

CONSERVATION PROCEDURES

4.10 Matting and Framing for Works on Paper and Photographs

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The importance of proper matting, mounting and framing is often overlooked as a key part of collections care and preventative conservation. Poor quality materials and improper framing techniques are a common source of damage to artwork and cultural heritage materials that are in otherwise good condition. Staying informed about proper framing practices and choosing conservation-grade mounting, matting and framing can prevent many problems that in the future will be much more difficult to solve or even completely irreversible. As Benjamin Franklin said, "An ounce of prevention is worth a pound of cure."

CHOICE OF A FRAMER

When choosing a framer it is important to find someone well-informed about best conservation framing practices and experienced in implementing them. Picture framing professionals may be under high pressure to make a sale, so it is a good idea to have a basic understanding of acceptable conservation framing materials and techniques before talking to a framer so that you know what to ask for. For more information on choosing a framer please see NEDCC's framing guide ["What's Behind Your Frame?"](#)

MATERIALS

There are many materials commonly used in picture framing that can cause harm to the object within. Even materials that are sold as archival-quality could be potentially harmful. Do not let aesthetics override preservation options. Many products which are labeled as "archival" may not be up to the standard required for long term preservation. Poor quality materials are less expensive and can create the illusion of value for the customer while causing damage overtime. Oxidation and the release of acidic gasses from poor quality materials can accelerate the deterioration of paper objects causing them to become embrittled, stained and discolored.

Choose 100% cotton rag mat board for all window mats and as the primary backing board that the piece will be mounted on. For a secondary backing board, Coroplast™, archival corrugated board, 100% cotton honeycomb boards, or Dibond® are all good options.

Do not use any type of foam board such as Fom-cor®, "archival" paper faced foam boards, Gator board, expanded PVC boards such as Sintra® or Komatex®, any lignin containing paper-based mat boards, kraft (brown) paper, non-archival or self-adhesive tapes (i.e. document repair tapes), or ATG (adhesive transfer gum), all of which are used in the majority of frame shops.

MATTING

The window mat is the standard mount for works on paper. The ideal window mat will be aesthetically pleasing while safely protecting the piece from exterior damage. Mats are an excellent storage method for works on paper and can minimize the damage caused from handling in collections that are used for exhibition and study. Some institutions simplify their framing and storage operations by using mats with outer dimensions that fit inside standard-sized archival storage boxes or modular frames.

A standard mat package is made of a window mat and a primary backing board. The two boards are held together with a strip of gummed linen tape along the inside of the longest edge. The board recommended for matting is 100% cotton rag-board. Most mat boards are buffered with an alkaline material such as calcium carbonate, but unbuffered mat boards are available for use with sensitive photographic materials such as cyanotypes, some albumen prints and many color prints.

The window mat and primary backing-board should be the same size and fit the frame with 1/16 to 1/8" of total play or "wobble room." The depth of the window mat must be deep enough to ensure that the glazing (either glass or acrylic) is not in contact with the object. Four-ply board may suffice, but thicker mats are required for large sheets, for pieces that may cockle or ripple, or for works with sensitive media, seals or other raised elements. Mat board thicker than four-ply is available, and deeper window mats can be made by laminating two or more layers of mat board. Attractive multilayered stepped mats can be made using one or more colors. With any layered mat, all layers should be made of 100% cotton rag-board. Beveled accents with foam board supports and fillets that come in contact with artwork are not recommended. Fabric covered mats should be adhered with appropriate

conservation grade adhesive to a 100% cotton rag-board, and the verso should be lined with a sheet of 2-ply 100% cotton rag-board to protect against adhesive residue and any transfer of dyes or sizing from the covering fabric. If a very deep mat is needed, a sink-mat may work best. Sink-mats are constructed by adding layers of archival board to the backing board or window mat to make a recess, or "sink", in which the object resides. The "walls" or "build-up" of the sink-mat are hidden by the window portion of the mat.

COVER SHEETS

When an object is matted but not framed, a cover sheet may be used for protection of the mounted object. There are several materials suitable for use as a cover sheet, each with differing qualities that make them more or less suitable for specific types of matted objects.

