NATIONAL PARK SERVICE
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Storage Enclosures For Photographic Prints And Negatives

Storage enclosures for photographic prints and negatives are available in a variety of materials and formats. One must decide between paper or plastic, buffered or non-buffered paper, polyester or other plastics, sleeves or envelopes. Choosing the proper enclosure requires a knowledge of the alternatives. This *Conserve O Gram* reviews the various options, discussing advantages, disadvantages, and special precautions for each. Whatever enclosure is chosen, avoid handling photographic prints and negatives with bare hands. Oils and perspiration can damage emulsions. Lint-free gloves are available from conservation or photographic suppliers.

All enclosures used to house photographs should meet the specifications provided in the American National Standards Institute (ANSI) Standard IT 9.2-1991.[1] The standard provides specifications on enclosure formats, papers, plastics, adhesives, and printing inks, and requires a variety of enclosure tests.

Paper Materials

The term *acid-free* is widely used to refer to archival-quality paper materials constructed of either *neutral* or *buffered* paper. A more precise distinction should be made between the two. Neutral enclosures, constructed of paper in the neutral pH range (7.0-7.5), do not contain acids that will damage photos stored in them, but have a limited capacity to absorb acids from the environment or from the objects stored inside. Buffered paper enclosures (approximately pH 8.5) contain an alkaline material that can serve to neutralize acids as they form.

The quality of pulp used to make paper is also important. Groundwood, from which many modern papers are made, contains lignin that produces acids rapidly. Papers described as *lignin-free* are produced from cotton or linen (containing little lignin) or have had the lignin chemically removed. Lignin-free buffered and non-buffered (neutral) paper enclosures are available.

The effect of direct contact of buffered paper on photographic emulsions is presently being questioned. Buffered storage enclosures are not recommended for color images, cyanotypes, or albumen prints. They *are* recommended for cellulose nitrate and early safety film negatives, brittle prints, and photographs on brittle acidic mounts. Research has yet to be conducted to determine the effect of buffering agents on many photographic processes; however, if the relative humidity of the storage environment is below 50%, buffered enclosures should present few, if any, problems. When in doubt, the use of neutral enclosures is probably advisable.

Research has demonstrated that even *archival* papers may be harmful to the photographic image. Labels such as *acid-free* do not guarantee that a material is safe when used with photographs. The only way to be certain of photographic inertness is to have materials undergo the Photographic Activity Test (PAT) as specified in ANSI Standard IT 9.2. The PAT has two components: a test to detect image fading resulting from harmful chemicals in enclosures, and a test to detect staining reactions between enclosures and gelatin. Consumers should contact archival suppliers to see if their

products comply with ANSI IT 9.2, and have passed the Photographic Activity Test.[2]

When PAT test results are not available, purchase materials from suppliers familiar with the special needs of photographs, and choose enclosures which are lignin-free, 100% rag, and not highly colored (especially avoid black). Glassine enclosures are not recommended.

Advantages and Disadvantages of Paper

1. Paper enclosures are opaque, protecting the object from light. However, this makes viewing difficult, requiring the removal of the object from the enclosure. This increases damage from handling, abrasion, and fingerprinting, especially in heavily used collections.

2. Paper enclosures are porous, protecting the object from the accumulation of moisture and detrimental gases. This is especially important for cellulose nitrate and early safety film negatives where the gases generated by the deterioration of the support material are harmful to the image.

3. Paper enclosures are generally less expensive than plastic enclosures.

4. Paper enclosures are easy to write on.

Seamed Paper Envelopes. An envelope is an enclosure with one open end; it may or may not have a protective top flap. The seam in paper envelopes should be located at the sides and across the bottom. Any adhesives used in construction should be non-acidic and unreactive with silver. Most envelopes come with a thumb cut, but those without are preferred. Thumb cuts allow air to touch the photo, and encourage users to grasp the photo and pull it from the sleeve. [Rather, to remove a photo, squeeze in slightly on the edges of the envelope, and tap the photo out, handling only the edges.] A top flap may be desirable in order to prevent dust from entering the envelope and causing abrasion of the image. When storing photographs in seamed envelopes, the photograph should be inserted with the emulsion away from the seam.

Seamless Paper Envelopes. A seamless envelope does not have any adhesive. The envelope is formed with three or four flaps which fold over to produce a pocket. The fourth flap, if present, closes the envelope completely, protecting the object within from dust and dirt. The construction of this envelope encourages the user to place the object on a flat surface to open it, which can be an advantage for brittle or fragile items such as glass plate negatives. Also, this type of enclosure is constructed so that it can compensate for the thickness of an object.

Paper Folders. A folder is a sheet of paper that is folded in half. It is closed on one side only and must therefore be kept in a properly fitted box in order to effectively hold the image. If used for vertical storage in files, the photograph stored inside must be well supported to prevent sagging or curling. Folders are simple to make and are very useful for large or mounted items.

