

# Deacidification

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*In March 2000, the National Archives and Records Administration held its 15th Annual Preservation Conference in Washington D.C., the topic being Deacidification Reconsidered. This article is based on information from the conference.*

A number of deacidification products exist, and selecting the right treatment for your particular item is important. These products contain microscopic alkaline particles that are meant to be deposited into the structure of the paper. These alkaline particles are attached to the paper by either a dipping (immersion) or spray method, which forms an alkaline reserve.

An alkaline reserve in paper is the alkali added beyond what is needed to make the paper acid-free. Papers containing acidic materials, such as lignin, are much more susceptible to degradation than papers in which extraneous materials have been removed from the cellulose. In other words, good quality paper will tend to resist degradation, whereas poor quality paper will tend to degrade if not treated.

Acids continually form in paper. Some migrate into the air around the paper. Some, however, do not dissipate and need to be neutralized. Choosing the right option for your needs involves understanding the distinctions between various methods and what they can do, as well as evaluating

the item to be treated.

Things to be considered include the nature and condition of the paper, the media, non-paper items that may be part of the item, the size, and the value of the item. For best results, a deacidification product should be applied to both sides of a paper item.

The final pH of a paper depends heavily on the original composition of the paper. Some papers may benefit from deacidification but others may not. Keep in mind that deacidification won't return lost strength to paper.

If acidic papers still have their strength, deacidification may prolong their life. However, if they are already past their prime, deacidification alone will not restore their usefulness. It may even be harmful in some instances. The long-term effects of a high pH on the chemical and mechanical stability of paper have not been fully studied.

Deacidification does not work well on sized (coated) or very dense papers because it can't penetrate the surface. Powdery deposits can be left after treatment on coated papers, but can easily be removed with a soft cloth.

Deacidification products may be absorbed irregularly by some papers, resulting in problems. An example shown during the conference was a book with a blue cover. The cover was discolored by a series of iridescent rings. Also, papers can turn gray or yellow after use of

some alkaline products. It is critical to know that color shifts can take place in some inks and dyes and that solvents carrying deacidification agents cause inks to bleed.

Mass deacidification is a method most often used by institutions, such as libraries. It involves placing materials into cylinders containing a suspension of alkaline particles that continuously circulate around the item for a period of time. There are also manuscript chambers to treat individual sheets.

These institutions take other measures as well, such as maintaining optimal storage conditions. However, these methods are generally not a practical approach for framers to take. When determining the best deacidification method for any particular piece of artwork, a framer would be advised to consult a conservator. (*Editor's note: Deacidification is primarily used by libraries and archives for printed materials which have to be handled to be useful. These materials have only their cellulose and simple printing ink to be considered. Works containing colored media present a more complicated chemical situation and should probably be left to the conservator.*)

One of the methods conservators use to remove acids from an individual piece of paper is a water bath. Acids tend to move out of paper and into the water. Alkaline products may or may not be added to the bath depending on what is needed for the particular object.

Conservators must determine how long to keep a paper object in contact with water. If an acidic paper is in the water bath for too long, the water may become an acid bath and do more harm than good.

Additional baths may be necessary if the pH needs to be raised further. Sprays may be used on secondary items associated with the art or used on the matboard that will back the artwork. Sprays are also an option for art that can not take water washing (i.e., pastels).

Information available on the pros and cons of deacidification of various papers is not complete. Decisions have to be made based on the most current information available.

*(Editor's note: Your customers may have some awareness of deacidification as it is being marketed to crafters, especially scrapbooking enthusiasts.)*

Accelerated aging tests may seem to indicate that a particular paper can benefit from deacidification. However, aging experiments are just that—experiments. Humidity can adversely influence the aging of sheets of paper, and traditional oven-aging methods do not control moisture. Also, these tests do not account for air pollution or use.

Therefore, it is difficult to say exactly how many years of real time are represented by time tests. The only thing that can be said is if a paper is stable, it will remain stable. If it is not stable, then it will degrade and it may be helpful to try

to slow down this degradation.

Paper conservator Christine Smith from Alexandria, Virginia, sounds a note of caution. “While this article introduces readers to some concepts of deacidification, it is an extremely complicated subject and one that few conservators consider that they understand well enough. It may be safest for framers to restrict their deacidification to the secondary materials, such as mats and leave the objects themselves untouched.” ■