Charles A.E. Brandt
Conservator: Paper
P.O. Box 272,
Moncton, N.B.

Mylar Encapsulation

Paper is an organic material and consequently it is always undergoing deterioration, sometimes very slowly, sometimes quite rapidly. The causes of this deterioration is either physical or chemical. Wear, tear, eating by insects or rodents are the common causes of physical deterioration. Chemical deterioration is caused by exposure to light, but mainly by acidity (acid catalyzed hydrolysis) which breaks down the cellulose fibres and brings about embrittlement and yellowing of paper. If this hydrolysis is not arrested, the paper becomes so brittle that it crubles with slight bending. Wood pulp paper which has not had its impurities removed (of which newsprint is an example) is highly subject to this type of deterioration.

How can such paper be strengthened? Paper which has deteriorated beyond a certain point needs some form of strengthening if it is to be handled and if it is to survive. There are a number of methods used today by technicians and conservators to accomplish this strengthening. Each process has certain advantages and certain weaknesses. For example, a print or drawing may be strengthened by a conservator backing it with oriental paper. Archival lamination is a means of strengthening archival documents such as newspapers and newsprint clippings. This process should be performed by a professional conservator with knowledge of the proper materials and equipment to be used. Today scientists are concerned with mass deacidification of documents and at the same time are beginning to think of means of strengthening brittle

documents through a method of impregnation with a suitable resin.

Mylar Encapsulation: Encasing a brittle document between sheets of flexible, transparent polyester film which are sealed around the edges is a method of supporting brittle and deteriorating paper artifacts which is finding increasing acceptance by conservators today.(1) It has several advantages: it does not alter the artifact in any way and is completely and easily reversible without the use of any solvent; it supports the paper object admirably and allows it to be handled even roughly with no physical harm to the paper object; since the polyester film is transparent it allows the artifact to be microfilmed or photographed without removal from the envelope; Mylar film is inert and contains no volatile agents which will harm the document. Finally, its use involves no expensive equipment and can be performed by relatively untrained personnel.

Mylar encapsulation of fragile, brittle and deteriorating paper artifacts is a recommended procedure for protecting, storing, and supporting manuscripts, maps, single leaf documents, posters, and works-of-art on paper (excepting pastels and charcoal drawings in which particles might adhere to the mylar surface). A complete book may be encapsulated in mylar, leaf by leaf and subsequently post-bound.

There are certain slight disavantages of such encapsulation. The encapsulated documents have a reflective surface. Also, if this technique is used for protecting documents on a very large scale, there obviously becomes a storage problem due to the increased bulk brought about by the additional thickness of the mylar.

Before a document is encapsulated it should be cleaned as far as possible. We recommend the use of an Opaline cleaning pad.(2) This is a cloth bag which contains absorbent powder and other ingredients. Either the Opaline bag itself can be rubbed over the document or one can squeeze the bag to release the granular particles and then use the FINGERS + palm of ones hand, rubbing in a circular motion, to clean the soiled document. More difficult dirt spots can be removed with an eraser. Tôw brands, Pink Pearl and Magic-Rub, have been tested and found to leave no harmful residues.(3)

Ideally, the paper artifact should be deacidified before encapsulation to neutralize any existing acid in the paper and buffered to prevent future acid contamination. This process requires the expertise of a professional conservator. If deacidification is not feasible at the time of encapsulation, fragile and brittle documents will be given protection and support through encapsulation until such time as the paper can be stabilized through deacidification.

Materials

The materials used in encapsulation are mylar film(4) and a double-sided acrylic tape.(5) Different documents demand various thicknesses of film:

For small and medium-sized documents:	3-mil(.003") film
Larger documents:	5-mil(.005") film
Large maps and posters:	7-mil(.007") film

The mylar film used is Type "D" Mylar as manufactured by the DuPont Company. This has been tested by the Library of Congress and found to be suitable for encapsulation.(6)

Equipment Needed

A few inexpensive tools are necessary: an ordinary squeegee used for

cleaning windows; a scalpel, non-abrasive disposable wipers such as Kimwipes, a rubber roller (brayer), weights to hold the document in place, and a grid scale which is placed under a sheet of glass and is used to align the document properly.

Procedure for Encapsulation

Cut two pieces of mylar approximately 1" larger than the document on all four sides.

