The preparation and use of precoated Asian tissue for mending paper, books, and textiles

Weissman Preservation Center · Harvard Library

using

preparing

updated by C. Sokolowski—Weissman Preservation Center March 2024
H:\Conservation-New\Lab Procedures\Recipes\Remoistenable (or Solvent Set)

Preparation and use of remoistenable mending tissue (RMT)

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Tissue prep: gather desired mending tissues and Mylar sheets. The WPC uses mostly white and off-white Kozo machine-made roll tissues in weights from 3g/m^2 up to 13g/m^2. The tissue can be efficiently cut off the rolls and into 8”x 10” sheets by making sharp folds in roll tissue and cutting along folds with a Japanese paper knife. Gather the same number of 8.5” x 11” 3mil Mylar sheets and label each along the bottom edge with tissue grammage, type, vendor, and date using a Sharpie pen or photocopier.

Adhesive prep: make a fresh “brain” style paste ball from Aytex P wheat starch paste in the usual WPC manner with the usual quantity of paste powder (50mL beaker of powder to 100mL of deionized water). Prepare 400mL of 2.5% A4M methyl cellulose (10g of powder to 400mL of deionized water). Push the cooled brain paste through a strainer twice and dilute with about 250mL of deionized water. Mix the diluted paste and MC together and then dilute this stock mixture with the same volume of deionized water (i.e., 650mL for 1 part mix: 1 part water). This quantity is sufficient for about 150 sheets of tissue.

Assembly: paste out a continuous and even layer of mixture onto labelled Mylar sheet with a Japanese pasting brush. Drop the dry tissue sheet onto the Mylar by holding the tissue by its diagonally opposite corners in a “hammock” shape and allow the bottom of the hammock to touch the adhesive first in the center. If done correctly, the rest of the sheet will roll itself down and out to the edges completely. Avoid touching or tamping the tissue as this will push adhesive through to the front of the tissue. Set aside on a flat surface to dry overnight. It is recommended to start with the heaviest tissue and work to the lightest to build practice. Misting the heavier tissues (13g/m^2 and 10g/m^2) before dropping them on the adhesive is helpful.

Use: In most circumstances, the RMT is best applied by wetting it first and then placing it on the object. Brush out a little deionized water on a smooth dark colored tile or glass. Cut mending tissue in strips or free-form shapes with a curved-blade scalpel. Lift cut tissue piece from the Mylar with tweezers and lay it on the wet tile for a moment without letting go. Then place tissue on object. Tamp down with a brush or lightly burnish down through Hollytex and dry under a blotter square, plexi plaque, and weight.

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Preparation and use of solvent set mending tissue (SST)

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Tissue prep: gather desired mending tissues and Mylar sheets. The WPC uses mostly white and off-white Kozo machine-made roll tissues in weights from 3g/m^2 up to 13g/m^2. The tissue can be efficiently cut off the rolls and into 8”x 10” sheets by making sharp folds in roll tissue and cutting along folds with a Japanese paper knife. Gather the same number of 8.5” x 11” 3mil Mylar sheets and label each along the bottom edge with tissue grammage, type, vendor, and date using a Sharpie pen or photocopier.

Adhesive prep: prepare a quantity of 5% Klucel G in deionized water (w/v). Based on the Mylar sheet size described above, anticipate using about 8mL of adhesive coating per sheet. For example, to make 50 sheets of 8”x 10” mending tissue, 400mL of adhesive is needed (8mL x 50 = 400mL). Weigh out 20g of Klucel G powder and slowly mix this into about half the water. When all the powder has been added, fill the container to the 400mL mark. Let mixture sit overnight to allow the powder to fully gel and for air bubbles to disperse. For larger quantities, allow a few days for the mixture to gel.

Assembly: paste out a continuous and even layer of mixture onto labelled Mylar sheet with a Japanese pasting brush. Spray a generous mist of deionized water over pasted Mylar until adhesive is glossy. Drop the dry tissue sheet onto the Mylar by holding the tissue by its diagonally opposite corners in a “hammock” shape and allow the bottom of the hammock to touch the adhesive first in the center. If done correctly, the rest of the sheet will roll itself down and out to the edges completely. Avoid touching or tamping the tissue as this will push adhesive through to the front of the tissue. Set aside on a flat surface to dry overnight. It is recommended to start with the heaviest tissue and work to the lightest to build practice. Misting the heavier tissues (13g/m^2 and 10g/m^2) before dropping them on the adhesive is helpful.

