frame.

### **Draping**

One of the simplest methods for displaying tapa in sound condition is draping over a padded pole. The advantages of this method include the ease of set-up and take-down. The tapa is simply laid over a prepared wooden pole which can be hung from the wall or from within a large frame with brackets. As wood off-gasses acidic vapors, the bar should be coated with Interprotec® 1000 to protect the tapa. Other methods of protecting the tapa against acidic vapor include covering the wood where the tapa will lay with polyethylene plastic sheeting, Mylar®, or aluminium foil. The coated wood dowel can then be padded with polyester batting covered with unbleached muslin to safely accept the draped tapa. To avoid distorting the tapa over time, the drape of the tapa can be changed slightly, every six months.

### **Clamping**

Heavier weight, multi-layer tapa such as Samoan, Tongan and Fijian tapa can be hung by simply clamping along the top edge. Interprotec® 1000 should be applied to the inner surfaces of two 1" x 4" boards which should be cut slightly longer than the width of the tapa. One of the boards is attached to the wall; the second is used to clamp the tapa in place. Bolts at the sides and top edge of the boards (not through the tapa) are used to hold the boards tightly together. As an extra precaution, 1/8" thin polyethylene foam padding called Polyfoam® can be cut and hot-melt glued to the clamping faces of the boards (see source list). Over time, especially if the lower hanging portion of the tapa sways or swings a great deal, this method can result in weakening, and even tearing of the tapa, just below the clamped region. Only heavy weight tapa in excellent condition should be mounted in this manner. Inspect the tapa frequently to insure that the area below the clamp boards is not creasing, tearing or showing any other sign of weakness.

### **Conservation mounting**

Hanging mechanisms such as paper hinges and velcro can be applied to tapa to create a stable, long term, yet reversible mount. Conservation grade adhesives which are not available commercially are used for these systems. Bishop Museum Conservation Department or a conservation facility in your area should be contacted.

## **Unacceptable Methods**

### **Tacking, stapling or nailing to the wall**

Metal tacks, staples and nails will cause damage to the tapa. Damage is caused initially as holes are created when the hardware is pushed through the tapa. With time, these holes will enlarge, causing distortion of the tapa as gravity pulls it down against the tacks. Further damage will occur as the metal rusts or corrodes, leading to weakening and staining of the fibers. Tacks, staples and nails are all difficult if not impossible to remove from the wall once they are applied. Removing them to relocate, sterilize or clean the tapa will cause additional damage to the tapa. Insects and mold are likely to attack the tapa where it is in direct contact with the wall.

### **Sewing**

Stitching velcro or cloth backings to tapa is not recommended. Although this technique is often used for textiles, it is not appropriate for tapa which is an essentially solid sheet, without holes between woven elements as is found with textiles. With sewing, areas of weakness are formed as holes are made in the tapa where the needle passes through. With time, the thread holes will enlarge if the tapa sags on its mount.

### **Sandwiching**

Tapa should never be sandwiched in place by being pressed behind glass or Plexiglas®. The first reason for this is that moisture forms easily on both glass and Plexiglas®, allowing mold to grow in the tight air space between the glazing and tapa. In time, the paints used to decorate tapa which has been sandwiched will stick to the glass or acrylic sheet, causing permanent losses and damage.

### **Flattening**

Tapa which has been stored folded for long periods of time often sustains folds and creases across the surface. With care, folds and creases are possible to diminish although complete removal is not always possible. The following steps should be followed in order:

- It may be possible to remove the creases by simply unfolding the tapa and allowing it to lay flat for awhile. The tapa should be laid out on a clean surface where it can be left for at least five days. A dining table or bed can be used or the tapa can be draped over a padded rod.
- If creases remain, try flattening with the following method to be carried out on a flat, clean, dry surface:
- Test the colors on the tapa for water fastness using the following method: Dampen a Q-tip® swab with tap water. Press the swab into a paper towel to remove excess water until the Q-tip® is just barely damp. Find an inconspicuous place to test the colors such as at an edge. Press (do not rub) the Q-tip® onto a color area and allow it to sit in one spot for 30 seconds. Look at the swab to see if color has lifted onto it. If no color bleeds onto the q-tip, check the same spot with a slightly damper swab, wait 30 seconds again and check the swab for color bleeding. If the swab comes up clean,

that color can be considered stable enough for the flattening process. Each different color on the tapa must be tested similarly.

