

About Lamination



Lamination was commonly used throughout the second half of the 20th century as a technique to preserve important documents. Conservators and archivists often receive inquiries about lamination as a way to preserve family documents. While it may appear to be an easy solution to the problem of handling fragile or fragmented items, research and observation has shown that lamination is generally not a safe option for preserving or prolonging the life of any important paper-based items .

The lamination process essentially seals a paper-based item between two sheets of transparent plastic material so it can be handled without damage to the paper support. The plastic material is typically cellulose acetate, which melts to form a seal when subjected to heat and pressure. Laminated objects usually appear shiny and have a plastic texture.

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The Rise and Fall of Lamination

Lamination had visual and tactile benefits that initially made it an appealing option for preserving documents: It increased the strength of delicate items; allowed for easier handling of large items and viewing of double-sided documents; and it appeared that the sealed items were sheltered from environmental changes in temperature and humidity.

Unfortunately, the cellulose acetate used in most laminates degrades over time, causing serious problems for the



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sealed item it is intended to protect. One tell-tale sign of degradation is the odor of vinegar (acetic acid) which is produced as the cellulose acetate molecules break down.

Unknown additives in the cellulose acetate cause it to shrink, which can cause structural problems for the paper it is laminated to. Degradation products from the cellulose acetate can transfer to the paper, leaving it permanently stained and discolored. Since the plastic laminate is not actually impervious to environmental fluctuations, the paper item is exposed to them and reacts differently to them than the laminate, which can cause further damage.

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were originally intended.

It is extremely difficult, if not impossible, to remove documents from the laminates. Success is dependent upon a number of variables, like past environmental conditions of storage and how ‘well’ the lamination process was done. Delamination is a difficult and time consuming process that must be carried out by a trained conservator.



Alternatives to Lamination

The intended merits of lamination are obvious: improved handling, structural improvement of paper items, and safe storage. Today these requirements are fulfilled by superior preservation options.

The most widely used and recommended alternative among conservation professionals is encapsulation. Encapsulation is a very similar concept

to lamination, but does not require heat, adhesive, or pressure that will irreversibly alter the structure of the item. A specialized machine called an ultrasonic welder can be used to create a custom housing out of flexible, inert, plastic sheets to protect paper-based items. Encapsulation is ideal for oddly sized or oversized items, and for valuable or irreplaceable items. To find

out more about encapsulation call your local library, or consult a conservator.

It is also possible to 'encapsulate' a paper-based item yourself at home using pre-cut Mylar® sleeves, which are made of the same inert plastic materials used for encapsulation. These sleeves come in a variety of sizes and thicknesses and can be purchased from conservation suppliers. Remember to look for terms like inert, stable, and polyethylene, polyester, and polypropylene when choosing the right plastic sleeves for protecting important documents.

If you have important items that are laminated, the first step is to digitize the items to provide a record of the in-

formation, before they continue to deteriorate. Local commercial photographers can make digital images or high resolution scans. A conservator can also be consulted to delamination options if the piece is highly valued.



Consulting a Conservator

If you have an important laminated document, a trained conservator will be able to assess its condition, and may be able to remove it from the laminate material. A conservator will also be able to give recommendations on the proper storage of laminated documents to help slow down the rate of degradation. Consult a conservator for further information.

Additional Resources

Page, Susan. (2003). Cellulose Acetate Lamination at the National Archives. *Book and Paper Group Annual*. Retrieved from

<http://cool.conservation-us.org/coolaic/sg/bpg/annual/v22/bp22-11.pdf>

National Museum of Natural History, Smithsonian Institution. *Guidelines for the Care of Works on Paper with Cellulose Acetate Lamination*. Retrieved from http://anthropology.si.edu/conservation/lamination/lamination_guidelines2.htm

Conservation Suppliers

Conservation Resources International

5532 Port Royal Road
Springfield, VA 22151
Toll free: (800) 634-6932
www.conservationresources.com
Archival housing/storage supplies, photographic supplies, general

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Syracuse, NY 13221-4901
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www.gaylord.com
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