- Many archival buffered papers are appropriate for use as a cover sheet or as interleaving on prints and drawings, but they may cause chemical reactions in sensitive photographic materials. For the latter types of materials, look for a product that is acid- and lignin-free and that passes the Photographic Activity Test (PAT), such as MicroChamber paper. Un-buffered archival papers free of calcium carbonate additives are also available for use in the storage of photographs.
- Clear polyester film such as Melinex®, an archival-quality polyester, is often used for cover sheets because it is transparent as well as chemically and dimensionally stable. Polyester carries a strong static charge, however, and is therefore not suitable for use on objects with friable media, i.e. pastels, loosely attached graphite, chalks and other types of media which are not securely attached to the paper. Polyester film is not a good choice for any light, tissue-like papers or photographic prints on polyester substrates which will be strongly drawn to it.
- Archival tissue paper is more appropriate for delicate media such as pastel, charcoal, soft graphite pencil, or opaque watercolor.
- Acid-free glassine is not recommended as it becomes acidic over time and easily distorts with fluctuations in humidity, potentially causing surface damage to the object.

MOUNTING

Mounting techniques tend to be the most varied and challenging aspect of conservation framing. Mounting methods can be separated into two primary attachment methods: adhesive and non-adhesive. If you are unsure of what method to employ, consult with a paper conservator or experienced conservation framer about your options.

The object must be mounted on the primary backing board and never on the reverse of the window. Under no circumstances should it be adhered directly to the backing board. Attachment to a primary backing board serves several purposes: it will keep the object in proper

alignment with the window mat and picture frame opening, keep your object from touching the glazing and the inside edge of the picture frame, and help prevent overall distortion and edge damage to the object.

The most common conservation mounting method of attachment for works of art on paper is Japanese paper hinges adhered with wheat starch paste. Part of the hinge is attached to the verso of the object and part to the primary backing board. Folded hinges or "v-hinges" are recommended for float-mounts, when the edges of the sheet will be shown inside the mat window. Hinges are usually applied to the far left and right, along the top edge, very close to the corners of the artifact, although with larger or heavy sheets and sheets with planar distortion, additional hinges may be added.

The adhesive preferred by conservators is purified starch-based paste which has the qualities demanded of a conservation adhesive: sufficient strength, good aging properties, no tendency to discolor, and reversibility. Most commercially available adhesives are not appropriate for use in hinging since they have no reversibility and darken upon aging. The self-adhering "archival" tapes available in many art supply stores may be non-staining, at least in the short run, but their aging properties are still not known, and with time they become difficult to remove.

Non-adhesive attachment methods such as corner supports, also known as photo corners, and edge strips are a good option for mounting many types of works on paper since they do not require that any adhesive be applied directly to the object, thus allowing the object to be easily removed from the mat if necessary. Edge strips hold down the edges of an object, while folded photo-corners are placed over the corners to secure the object. They can be made of archival paper or plastic and are adhered only to the primary backing board. Wheat starch paste, gummed linen tape or Filmoplast P90 which passes the PAT are recommended for this purpose. Self-adhesive photo corners found in many art supply stores can be problematic due to their tendency to fail and become stuck to the object that they were holding.

MOUNTING WITHOUT A WINDOW MAT

When a traditional window mat is not appropriate or desirable a spacer can be used. Spacers can be made of 100% cotton rag-board, acrylic, strips of wood (never in contact with the object), or aluminum to create the necessary space between the glazing and the object.

Spacers should be arranged in a post and lintel style arrangement with the top piece resting above the side pieces and the bottom piece below. This arrangement ensures that no pieces will fall and damage the framed object if the spacer's attachment to the frame should ever fail.

Many custom framers are able to create spacers that are built in or match the finish of the exterior frame. As always, the object should be attached to an appropriate backing board and framed so that it is not in contact with the glazing or the frame interior.

GLAZING

Glazing, which can be either glass or acrylic, is an essential component of the frame package for works on paper. It protects the fragile, porous paper surface from air-borne dirt and pollutants, and in a gallery setting it will protect against unwanted touching from curious visitors. Objects should never be in contact with the glazing surface. If moisture condenses on the inside of the frame's glazing, objects that make contact are at risk of becoming stuck or adhered.

There are draw backs and benefits of each type of glazing product. Glass is much heavier than acrylic glazing. Acrylic glazing is available in larger dimensions than regular picture framing glass. For very large pieces that require glass, laminated glass can be used. Glass is generally less expensive, but it is difficult to safely ship because of the risk of breaking or shattering, which can cause major damage to the object within. Acrylic will not break in the same way as glass but is more easily scratched. Acrylics tend to be more expensive than glass especially when they include added options like scratch resistant, anti-reflective and anti-static coatings. Similar to polyester films, conventional acrylic glazing carries a strong static charge and must never be used for objects with friable media such as pastels, charcoal drawings, light tissue-like papers, or photographic prints on polyester substrates. UV-filtering glass or anti-static acrylic glazing should be used with these objects instead. While glass is considered to be a true vapor barrier that does not allow any moisture to pass through, acrylic is slightly permeable allowing very small amounts of vapor to pass through.