Place one sheet of mylar on the glass plate with the grid underneath and wipe the mylar surface with the disposable wiper both to remove any dust particles and to set up a static electrical charge. (FIG 1)

The document is then centered so that there is a 1" mylar border on the four sides. A weight is used to hold the document in position. The grid lines are utilized to get proper alignment. (FIG. 1)

The acrylic double sided tape is then put down, paper side up, leaving a margin of 1/8" on all four sides BETWEEN THE TAPE & THE DOCUMENT again using the grid lines as a guide. (FIG 2) The tape is easier to handle if put on top of a jar - a Dundee marmalade jar fits well.(7) Leave a gap of 1/16" at all four corners of the tape. These gaps will help later in removing the air. Do not at this time remove the brown paper.

Since the mylar comes in rolls it generally has a slight curl. To construct a flat envelope the two pieces of mylar should be placed with the curl in opposite directions. (FIG. 2)

The second sheet of mylar is dusted and placed on the upper side of the document. This is then smoothed down with a window squeegee to get rid of as much air as possible. (FIG. 3)

SECOND SHEET OF

A weight is now placed on top of the mylar. Reach under the top sheet of mylar and peel the brown paper off the tape on two sides of the document. (FIG 4) Using the squeegee press the mylar down onto the tape. Treat the other two sides in a similar manner. Finally go over the tape with a brayer (rubber roller) (FIG. 5). This will force all of the air out of the envelope and also guarantee good adhesion of the tape and mylar.

The final step is to trim the envelope on all four sides, leaving a margin beyond the tape of 1/16". (FIG 6) This margin will later prevent the edge of the tape from picking up dust.

An alternate method of encapsulation is to run the tape just along one ~~side~~ EDGE OF THE SHEETS OF MYLAR UNSEALED of the document leaving the other three sides open. This is a very temporary method but allows handling of brittle documents and facilitates easy removal from the mylar sheets. (FIG. 7)

Finally a note on mylar encapsulation in book form. Encapsulation is begun in the same manner, but enough mylar is left on one sheet to have a two inch stub on the left side. The binding edge is creased and folded over. (FIG 8) For detailed instructions on this process see the instruction sheet of James C. Dart. (8)

References

1. "Lamination" p. 1. The Newberry Library, West Walton Street, Chicago, Illinois 606110

2. Opaline Pads; contain ground-up erasers; manufactured by Durasol Drug & Chemical Co., 325 Marginal Street, East Borden, MA 02128, U.S.A., Available from TALAS (Technical Library Service), 104 Fifth Avenue, New York, N.Y. 10011.

3. Cleaning and Preserving Bindings and Related Materials, Carolyn Horton, p.33.

   Pink Pearl Erasers, No. 101; manufactured by Eberhard Faber Inc., Crestwood, Wilkes-Barre, Pennsylvania, 18703. Sold by art supply or stationery stores and TALAS.

   Magic-Rub Erasers: Manufactured by A.W. Faber-Castell Pencil Co., Inc., Dickenson & Biltman Streets, Newark, New Jersey, 07103. Sold by art and stationery stores and TALAS.

4. Type "D" Mylar Manufactured by the Dupont Company, available from:

   (1) Transilwrap Corporation
   405 Midwest Road
   Scarborough, Ontario
   416-751-9480

   (2) (in smaller quantities)
   Crown Bindery Service
   P.O. Box 72, Station "O"
   Toronto, Ontario
   M4A 2M8

   3) Dupont of Canada Ltd
   Films Department
   P.O. Box 660
   Montreal, Quebec

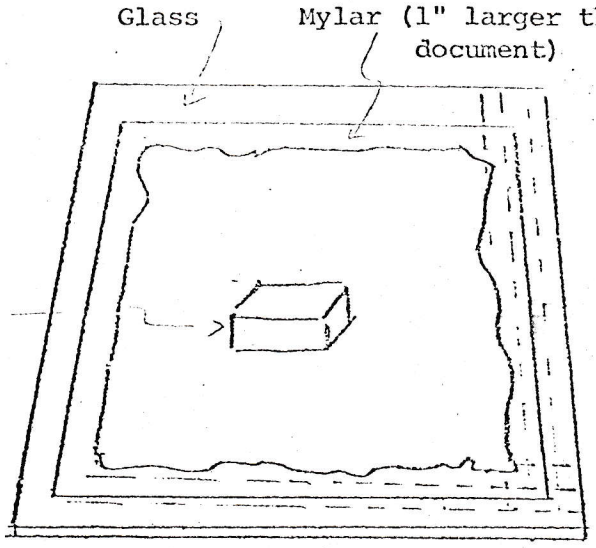
5. Scotch Double-coated adhesive tape No. 415, 1/4"; available from:

   (1) 3-M Canada, Don Mills, Ontario
   (2) Carr McLean, Toronto
   (3) TALAS

6. "Brief Instructions for the Preservation of Documents by Polyester Encasement", p. 3. Office of the Assistant Director for Preservation, Administrative Department, Library of Congress, Washington, D.C., 20540.

