

MENDING PAPER

Introduction

Tears, breaks and losses in paper are very common. Unfortunately, there is no easy, ready-made solution to this problem. Commercial pressure-sensitive tapes will cause much more damage in the future than they are fixing in the present. The adhesives can darken and become brittle over time. Adhesives can sink into and saturate the paper, or they may ooze out from under their carriers, adhering to and staining adjacent documents. And although some tapes may be labeled as “archival” or “acid-free,” they can still cause damage and should not be used on valuable or irreplaceable documents.

The method of mending most often used by conservators is to apply Japanese or other specially made mending papers to the tear, adhering them with wheat starch paste. Wheat starch paste is fully reversible – that is, it can be easily removed with water at any time. It will not darken, damage, or embrittle a document as it ages. Japanese and other mending papers are usually handmade, and come in a wide variety of fibers, colors, textures and thicknesses. They are very strong, and usually made without harmful additives.



Choose a mending paper that is appropriate for your particular tear. Lightweight documents need lightweight mending paper to prevent eventual damage along the mend. Heavier documents may need heavier mending paper for strength. In general, less is best, so use the smallest, lightest weight piece of mending paper that will work for each particular document.

There are many, many different types of mending papers available. Three kinds you may find useful are:



- *Tengucho* – a very thin, lightweight paper. Tengucho is good for mending tears on light – medium weight papers. It is also a good choice when you must mend over media, as it is thin enough for most media to show through.
- *Usu Mino Thin* – a medium-weight, natural colored, long fibered Japanese paper. It is good for mending tears and filling losses on medium – heavy weight papers.
- *Guard Strips or Hinging Tissue*– this is a medium weight paper, and comes in pre-made strips that can be easily torn for simple mends. It comes in a variety of widths for different types of applications.

Usually a document is mended from the back, to make the mend as unobtrusive as possible. For a two sided document, you may have to choose which side would be less noticeable. Try not to mend over media, if possible. If you must, test the media in that area for water solubility. You can do this by dabbing a tiny bit of water on the area, then immediately blotting with a piece of blotting paper. If there is no ink transfer to the blotting paper, repeat the process a couple more times on the same spot, letting the bit of water sit for longer time periods each time. If at any time the ink transfers to the blotting paper, the ink is water soluble and a mend should not be placed over it. The water in the paste will likely cause damage to the soluble ink. If there is no

transfer, and you must mend over media, use the lightest tissue you can so that the information can still be read through the tissue after you mend the area.

Supplies needed (details below)

- blotting paper (blotters)
- spunbonded polyester
- tweezers (for picking up the pasted mend)
- mending paper
- wheat starch paste
- paste brush
- Plexiglas platens
- blotting paper and spunbonded polyester pieces cut to the same size as the Plexiglas
- something to use as a weight, between ½ and 2 pounds.

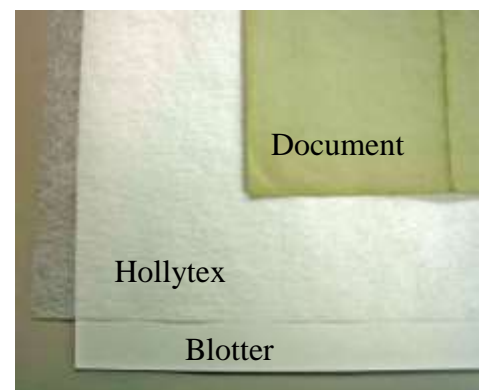


Choosing supplies

- *Blotting paper (blotters)* can be obtained from archival supply companies. It is a thick, usually 100% cotton sheet that is soft, porous, and very absorbent. You will need blotters in three different roles – one large piece for a work surface, smaller pieces cut to the size of your Plexiglas platens (see below) and scraps for pasting out the mending papers.
- *Spunbonded polyester* is also available from the archival supply companies. You might find it under the brand names Hollytex or Reemay. You will need spunbonded polyester in two sizes – one for a work surface, and several cut to the size of your Plexiglas platens.
- *What starch paste* can also be obtained from archival supply companies. It comes in powder form, in two basic types; the kind that needs to be cooked, and the kind that does not. For our purposes, we will be using the instant or “pre-gelatinized” variety.
- Choose a *paste brush* with smooth, clean bristles. ¼” to ½” wide is probably most useful.
- *Plexiglas platens* are used to hold the mended area flat while it dries, to prevent cockling and distortion. You can have them cut at a local glass supply store. You may want to have a few different sizes made. We find the 2” x 4” most useful. Make sure to ask that the edges and corners be rounded, for safety.

The procedure

- 1) **Surface clean the area around the tear before mending.** Surface cleaning before mending is important because the water from the paste can drive dirt into the paper fibers, making it difficult or impossible to remove later. See our Conservation Note on *Surface Cleaning of Paper* at <https://www.sos.mo.gov/CMSImages/LocalRecords/SurfaceCleaningofPaper.pdf> for more information.
- 2) **Mix desired amount of paste.** Paste can be mixed to whatever thickness is desired. A good working consistency is approximately that of very thick cream. Start with the manufacturer’s directions and then find a consistency that is right for you. Place water in a small bowl, then sprinkle instant paste on top and allow the granules to absorb the water for a minute or so. Mix until smooth. Unused paste must be discarded at the end of each day, to avoid mold growth.
- 3) **Prepare the work area.** Use a clean, flat piece of blotter, at least 1” larger than the document on each side. Place a piece of spunbonded polyester, roughly the same size, on top of the blotter. The blotter will



help the mends dry as it absorbs the moisture from the wheat paste. The spunbonded polyester will prevent the mends from sticking to the blotter as they dry.

