

The Care and Preservation Of

Archival Materials

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Introduction

Archival materials can be maintained for years of use and enjoyment provided that some basic care and attention is given to their preservation. The conservation staff at The Henry Ford has compiled the information in this fact sheet to help individuals care for their objects and collections. The first step in the care of collections is to understand and minimize or eliminate conditions that can cause damage. The second step is to follow basic guidelines for care, handling, and cleaning.

Archival materials are divided into three basic types: books, photographic prints, and documents. This fact sheet addresses the preservation concerns of books and documents. For information concerning photographic print collections see the listing of available conservation fact sheets.

Paper

Inscribed papyrus supports from the ancient world date to at least 2500 B.C.E. Since then, documents and books have been written on parchment, cloth, paper products, and wood. The process of paper making was created in the year 104 C.E. in China. The quality of paper products over the centuries has decreased as demands have increased. Knowing what your archival materials are made of helps in knowing how to preserve and enjoy them for years to come.

Types of Damage to Archival Materials

Poor handling and inappropriate storage are the major causes of damage to archival materials. Inappropriate storage refers to either an area that is not properly environmentally controlled, or storage with inappropriate stresses placed on the object physically. Archival materials can become brittle or fragmented due to high levels of acidity in the materials used to create the object. Clear plastic tape is often used to repair damaged archival materials but is a bad remedy that causes more harm. As tape ages, the adhesive embeds into the archival material's fibers causing staining, dirt attraction, and can harm the text when attempts are made to remove it.



Physical force - Physical damage to archival materials is quite common as materials are susceptible to tearing, creasing, and breaking. For example, books should not be removed at their weakest point, the top of the spine, but grasped around the text block. Handling of original and fragile materials should be kept to a minimum.

Light - Excessive light causes fading, bleaching, darkening, and weakening of paper, cloth, and leather. Daylight and ultraviolet light cause severe and permanent damage to archival materials when not filtered out.

Incorrect humidity - Relative humidity (RH) levels above 65% cause mold growth. Levels below 25% RH cause brittleness and curling of paper-based materials. Mold fungus feeds on dead organic matter, including leather, wood, paper, and gelatin.

Pollutants - In cities and areas of high pollution, oxidation rates increase, causing metal corrosion and damage to paper and leather materials.

Pests - Insects and rodents are attracted to ingredients in archival materials. Good housekeeping practices include no food, drink, or smoking in storage areas. Fumigants used for pest infestations can cause chemical reactions with organic materials. It is best to avoid chemicals and use non-chemical methods such as freezing to control infestations. See the bibliography at the end of this document for information about freezing.

Storage of Archival Materials

As with most materials, proper storage is the first line of defense against damage of archival materials. In an ideal world, archival materials would be kept in an environment of 45°F and an even, low of 30% relative humidity (RH). In most homes and museums this is not feasible. The best storage is in dry areas of a building, away from exterior walls, attics, basements, and leak sources with the addition of fans and dehumidifiers. If possible exhibit and work areas, should be maintained between 68-72°F and 50-60% RH avoiding rapid fluctuations in either RH ($\pm 3-5\%$ daily, $\pm 10\%$ seasonally) or temperature ($\pm 2-3^\circ\text{F}$ daily, $\pm 10-20^\circ\text{F}$ seasonally), as drastic changes in temperature and humidity accelerate deterioration of paper, ink, and leather. Humidity sensors are available through suppliers listed at the end of this document for those who wish to check conditions near their collections. Do not allow dust to accumulate on stored objects, as it is highly abrasive and traps moisture which can contribute to mold growth.

An integrated pest management (IPM) approach should be considered to deter common insects and rodents that target archival materials. The most effective measure to deter

silverfish, beetles, cockroaches, moths, bookworms, and book lice from living in collection areas is to maintain the RH levels consistently and use air-conditioning or fans to circulate air. Caulk cracks and holes larger than ¼” in the exterior of the building to prevent rodents from entering. Mechanical traps are preferred to chemical products.

While in storage, archival materials should be in non-illuminated areas to prevent fading of sensitive pigments and inks. Eliminate ultraviolet radiation as much as possible using curtains or blinds on windows. Plastic filters, such as Plexiglas are helpful on both windows to prevent transmission of harmful UV light. UV filters should be checked every six months. Condensation on windows shortens the life span of UV filters. The light level recommendations for storage are 10-50 lux (1-5 footcandles) and work areas are 330-660 lux (30-60 footcandles). UV levels should be maintained at less than 0-10 µW/lumen. Light sensors are available through suppliers listed at the end of this document or on smartphone apps for those who wish to check conditions near their collections.

