Preservation Practices

by Hugh Phibbs

Monitoring RH in the Frame Shop

Keeping the relative humidity in a frame shop within a safe range may be easier than it first sounds. If one considers how often items in the shop have grown mold, or how many have shown signs of new foxing, one will have an idea of how often the relative humidity has been dangerously high for a long enough period to cause damage. Even if the shop is briefly exposed to dangerously high conditions (due to power failure in the summer, or flooding), the endangered materials can be moved to a safer place or sequestered in vapor barrier materials before they become damp.

Looking at the other side of the humidity issue, materials which will suffer from exposure to *low* relative humidity—wooden panels and inlay, ivory, oil paintings with hide glue grounds, and thick layers of gum in watercolor and gouache—are not frequently brought in for framing. When such an item is brought in during a dry period, it can be kept in a vapor barrier bag with a conditioned blotter or board until it is framed.

Most importantly, to understand and control relative humidity one must first be able to watch it change. The least expensive monitor for relative humidity is a cobalt salt card. A pack of five of these cards can be found in most preservation supply catalogues for under ten dollars. If these cards are fixed to a wall in each room of the shop and to the inside of storage units (such as map drawers), the staff can begin to get a sense of how the conditions fluctuate in each area over a year. An electronic hygrometer will also be useful in tracking the conditions of the air in the shop and will provide a check on the cards.

Tracking the changes shown by the cards is likely to reveal that the shop will be on the dry side of 50% far more often than it is on the damp side, unless it is located in a basement. Each building has areas of greater and lesser fluctuation in relative humidity. Exterior walls are an obvious source for concern.

Furthermore, few buildings are designed with vapor barriers in their walls. Plastic sheeting can slow the passage of water vapor, but an additional layer of metal foil is required for complete vapor barrier protection. Films which comprise aluminum foil with polyester sheet bonded to either side of it can be used in this role, but they are quite expensive and require careful installation. Since there is little likelihood that any outside walls in the shop can be expected to have complete vapor barriers in them, critical functions such as art and board storage should not be adjacent to these walls.

Interior walls must also be examined to see whether they communicate with attic or crawl spaces which have untreated air in them. Warm, damp air in the summer can move into such walls and humidify them. In the winter, cold air moving through such walls can lower their temperature and make them condensation sites if the room air has been humidified.

In light of these considerations, the simplest strategy is a concentration on

local control of humidity. Concentrating on the areas where the matting materials and works to be framed are stored allows relatively small effort to produce significant results. The storage drawers can be shielded with vapor barrier film which encloses the bottom, back, top, and sides. They will be open to the air in the room, but this can be tracked. It is also possible to make large pouches which will fit into the drawers themselves. The pouches can be fashioned by ironing the laminate to itself. If separate side pieces are used, it will accommodate larger loads.

When materials are added to the system, attention should be paid to the amount of moisture which they contain. If a paper-based item has come in from an automobile on a damp day, it can be placed in a clear polyethylene bag with a cobalt salt card and watched for an hour or so. Anything to which hinges have been attached should also be kept out of the drawers until it is thoroughly dry. The same is true for any board which comes into the shop, especially if it has been delivered during a time when the weather is damp.

When the staff has become sensitized to the issues involved in control of relative humidity, highly sealed framing can be done. The techniques which have been described in "Preservation Practices" and the preservation supplement, "The Science of Preservation Framing," (February 1999) both involved the use heat to bond the metal/plastic laminate to the glazing. Simpler packages can be made using laminate and pressure sensitive tape without any heat.

There are tapes available from preservation suppliers that have a aluminum foil layer to which their adhesive and a paper backing have been added. The one drawback such tapes have is the relative ease with which the foil can be punctured. If that tape is reinforced with another layer of tape placed on its outer surface, that problem can be overcome.

A package which comprises glass on the front, the mat package, and a sheet of plastic/aluminum laminate on the back which is sealed with the combination of tapes around its edges, will be resistant to most changes to relative humidity. If acrylic glazing is used, water vapor will eventually be able to enter the package through it, so it can not operate as effectively as one made with glass. The tape should be burnished to the glass and the laminate layer on the back of the package to eliminate gaps.

Before such packages are offered to the public, the staff should make practice packages which can be equipped with cobalt salt cards, placed in challenging climate situations, and observed for some time to ensure the success of the seal.

That same sort of practice must precede the use of any new technique used in preservation framing. Innovation must be approached with great circumspection and successful experience must guide the choices framers make, but the control of relative humidity, inside and outside the frame, is critical to the preservation of the material with which the framer is entrusted. ■