Use: In most circumstances, the SST is best applied by wetting it with ethanol first and then placing it on the object. Brush out a little ethanol on a smooth dark colored tile or glass. Cut mending tissue in strips or free-form shapes with a curved-blade scalpel. Lift cut tissue piece from the Mylar with tweezers and lay it on the wet tile for a moment without letting go. Then place tissue on object. Tamp down with a brush or lightly burnish down through Hollytex and dry under a blotter square, plexi plaque, and weight.

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Materials and tools for precoated mending tissues

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Tissues:

- Tissue— *NAJ Toned Tengujo, Kozo 1.6g/m^2, off-white color, roll* (Hiromi)
- Tissue—*NAJ Toned Tengujo, Kozo 2g/m^2, off-white color, roll* (Hiromi)
- Tissue—*Haini, Kozo 3.5g/m^2, white color, roll* (Hiromi)
- Tissue—*Haini, Kozo 5g/m^2, white color, roll* (Hiromi)
- Tissue—*Tengujo, Kozo 5g/m^2, white color, roll* (Japanese Paper Place)
- Tissue—*Kizuki Kozo Cream, Kozo 6g/m^2, off-white color, roll* (Japanese Paper Place)
- Japanese paper "spatula"—*paper cutting knife* (Talas)

Adhesives:

- wheat starch paste—*Aytex P* (Talas)
- methyl cellulose—*A4M* (Hollinger, Metal Edge, Talas)
- Klucel G—*hydroxypropylcellulose* (Talas)

Assembly materials:

- wide pasting brush—*tsukemawashi* (Hiromi $$$) or generic *hake* (art supply stores ¢)
- misting spray bottle—*plastic* (houseware, hardware stores)
- shallow rectangular glass baking dish
- Mylar sheets—*3mil* 8.5"x 11" (Conservation Resources, Hollinger, University Products)
- dish towels for cleanup

Mending tools:

- scalpel—*a curved-tip blade (#10) is better* (Talas)
- metal ruler/straight edge—*without cork strip is better* (Talas)
- fine-tipped tweezers—*a hooked tip is better*, Miltex (Talas)
- water pens ok; ethanol-filled pens leave residue. Use dropper bottle for ethanol.
- black glazed ceramic tile (or other dark, smooth, non-porous surface)
- tamping brush (McClain's, Hiromi) Teflon spatula (Peregrine)
- Hollytex (Talas) squares, blotter (Talas) squares, 3 x 5 plexi plaques (plasticsupply.com), small drying weights (M. Glosser & Sons, Hollinger)

Tips and Guidelines for Mending with Remoistenable (RMT) and Solvent-set (SST) Tissues

Before Mending

- The area to be mended should be as planar as possible for best adhesion and alignment.
- Dry clean the paper surface around the tear to avoid embedding soil in the paper.
- Position the tear edges, making sure the shelf of the tear is properly aligned.

Mending

- Select a repair tissue with a tone that will be as invisible as possible on the object. A lighter tone is preferred to one that is darker than the object.
- Select a tissue as thin as possible to accomplish the task.
- Use as narrow a strip as possible that will provide sufficient hold (try 1/8-3/16" or 4 mm wide to start).
- Cut the mending strips with straight edges (as opposed to torn, feathered edges).
- Shorter lengths are easier to handle (suggest ~ ¾" or 1.5-2 cm)
- A variety of methods are used to dampen the tissue and soften the adhesive: pass the mending strip through a pool of solvent; brush the strip with a liquid-filled pen on textured ceramic tile or cutting mat (may not be ideal with ethanol). BUT be sensitive to the degree of wetness of the tissue to avoid creating tide lines on the object.
- An evenly wet/damp strip will have a uniform dark appearance.
- Because ethanol evaporates more quickly than water, solvent-set mending strips require a tad more initial liquid saturation not to dry out during application.
- Mending strips require pressure to set and hold. Once in place, cover with Hollytex and ensure good adhesion by pressing with spatula or tamping with brush. Apply light weight.
- Once the mending strip is dry, check to make sure the reinforcement is holding, and check if the tone of tissue is sympathetic (as invisible as possible), and it is not shiny.
- Trim tissue that extends beyond the object edge. A dark background (black mat board or cutting mat) is a helpful aid to achieve close and clean cuts.

Prepared Tissue Sheets - Flaws to Avoid

- Tissue that tears or frays while cutting on the Mylar sheet is insufficiently coated with adhesive. Do not use these areas.
- Tissue that appears translucent on the Mylar sheet is over-saturated with adhesive, will be overly sticky, and may be shiny on the paper. Do not use these areas.

Links page *for*

Repairing modern first edition dust jackets without fills or inpainting: a conservative approach

Christopher Sokolowski
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Abstract

Poster

Video of presentation (9 mins.)

Instructions for making and using pre-coated mending tissue (5 pages)