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Archival quality - what type of enclosures should I buy?

That question is asked of us frequently. The following is not so much a definitive answer but as a basis for further discussion and debate.]

General guidelines are available from the International Standards Organisation and from our own National Archives. What is lacking is specific advice about what are the best types of enclosures that should be used. And that is the most frequently asked question.

What is of even more concern is that buffered paperboard enclosures with a pH of approximately 8.6 are being promoted as being archival quality. The basis of this claim is that they have passed the Photographic Activity Test of the Image Permanence Institute of the USA. But that test relates obviously to photographic materials. The archival requirements for paper records are different.

Time and technology have provided more options for archiving practice and it is time for Conservators to be provided with more appropriate answers. What was accepted practice 50 years ago was perhaps the best of the alternatives available at that time. And it appears to be a feature of the archival industry to resist change. An archivist in Canberra told me 10 years ago that she would not consider polypropylene until it had been around and tested for 50 years. It is one thing to be conservative but such an attitude is quaint. I wonder if she still uses a typewriter?

The following quotes are from the Image Permanence Society web site - in relation to the Photographic Activity Test that is used internationally for testing materials for archival purposes.

"There is no standard or legal definition for the word "archival."

The P.A.T. "predicts possible interactions between photographic images and the enclosures in which they are stored."

Most Conservators today recommend polypropylene or polyester for preserving photographic materials but the P.A.T. test lingers on for testing archival suitability in all sorts of materials in the absence of a better acceptable alternative. The test does look for the presence of undesirable elements in inks, adhesives

There are two main conservation issues:

1. **PRESERVATION** of materials or objects. This involves many practices that require high conservation skills. Preservation techniques generally are designed to prevent or slow down natural decay. There is a very wide range of items that are considered for preservation including textiles, paper, works of art and buildings. It is not the purpose of this paper to discuss preservation.

2. **STORAGE** of items including paper records.

There is a difference between treating something to make it last and protecting something by enclosing it in a safe environment. It is the focus of this paper to examine the options for protective enclosures. There is a great deal of helpful information on the National Archives website about matters pertaining to storage conditions but there is no specific advice as to the nature of the enclosures that should be used. And that is the question that is of prime importance.

The National Archives website also provides a list of products that have passed the P.A.T. This list may imply archival quality ? But the list includes paperboard that has a very high alkalinity - which may be acceptable for photographic materials but is very questionable for records management paper based materials.

In order to achieve the purpose of this paper the following approach was taken:

Questions and answers about the chemistry of archive storage boxes

TYPE 1 BOXES IN PARTICULAR

Note: This questionnaire and the answers have been appraised and approved by a PhD Chemical engineer from the University of Adelaide and a PhD in Organic Chemistry from the University of South Australia.

Specifications desirable for boxes that will hold papers (that will usually be acidic) for up to 100 years

QUESTION: What is the ideal environment for the inside of such boxes?
ANSWER: Inert.

QUESTION: Should the boxes be airtight?
ANSWER: No. Over time the paper contents will naturally decay to some extent. If the gases thus produced cannot escape they will contribute to more rapid deterioration. The boxes should therefore be allowed to "breathe". Air access should however be reduced to a minimum to prevent the entry of unwanted air. The entry of air and the moisture that it will normally contain will contribute to a more rapid deterioration of the contents.

QUESTION: The finger holes in each end of the present no.1 boxes may be functional for handling but are they good for the box internal environment?
ANSWER: No. As explained above the entry of unwanted air is not good. The thought of fingers entering the box environment is abhorrent - not to mention possible rodents and insects. The holes are needed in paperboard boxes for removal from the shelf but a protective flap has been introduced by Albox to minimise risk to the internal environment.

QUESTION: What are the chemical guidelines for the best material to use in making these boxes?
ANSWER: As chemically inert and stable as possible.

QUESTION: Is the addition of an alkaline chemical buffering to the box material a helpful stabiliser for the box environment?
ANSWER: Quite the contrary. The presence of an alkali in a box of acidic paper is inviting chemical reaction. The presence of any moisture will facilitate the reaction. The idea that the alkali will offset the acidic gases from the paper and thus prolong its life is chemically illogical.

QUESTION: Is it in the interest of the preservation of the contents of the box to have a box material that can absorb moisture?
ANSWER: Firstly it is not in the interests of the longevity of the box to have water being absorbed and evaporating. This will promote the degradation of the box itself and for long-term storage this is not desirable. Secondly the concept of having the box action as a sponge to moderate the humidity of the interior of the box implies that the design of the box allows such variation in humidity. Changing humidity is undesirable in the box interior and should be minimised by the box design rather than trying to later correct the problem by adding undesirable chemicals.

QUESTION: Are pigments in the material used in the box construction a potential risk to the contents?
ANSWER: Whilst some pigments such as titanium dioxide (white) and carbon black are basically stable it is difficult to be certain of others without knowing exactly their composition. As a general rule it is best to avoid pigments being present in the box interior.

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The ISO 18902 page 4, in relation to plastics, expresses the opinion that polypropylene and polyester have been "found suitable as they are usually inert, unplasticized, and have a good chemical stability."

To sum it up - polypropylene and polyester are superior materials to paperboard for archival enclosures.

But the other factor that has always to be considered is cost. Polyester is more expensive and has some less desirable physical characteristics that polypropylene. Ordinary paperboard is cheaper than polypropylene but the costs of so-called archival quality and polypropylene are almost in line. When considering folders and pockets for filing purposes polypropylene film items are cheaper.

Conclusions:

Polypropylene is the best option for archival enclosures. For short term storage paperboard is a lower cost alternative.

The P.A.T. test is excellent for testing paper for photographic imaging materials - for which is was designed. It is a good test for finding the presence of undesirable elements but not a total guide to establishing the archival quality for enclosures for management records.

Darby Johns
Managing Director
Albox Australia Pty Ltd
May 2005

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