You can protect your collection by storing boxes, albums, folders, and books in noncorrosive furniture cabinets or drawers made of aluminum or steel. Wood cabinets and shelving should be avoided. Ensure materials do not slump, move about, or slide underneath one another. Documents can be interleaved with acid-free paper, enclosed within storage materials made of chemically stable plastic (polyethylene, polypropylene, and uncoated polyester) or high-quality paper enclosures. Never use paperclips, rubber bands, acidic paper bookmarks, sticky notes, tapes, or adhesives on archival materials.

Handling of Archival Materials

Archival materials should be handled with clean hands or nitrile gloves. Salts and oils from your skin absorb into the archival artifacts causing permanent damage. If the archival material is mounted on matboard, handle it by the mount. If the mount is original to the artifact and in a fragile state, use an acid-free, rigid board to safely move the object.

Light causes cumulative, irreversible damage to archival materials, but can be controlled by simple measures. Exhibited archival materials should be kept at light levels of 50-150 lux (5-15 footcandles). When displaying materials, use LED bulbs when possible. Eliminate harmful ultraviolet light by using UV-filtered glass or Plexiglas on framed materials. If it is impossible to keep archival materials away from windows and skylights, use curtains or blinds to block out harmful daylight and UV. Inscriptions written on archival materials are likely to fade while on display. Display original archival materials for no longer than 6-8 weeks at a time.

Cleaning & Care

At least once a year, archival collections and storage areas should be inspected and dusted. Accumulated surface dirt is best removed with a soft, natural bristle brush or microfiber cloth. For significant dust and debris on archival materials, a low suction HEPA vacuum fitted with a brush and protective screen helps prevent the removal of loose elements while cleaning. Work should be carried out on a clean, flat surface with weights to keep the archival materials from shifting during cleaning. Always apply light pressure when brushing away loose dust and debris. Tougher to remove surface dirt may be reduced or removed with erasers and eraser crumbs, but take care to avoid fragile text and inscriptions, decorative illustrations, embossed stamps, colors, and sensitive areas of the material so as not to cause smudging (see link to YouTube video below). Beware of flaking ink and paint on manuscripts, parchment, and vellum. Acidic iron-gall ink was commonly used on archival materials and is identifiable by the way it weakens paper and causes losses.

If books are found severely damaged with separating or broken components, warping, tears, etc. and require treatment, contact a professional. To prevent further losses and deterioration, the weakened books can be tied up with flat, cotton twill tape or wrapped entirely with acid-free paper and tied with the bow placed along the fore edge (opposite spine). Until conservation treatment is performed, these wrapped books can return to shelving safely. For pamphlets that are flimsier than books, storing them in boxes or folders helps prevent further damage.

Disaster Response

Archival materials are typically high on salvage priority lists in the case of many disasters due to their fragility. Before an unforeseen event occurs, have a record of the collection and keep routine building maintenance updated. Archival materials should not be stored beneath pipes or stacked on floors.

Information on disaster recovery can be found at:

<https://www.nlm.nih.gov/hmd/preservation/videos.html>

Please note - this fact sheet presents a brief overview of the care of archival materials, stressing good storage and proper handling as the best methods of preservation. It does not address the disastrous damage caused by fire, water, pests, and other agents of deterioration. Please contact a conservator if you need specialist assistance with conservation of these materials.

BIBLIOGRAPHY

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The Canadian Conservation Institute. CCI Notes 14/3, 14/4, 14/10, 16/1, 16/4, 16/5.

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Useful source:

Northeast Document Conservation Center
<https://www.nedcc.org>



Cleaning documents

<https://www.sos.mo.gov/archives/localrecs/conservation/notes/surfacecleaning.asp>

<https://www.youtube.com/watch?v=dwK-hTNfIMo>

Freezing to eradicate pests:

<https://www.museumoflondon.org.uk/Resources/e-learning/introduction-to-museum-pests/s03p05.html>

<https://www.canada.ca/en/conservation-institute/services/conservation-preservation-publications/canadian-conservation-institute-notes/controlling-insects-low-temperature.html>

SUPPLIERS

Framing, Storage Supplies, Light Sensors:

- Conservation Resources International L.L.C.
<http://www.conservationresources.com>
- Light Impressions
<http://www.lightimpressionsdirect.com>
- Hollinger Metal Edge
<https://www.hollingermetaledge.com>
- TALAS
<https://www.talasonline.com>

Nitrile and Cotton Gloves:

- Gaylord Archival
<https://www.gaylord.com>
- Uline
<https://www.uline.com>

Brushes:

- Arts/Crafts supply stores

Humidity Indicators and Dust Cloths:

- University Products
<https://www.universityproducts.com>
- Gaylord
<https://www.gaylord.com>



To Find a Conservator:

The American Institute for Conservation of Historic & Artistic Works

<https://www.culturalheritage.org/about-conservation/find-a-conservator>

