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Polyester Encapsulation

In several of my previous Notes the focus has been on preventive care of archival records (environmental control, storage methods and materials, etc.) This is the first in a periodic series that will describe basic conservation procedures that can be carried out with minimal hand tools and very little space. With a bit of practice and some manual dexterity, most people should be able to master these procedures with relative ease.

What Is It?

Polyester encapsulation is one method of protecting paper items during storage, handling and exhibition. This relatively simple procedure protects fragile paper from physical damage, dust, acid migration from adjacent materials, and to some extent from pollutants and temperature and humidity changes. Polyester film is a strong, clear, flexible, acid free, chemically inert plastic, which, when free of plasticizers, ultraviolet inhibitors, coloured dyes and surface coatings will not damage the paper enclosed within it.

The encapsulation procedure sandwiches the paper item between two sheets of polyester film, the edges of which are sealed with a double-sided pressure-sensitive tape. Since the paper item is not laminated or adhered in any way to the polyester or the tape, the encapsulation is easily reversed by cutting open the polyester envelope along the space between the tape and the edge of the paper. Encapsulation is a useful treatment but not a substitute for all conservation treatments. Acidic, brittle paper will continue to chemically deteriorate inside the polyester. However, encapsulation will provide physical protection during handling of such fragile documents. Further, polyester encapsulation as described below will not screen out harmful ultraviolet or visible light rays.

What Can Be Encapsulated?

Generally, items that can be safely encapsulated include paper records such as manuscripts, letters, handbills, news clippings, maps, architectural drawings, posters, paper currency, deeds and indentures. Many photographic prints can also be safely encapsulated. Multi-page unbound items, such as a newspaper, may also be encapsulated but the procedure is more complex and will not be discussed here.

Certain items must not be encapsulated because polyester film tends to hold an electrostatic charge and can trap moisture in a humid environment if tightly sealed on all four edges. Unsuitable items would include works of art on paper with medium such as unfixed pastel, charcoal or soft graphite drawings, watercolours and parchment documents. These items may have a friable surface, which will offset onto the polyester film due to the static charge. Photographic prints should not be encapsulated if they will be exposed to conditions of high relative humidity (R.H. over 60%). In conditions of high RH the emulsion may adhere to the

polyester film or ferrotyping may occur on the emulsion. Photographic prints with a loose or lifting emulsion layer should also not be encapsulated.

What Tools and Materials Do I Need?

With the exception of the polyester film and the double-sided tape the other tools and materials are most likely readily available in your archives. Polyester film and the double-sided tape are available from archival conservation suppliers. The following is a list of the tools and materials you will need.

- A flat work surface larger than the item to be encapsulated.
- 1-inch graph paper (optional). A taping guide can be prepared by adhering the graph paper to the underside of a sheet of glass or Plexiglas.
- Polyester film (clear, uncoated). Available in pre-cut sheets in a variety of sizes and in 42 and 50-inch wide rolls. For small items and lightweight papers use 3-mil thick film. Large items or heavyweight paper may require 4 or 5 mil thick film.
- 3M #415 double-sided tape, available in ½ inch or ¼ inch wide roll. The narrow width is usually sufficient for all but the largest items such as oversized maps and posters.
- Scissors, and a utility or x-acto knife and a straight edge metal ruler.
- A clean, lint-free, nonabrasive cloth, (e.g. cheesecloth, J-Cloth).
- Small weights with no sharp edges.
- Bone folder and a hard rubber brayer (optional)
- Pair of clean, white cotton or nylon gloves.

What Do I Do?

The document to be encapsulated should be fairly flat and free of loose surface dust and dirt. Acidic documents with writing on only one side will benefit from inserting behind them, a sheet of white alkaline-buffered paper of the same size. This alkaline paper will absorb free acids from the document and help to slow down the process of chemical deterioration. Alternatively leave one side unsealed to allow greater exchange of air and prevent the build-up of acidic gases within the encapsulation.

1. Work on a large, flat, dust-free surface. Polyester film will easily scratch, therefore keep handling to a minimum and store the film in a protective box or bag until needed. Wearing gloves prevents transfer of fingerprints to the polyester film.

2. Cut two pieces of polyester film at least one inch larger than the document on all sides.

3. Lay one sheet of polyester film flat on the work surface (or over the graph paper taping guide). Wipe the film with a lint-free, soft cloth to remove dust.

4. Lay the document on the middle of the polyester film and place a weight on the centre to keep it in position.

5. Apply the double-sided tape to the polyester film, leaving a 1/8-inch space between the document edge and the tape. (Use of the graph paper will assist in laying the tape straight.) Cut the tape off squarely at the corner of the document. Leave the brown protective paper on the tape.

6. Continue applying the tape along the remaining three sides of the document, leaving the brown paper on the tape. Ensure that you leave a 1/8-inch space between the document and the tape on all sides and a small gap at all the corners. Do not overlap the tape at the corners as this space allows air trapped between the sheets of plastic to escape and reduces the risk of condensation and acidic gas build-up.

7. Wipe the second sheet of polyester film with a lint-free, soft cloth and after removing the weight place it cleaned side down on top of the document. Ensure the document does not move when you lay down the second sheet of film. Replace the weight on top of the film.

8. While ensuring the document does not move within the sandwich, use a rubber brayer or a soft lint free cloth and rub over the surface to remove as much air as possible from between the polyester sandwich. Work from the centre out towards the edges and corners.

9. Lift one corner of the top polyester sheet and carefully peel off the brown paper from two adjacent strips of tape. Repeat this step at the diagonally opposite corner.

10. Use the brayer or soft cloth again to expel any remaining air from the encapsulation, working always from the centre out towards the edges and corners. Use a bone folder or your finger to firmly rub down the tape and bond it to the polyester.

11. Trim off the excess polyester outside the tape edge with scissors, or using a utility or x-acto knife and a straight edge ruler. Leave a 1/8-inch border of polyester film outside the tape so that the sticky tape edges will not attract dust. A larger border can be left to provide a surface for pinning or securing the encapsulation to a display panel for an exhibit. Round the sharp corners of the polyester film with scissors to complete the encapsulation.

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