- If all colors prove to be colorfast, flattening can continue on a large, flat, clean and dry table which has been covered overall with plastic. Polyethylene plastic sheeting or strips of Saran Wrap® should be wrapped around the work table. You should also have on-hand rolls of all-white paper towels, scissors, a NEW fine-mist water sprayer (filled with distilled water), well washed cotton bath towels and numerous light-weight books such as Steven King paperbacks.
- Begin by choosing a 10" section of a single crease to flatten first. In a separate area away from the tapa, lightly spray distilled water mist onto one side of a paper towel. The paper towel should be just barely damp. Fold the barely dampened paper towel into a 3" wide strip and lay the strip directly over the crease. To allow the moisture to settle into the tapa before it all evaporates, cover the paper towel with a piece of Saran Wrap® and allow it to sit for 10 minutes. You may want to weight the paper towel lightly with a cotton towel.
- Remove the paper towel and Saran Wrap® from the crease. The tapa should feel as though it has relaxed a bit with the moisture. Lay down two clean, dry paper towels over the humidified crease area. Cover the paper towels with a cotton towel . Weight the covered humidified crease with books lined up side to side. It is essential that all areas that are dampened receive weights during drying. Leave to dry for at least 6 hours.
- After the flattened area is dry, remove the books and toweling and continue the process on an adjacent area. As you get accustomed to the system, larger areas can be done at one time.

Once the tapa has been flattened, it can be stored as outlined above or can be prepared for exhibition.

### Materials and Source List

Product	Supplier
Acid-Free Mat Board:	Hawaiian Graphics 1312 Kaumualii Street Honolulu HI 96817 (808) 841-7527
Acid-Free Boxes:	Bonjon Framing Supplies, Inc. 331 Laurelwood Road Santa Clara CA 95054-2001 (800) 345-4040
	Conservation Materials, Limited P.O. Box 2884 Sparks NV 89431 (702) 331-0582
	Conservation Resources International 8000-H Forbes Place Springfield VA 22151 (703) 321-7730

	Paper Technologies 25801 Obrero #4 Mission Viejo CA 92691 (714) 768-7497
	Light Impressions 439 Monroe Avenue Rochester NY 14607-3717 (800) 828-6216
	University Products P.O. Box 101 South Canal Street Holyoke MA 01041 (800) 628-1912
Acid-Free Tissue and Paper:	Conservation Materials, Limited P.O. Box 2884 Sparks NV 89431 (702) 331-0582
	Hawaiian Graphics 1312 Kaumualii Street Honolulu HI 96817 (808) 841-7527
	Conservation Resources International 8000-H Forbes Place Springfield VA 22151 (703) 321-7730
Acid-Free Rolls:	University Products P.O. Box 101 South Canal Street Holyoke MA 01041 (800) 628-1912
	Bonjon Framing Supplies, Inc. 331 Laurelwood Road Santa Clara CA 95054-2001 (800) 345-4040
	Conservation Materials, Limited P.O. Box 2884 Sparks NV 89431 (702) 331-0582
Acid-Free Fomecor:	Hawaiian Graphics 1312 Kaumualii Street Honolulu HI 96817 (808) 841-7527
	C2F 875 Waimanu Street

	Honolulu HI 96813 (808) 524-7070
Acid-Free Corrugated Board:	Bonjon Framing Supplies, Inc. 331 Laurelwood Road Santa Clara CA 95054-2001 (800) 345-4040
	Paper Technologies 25801 Obrero #4 Mission Viejo CA 92691 (714) 768-7497
U.V. Absorbing Plexiglas:	Min Plastics 921 Kaamahu Place Honolulu HI (808) 847-1511
Nylon Window Screening:	Any hardware store (i.e. Kilgo's 180 Sand Island Access Road Honolulu HI 96819 (808) 832-2200)
Polyethylene Plastic Sheeting:	American Pacific Enterprises 740 Moowaa Street Honolulu HI 96817 (808) 848-0555
Polyethylene Plastic Bags:	American Pacific Enterprises 740 Moowaa Street Honolulu HI 96817 (808) 848-0555
Mylar Film:	Conservation Materials, Limited P.O. Box 2884 Sparks NV 89431 (702) 331-0582
	Conservation Resources International 8000-H Forbes Place Springfield VA 22151 (703) 321-7730
	Hawaiian Graphics 1312 Kaumualii Street Honolulu HI 96817 (808) 841-7527
	Light Impressions 439 Monroe Avenue Rochester NY 14607-3717 (800) 828-6216
	University Products

	P.O. Box 101 South Canal Street Holyoke MA 01041 (800) 628-1912
Interprotec 1000:	Kilgo's 180 Sand Island Access Road Honolulu HI 96819 (808) 832-2200
Polyester Batting:	Any fabric store
Polyfoam:	GBC Boxes and Packaging 4478 Malaai Street Honolulu HI 96818 (808) 423-4111

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