- 4) **Tear a piece of mending paper to the size of the tear.** Mends should be just slightly larger than the tear or loss. For edge tears, use a piece of mending paper that is a bit longer than the tear and let it hang off the side of the document. These “tails” can be trimmed off after the mend is dry.

Japanese paper used for mends should be torn rather than cut. This gives extra fibers at the edges for added “gripping strength”, and it gives a softer, more gradual edge against the artifact. Guard or hinging tissue strips are easily torn into uniform strips without wetting. The others you will have to tear yourself to the shape you want. Water tearing is best, and produces a nice feathered edge on the mending paper. Water tearing is accomplished by “drawing” a line on the paper with a small brush dipped in water, then tearing slowly along the water line. If you are filling a loss, or want an odd shaped piece of mending paper, lay a piece of clear polyester film on top of the area to be mended, then lay the mending paper on top of that and draw a water line in the shape that fits the area you want to mend. The polyester will protect the document from the water and allow you to “trace” around the tear or hole to be mended.



- 5) **Lay the mend on a scrap of blotter.** The blotter will absorb some of the moisture from the paste. This blotter can be used over and over again until it is so wet or warped that it is difficult to use. For shaped mends, make sure you turn the mend over and paste out the side that will be against the document.

- 6) **Brush a thin, even layer of paste onto the mending strip.** Using the paste brush, brush a little wheat starch paste on the tissue. Try for a very light, even coat of paste.



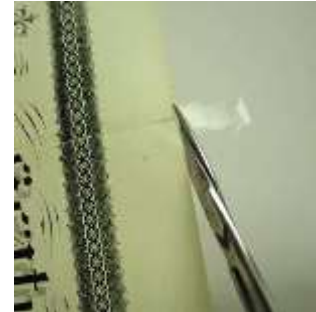
- 7) **Pick up the mend and place it on the tear.** Use tweezers to carefully pick up the pasted mend. Position it over the area to be mended, then place it on top of the tear or loss. Lightly smooth down the mend with your finger. Try to smooth outwards from the center to evenly distribute and spread the fibers at the edge of the mend.

- 8) **Cover mended area with spunbonded polyester and a piece of blotter, then place a plexiglas platen on top.** Directly on top of the mend, place one piece of spunbonded polyester, then a piece of blotter. The mended area is now sandwiched between



spunbonded polyester and blotters. Then place a plexiglas platen over the area.

- 9) **Place a light weight (1/2 – 2 pounds) on top of the plexiglas.** This will hold the area flat while it dries. Anything will do that is not too heavy (not over 2 pounds) and that will not flop down onto the artifact.
- 10) **Leave until dry.** Drying times vary due to thickness of paste, thickness of artifact, and atmospheric conditions. Usually, it will take between 5 and 15 minutes for a mend to dry completely. Large mends or fills will take longer. Make sure the mend is completely dry before you remove the weight, to avoid cockling.
- 11) **Carefully trim mend “tails.”** After the mend is dry, carefully trim off the “tails” of the mends that extend past the edge of the document.



Cautions

Sometimes a mended document will become distorted, even when the mended area is properly weighted and dried. Often this distortion can be reduced or removed by humidifying the document. Please see our Conservation Note on *Humidification and Flattening of Documents* at <https://www.sos.mo.gov/CMSImages/LocalRecords/HumidificationandFlattening.pdf> for more information.

Mending an item has its risks, and additional damage is possible. To avoid these risks, the document can instead be placed in a clear polyester sleeve. This can hold the document together and allow it to be handled more safely without mending. Sleeves are sealed on two adjacent sides, and can be purchased ready-made from archival supply companies.

For very fragile or valuable objects, you may want to call a professional conservator. For help finding and selecting a conservator in your area, you can contact the American Institute for Conservation at (202) 452-9545 or visit their website at <http://www.conservation-us.org/>. More information on selecting a conservator can be found in Jan Paris' *Choosing and Working With a Conservator* at <https://www.nedcc.org/free-resources/preservation-leaflets/7.-conservation-procedures/7.7-choosing-and-working-with-a-conservator>.



For further information

The conservation staff of the Local Records Preservation Program is available to provide additional guidance and support. Contact them at: P.O Box 1747, Jefferson City, MO 65102, (573) 751-9047, or local.records@sos.mo.gov.

The Local Records staff has compiled a list of preservation-related vendors, particularly those that provide supplies and services to Missouri citizens and government officials. It is available from the Local Records office or at https://www.sos.mo.gov/CMSImages/LocalRecords/Vendors_Information.pdf.

Published by the Local Records Preservation Program, Missouri State Archives, Office of the Secretary of State. The full set of Conservation Notes on this and other topics is available at <https://www.sos.mo.gov/archives/localrecs/conservation>.

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