Plastic Materials

Plastic enclosures of archival quality may be made of polyester, polypropylene, or polyethylene. They should not be coated or contain plasticizers or other additives. *Polyester* is the most inert and rigid of the three. It generates static electricity that can attract dust, and it is expensive. Polyester enclosures should be either DuPont Mylar® D or ICI Melinex® #516. *Polypropylene* is almost as rigid and strong as polyester when in sleeve format, but is soft when used for ring binder storage pages. *Polyethylene* is the softest, most easily scratched, and least rigid of these plastics.

Plastic enclosures made from *polyvinyl chloride* (PVC) are unacceptable for archival photographic storage. This plastic, often referred to as *vinyl* by suppliers, is not chemically stable and will cause deterioration of a photograph over time.

[*NOTE:* Plastic enclosures should only be used for objects that are stored in a climatically controlled environment because these enclosures can trap moisture. See number 3 below.]

Advantages and Disadvantages of Plastic

1. Plastic enclosures have the great advantage of allowing an image to be viewed without removing it from the enclosure. This greatly reduces the chance of abrading, scratching, or fingerprinting the photograph especially in heavily-used collections.

2. Moisture and sulphides in the environment react with photographs and hasten their deterioration. Plastic enclosures protect the object from the atmosphere and prolong the life of the image. There are two important exceptions: cellulose nitrate film and early safety film should not be stored in plastic enclosures. Such enclosures accelerate their deterioration by trapping harmful gases.

3. Plastic enclosures can trap moisture and cause ferrotyping (sticking with resulting shiny areas) of the image. This is a particular threat in storage environments with high relative humidity or in the event of a disaster involving water.

4. Plastic enclosures with matte or frosted surfaces are not recommended, as they can be abrasive and may scratch the emulsion.

5. Plastic enclosures can be difficult to write on.

6. Plastic enclosures can be flimsy and may require additional support, such as archival-quality Bristol board. Any information which should accompany the image can be recorded on this board.

Plastic Envelopes. Plastic envelopes normally have heat-sealed seams, which eliminate any potential problem with adhesives. Both polyethylene and polyester envelopes have been marketed by conservation product suppliers.

Plastic Folders. These are usually made from polyester. They may be successfully used in conjunction with paper envelopes, the polyester folder protecting the image from handling whenever it is removed from the envelope.

L-Velopes.™ These are a combination envelope-folder, being an envelope sealed on only two adjacent sides. This allows for easy insertion and removal of objects, but provides more support than a folder. This format is particularly useful for smaller format images.

Plastic Sleeves. A sleeve is an enclosure open at two opposite sides. It can be made from polyester or polypropylene. Usually, these sleeves are a one-piece construction with a self-locking fold on one edge. This fold provides for easy insertion and removal of the photograph without abrading the image on the sharp edge of the enclosure.

Polyester Encapsulation. Polyester encapsulation encloses a photograph between two sheets of polyester, sealed on all four sides with either double-sided tape or a special polyester welding machine. Encapsulation provides physical support and protection from the environment. It is useful for storing fragile prints, especially those which are torn. Encapsulation is not recommended for photographs adhered to poor quality mounts or for contemporary color photographs. [See *Conserve O Gram* 13/3.]

Ring Binder Storage Pages. These pages are made to fit three-ring binders with slipcases. They are available in a wide variety of formats, sizes, and materials, including polyester, polypropylene and polyethylene. They are an excellent alternative for small, concentrated collections of uniform size.

Polyester Sheet - Matboard Folder. These folders are made of a sheet of polyester and a sheet of matboard of the same size, attached together along one long edge with double-sided tape. The matboard gives needed support and the polyester allows the image to be easily

viewed. These folders should be stored flat. They are particularly useful for storage of oversized photographs or photographs on rigid mounts.

Polyester Sheet Within a Paper Folder. This enclosure consists of a paper folder with a polyester sheet attached along an inner edge, opposite the center fold. The attachment is made with double-sided tape. The polyester holds the object in place and protects it from dirt and handling, but allows for easy viewing and removal. The paper folder provides support to the image and protects it from light. These folders are especially useful for small fragile prints.

Summary

Many of the enclosures available for photographic storage have been discussed in this *Conserve O Gram*. Each has been discussed individually, but often two enclosures can be combined to form another format with its own characteristics. An example would be the use of polyester folders within seamed paper envelopes. Each of these systems has advantages and disadvantages. The final choice of enclosure will depend on the particular needs of a collection.

Notes

1. ANSI IT 9.2-1991. "American National Standard for Imaging Media - Photographic Processed Films, Plates, and Papers - Filing Enclosures and Storage Containers," New York: American National Standards Institute, 1991. (11 West 42nd Street, New York, NY 10036)

2. This test can be performed by Image Permanence Institute, Rochester Institute of Technology, F. E. Gannett Memorial Building, P.O. Box 9887, Rochester, NY 14623-0887.

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