

# Preservation Practices



by Hugh Phibbs

## *Preservation Problem Solving: Protecting Items from Physical Impact and Humidity Fluctuations*

As we consider how to optimize the preservation potential of matting and framing structures, we should keep designs and techniques simple and materials similar. We should also limit the light, pollution, extremes of relative humidity, and shock or vibration that may affect the framed item. Some of these goals can be achieved through the use of proper materials (as in the case of ultraviolet filtering glazing), while others can be accomplished through the use of appropriate techniques. In order to control the shock and vibration that the framed item may experience, both materials and techniques are involved.

Properly insulating a work of art or an artifact from physical insult requires an understanding of both chemistry and physics. As we saw last month, the chemistry of the materials used must be considered so that nothing can donate or give off anything that might pollute the framed or matted item.

The support materials must be properly employed so that the item is not unduly confined, improperly supported, subjected to shock, or abraded. If the support given the item is both gentle and steady, it will probably be appropriate.

Papers and non-woven polyester sheet materials are critically important when sensitive items are being housed. Papers can be found in a wide variety of weights, surface finishes, and degrees of strength. This allows one or more to be chosen to fill an amazing number of support roles.

Some papers have smooth finishes that make them useful in creating edge strips for photos. Toothier

Japanese tissues can be most appropriate for padded and taut paper spacers, where they can provide a combination of grip for the edges of thicker items and a surface whose fibers will yield in an accident. Just as hinges must be weaker than the paper to which they are applied, so

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the material that is used as a support should have a surface that is softer and more yielding than the surface of the item it is supporting. The item should abrade its housing and not the other way around.

The fact that papers will tear makes them ideal for designing impact resistance into a housing. The support nearest to the housed item can be made from a paper that has been chosen to provide support during normal times and to break during an accident. An outer layer of non-spun polyester sheet can be included beyond the paper layer at a slight distance; thus, when the paper tears the polyester can catch and support the item.

When foams are used in this sort of support role, compression becomes critical. If the foam is to provide yielding support, it must be slightly compressed when the item is situated on it. If the foam does not compress, there is no way of telling whether it will ever yield to the weight of the item and, indeed, it may be providing support that is no better than a non-foam alternative. Another problem of engineering support with foams arises from the possi-

bility that the foam may become permanently compressed over time.

Foams can be used with greater safety in a static situation (such as a storage shelf) than they can be in a frame. This is because a frame is likely to be moved and is more likely to experience more shock and vibration.

The support that we provide for items in mats and frames should be as broad as possible. Examples of this sort of support can be seen in cradles and slings that fit themselves to the contours of the item. The fitted cases that have been made for musical instruments incorporate this principle. This lessens the stress on the surface and within the item. In certain cases, this broadest support principle may be overridden by the structure of the item. Composite items may illustrate this problem. An old photo with degraded edges that has had a small piece of board glued to its back may offer more possibilities for safe support via the board rather than from the edges of the photo.

Beyond this gentle, steady support that we look to create, we seek to keep the housed object from the harm that pollution can

cause. Our understanding of self-destructive materials, such as old plastics and poor quality papers and boards, is too incomplete for us to know exactly how they should be housed so that the byproducts of their breakdown are ventilated to the outside, and how much of those byproducts should be scavenged by materials that are part of the housing. If both functions can be built into the mat and frame, we may achieve the greatest benefit.

Thus a photo that is mounted to a ligneous, but historically important, board might be secured in a sink that contains such materials as calcium carbonate, active carbon, or zeolites. These will take up acids and peroxides coming from the mount board, and it might be framed with an acid-free corrugated backing board that will allow some of the pollutant to escape the frame. The scavenging potential of the materials used to form the sink mat should keep pollution outside the frame from entering. This sort of frame will not protect its contents from extremes and fluctuations in relative humidity, and must be kept in an environment that provides a

beneficial RH range.

The sequestration of delicate materials from RH extremes is another extremely important element in preservation framing. Ivory, wood laminates, and animal hides require conditions of relative humidity that are higher than those required by metals and glasses. Paper products do best in the middle range, but no material is benefited by fluctuations in relative humidity. Low RH can crack paint films and photo emulsions, but it may lessen the effectiveness of light in fading some colorants. Higher levels of relative humidity keep the paper in books from becoming too brittle and help lessen the problems of static. However, they enhance

the breakdown of paper by acids and, if allowed to rise too high, will permit the growth of molds.

The use of properly conditioned, highly sealed glass and plastic/aluminum laminate packages can allow us to maintain the desired conditions. This should only be undertaken after one's skills have been developed by considerable practice and when one's familiarity with the issues involved is fully developed.

In moving beyond the straightforward areas of preservation matting and framing and into the area of preservation problem solving, we must develop a thorough understanding of the materials at our disposal and learn how

we can expect them to react in differing situations. How will their use in novel roles affect their performance? Which may have capacities that can be adapted to new usages? Consultation with conservators, museum professionals, and other framers is essential in solving such problems. Ultimately, the inventiveness that typifies framers can be a great asset to preservation, if appropriate materials are incorporated into well-designed housings. ■