The best glazing materials for works on paper and photographs are designed to filter out damaging UV light as much as possible. Normal glass and regular acrylic glazing does not block UV radiation. When choosing glazing, be certain to select a product with a high UV-filtering capacity, at least 99 percent such as Tru-View Conservation Clear or Acrylite OP-3 acrylic glazing.

In instances when it is important to retain the original antique glass in an old frame, a double-glazing system can be used with UV-filtering glazing next to the object (but not touching it) and the old glass on top. Aside from the UV protection this technique offers, it also protects the object if the fragile antique glass should break. The second glazing layer will not be obvious to most viewers.

WHAT ELSE GOES INTO A FRAME?

A secondary backing layer should be placed, unadhered, behind the primary backing board on which the object is mounted. This secondary backing board, meant for physical and thermal protection, should be an archival, lignin-free board such as archival corrugated board. For even greater protection, a vapor barrier such as Coroplast™, polyester film or Marvelseal® may be used as the outermost backing.

Wood can give off volatile substances damaging to paper. While this is especially true of freshly cut wood, even old wooden frames will off-gas. This is particularly obvious in

frames with wooden slat backing boards, which over time will burn a strong wood grain pattern into any paper-based material they are in contact with. Ideally the inside of the frame should be an inch or more away from the object on each side. For additional protection, the frame rabbet may be lined with a barrier material such as polyester film, Marvelseal®, or impermeable aluminum self-adhesive frame sealing tape.

Sealed packages are a good option for some framing projects, such as for objects that are particularly sensitive to changes in room conditions. Using the mat package, glazing, and a secondary backing board, which must be vapor barrier such as Coroplast™ or polyester, each of the edges are sealed with archival sealing tape such as 3M Scotch 850. This practice is one way to create a micro-climate that can help to protect the object within from fluctuations in temperature and humidity, insect damage, and damage caused by the water and smoke of a disaster event. The finished sealed package is placed in the frame as a unit. Creating a sealed package can make the fitting step of framing easier, as it keeps everything well in place and will keep dust and other unwanted specks out of the inside of the frame.

The frame should be deep enough to accommodate all layers. When ordering new frames, make certain they are deep enough. The depth of existing wood frames can be extended by adding a wooden build-up, stained or painted to match the frame, and then screwed and/or glued into place. The frame should be as air-tight as possible to keep out dirt and pollutants and to stabilize the interior against short-term fluctuations in temperature and relative humidity. The contents of the frame should be firmly held in place with points, brads, or a strainer back. For objects that are to be housed permanently in a frame, the back of the frame should be finished with an archival paper or Tyvek dust cover attached to the back of the frame with archival double-sided tape.

CONCLUSION

Even if UV-filtering glazing is used, works on paper should be hung in areas of subdued lighting. Because light at any level is potentially damaging, conservators advise that no paper-based work of art be kept on permanent display. Works on paper and photographs in a gallery setting should be regularly rotated to reduce exposure, and lights should be turned off whenever possible and windows covered with UV filtering film. Museum quality LED lights can be installed to reduce damage from light. (See NEDCC Preservation Leaflets [2.4 Protection from Light Damage](#) and [2.5 Protecting Paper and Book Collections During Exhibition](#) for more information.) In addition, storage and display areas should have an appropriate environmental climate with minimal fluctuations of temperature and relative humidity. Climatic fluctuations not only weaken paper over time but can cause unsightly rippling or distortion of the sheet. Proper framing will help to buffer against minor short-term climate changes but may not protect against seasonal changes or long periods of high humidity. As is the case with all works on paper, the environment surrounding framed objects is crucial to their preservation.

FURTHER READING

Clapp, Anne F. *Curatorial Care of Works of Art on Paper*. New York: Nick Lyons Books, 1987.

Hamel, Annajean. "[What's Behind Your Frame?](#)" NEDCC, 2015.

Kosek, Joana M. *Mounting for Prints and Drawings*. National Book Network, 2004

NEDCC Preservation Leaflets

[2.1 Temperature, Relative Humidity, Light, and Air Quality: Basic Guidelines for Preservation](#)

[2.4 Protection from Light Damage](#)

[2.5 Protecting Paper and Book Collections During Exhibition](#)

Phibbs, Hugh. "Building Space Into the Frame" *Picture Framing Magazine*, Feb. 1995.

"Preservation Matting for Works of Art on Paper," Supplement to *Picture Framing Magazine*, Feb. 1997.

Smith, Merrily A. *Matting and Hinging of Works of Art on Paper*. Washington, D.C.: Library of Congress, 1981.

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