7. "Mylar Envelopes", Jane Greenfield, p. 2, Conservation Studio, Yale University Library.

8. "Some Notes on Polyester (Mylar) Books", James C. Dast, University of Wisconsin-Madison Libraries, College Library, 600 North Park Street, Madison, Wis. 153706.



Document with weight in place on Mylar film resting on a sheet of glass with grid underneath

Fig. 1.

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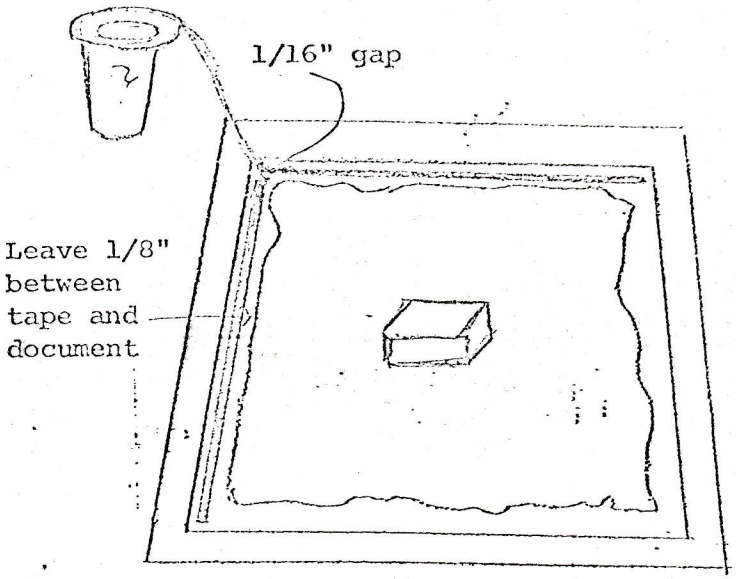


MYLAR
Curl of sheets placed in opposite directions

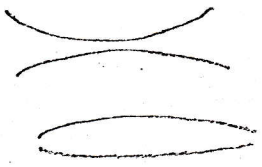
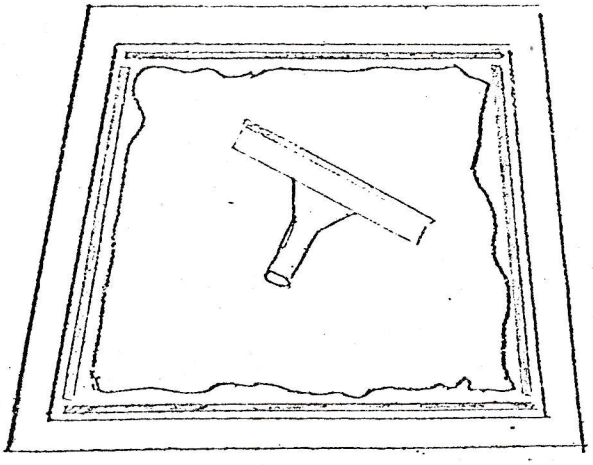
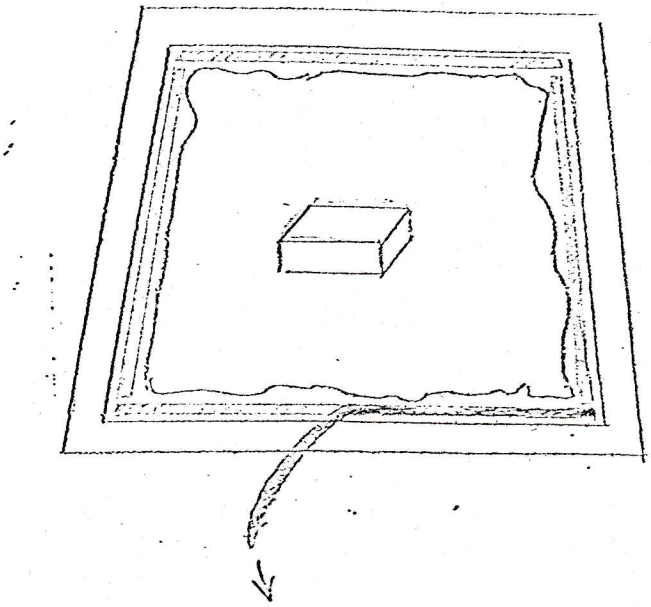


Fig. 2.



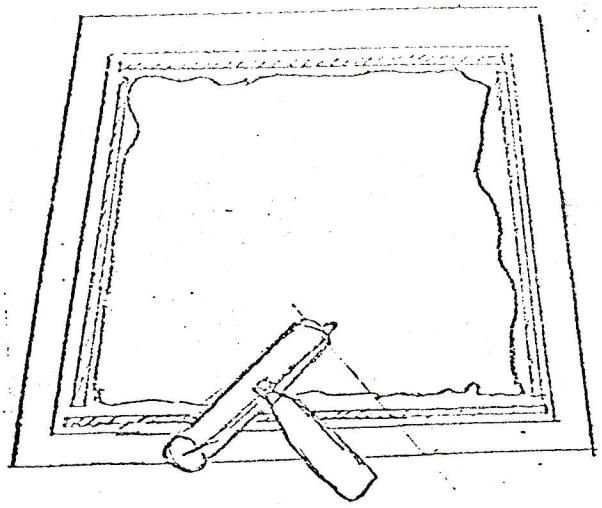
Removing Air from Envelope by use of squeegee

Fig. 3.



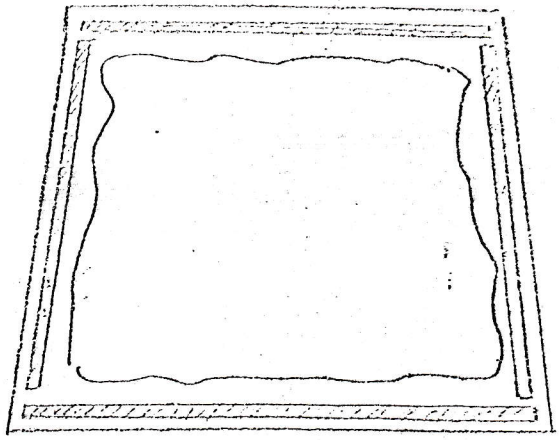
Removing brown paper from upper side of tape.

Fig. 4.



By use of Brayer good adhesion is made between Mylar and tape.

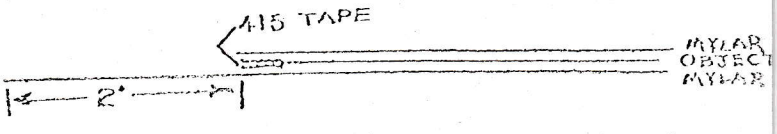
Fig. 5.

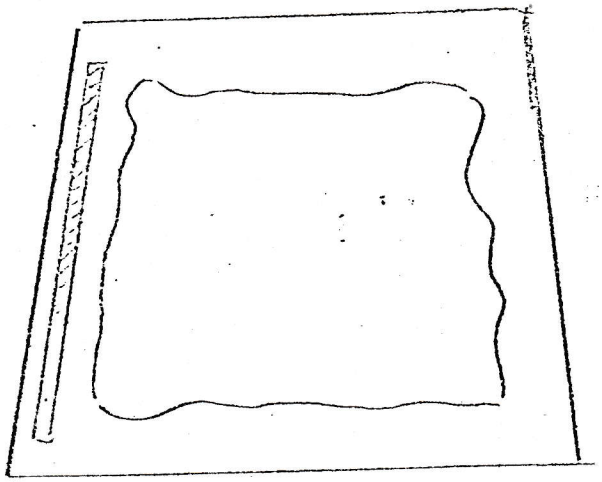


1/16"

Encapsulated Document trimmed to leave 1/16" beyond tape.

Fig. 6.

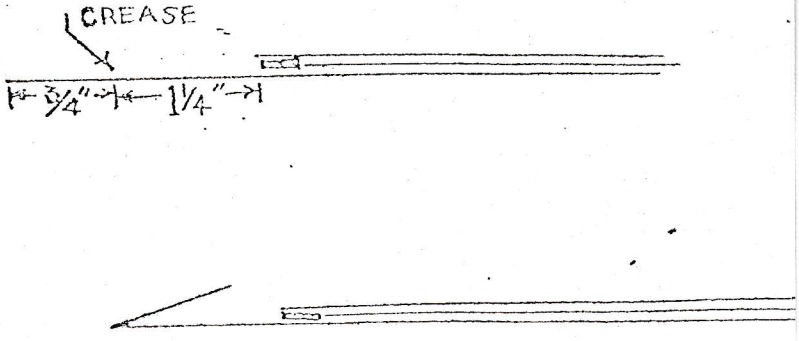




RUN ALONG

Alternate Method: Tape is just on one side of Document holding the two sheets of Mylar together

Fig. 7.



Detail of stub left for encapsulation of leaves to be post-bound

Fig. 8.